第13次 人口센서스會議 結果報告書

THIRTEENTH POPULATION CENSUS CONFERENCE
EAST-WEST POPULATION INSTITUTE
HONOLULU, HAWAII
Dec. 10 - 14, 1990

1990.12

經濟企劃院 調査統計局

National Bureau of Statistics
Economic Planning Board

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9. Tabulation Planning(The Case of Thailand)

10. Dissemination of Census Data

11. Data Processing and Publication Plans for the 1991 Census of Population and Housing of Sri Lanka

12. The Use of Census Data for Household Projections : An Overview of Results from the HOMES Project

13. Tabulation Plans for the 1991 Census of Bangladesh

14. The Tabulation Plans and Dissemination of the 1991 Population Census of Nepal

15. Australian Initiatives in Design and Marketing of Population Census Products and Services

16. Marketing Strategies for Philippines Population a Census Data

17. The 1989 Census of Vietnam

18. Small Area Data for Social Planning in Hong Kong

19. Plans for Utilization of Small Area Data from the 1990 Census of Papua New Guinea Census

20. The 1990 Population Census of Indonesia As One of the Important Sources of Small Area Data on Population

21. The Effect of Female Literacy on Fertility : A Case Study of the Use of Small Area Data in India

22. Fertility and Child Mortality Estimation from Census Data in India

23. New Development in Census Editing

24. Reconstructing Birth Histories from Census Data : An Extension of the Own-Children Method of Fertility Estimation

25. The Population of the French Territories of the Pacific : An Overview

26. The Depopulation of Polynesia : Migration to New Zealand

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Ⅰ. 第13次 人口센서스 會議 槪要

第 13 次 人口센서스 會議 槪要

1 . 出 張 者

調査統計局　　　人口統計課長　　書記官　　金 日 炫

調査統計局　　　人口統計課　　　統計主事　　李 三 植

2 . 出 張 期間

1990. 12. 10 - 12. 14 (5 日間)

3 . 出 張 地

미국 하와이 호놀룰루

4 . 出 張 目的

o 미동서센터 인구연구원 주관 제 13 차 인구센서스 회의 참석

o 미국과 아시아·태평양 각국의 인구센서스 시행 및 제반 문제점에 대한 상호 의견 교환

o 각국의 인구센서스 자료 처리·분석 및 결과 활용에 관한 상호 의견 교환

o 각종 인구관련 간행물 및 자료 수집

5 . 出 張 成果

1) 효율적이고 능률적인 자료처리·분석 및 활용에 관하여 의견 교환

2) 한국을 비롯한 참가국들의 인구센서스 시행중 발생된 또는 예상되는 각종 문제점의 소개 및 참석자간 활발한 토론을 통하여 해결책 도시 노력

3) 동회의 참석국간 인구센서스 및 통계에 관한 상호 기술협력 증진 도모

4) 간행물 및 자료 수집

5) 인구센서스 책임기관(통계국) 및 국장급 모임의 발족 준비 (회원 자격은 현재 또는 과거에 인구센서스를 책임지고 있는 국장들로서 영구회원이 됨)

6) 제14차 회의는 일본(1992년 3 - 5월 중)에서 열릴 예정이며, 제15차는 한국(1993년 가을)에서 개최토록 요청이 있었음

7) 한국에서 기부한 10,000달러의 지출 내역에 대한 간단한 설명이 있었음(차후 총기금 지출 내역의 문서화 예정). 이외 회원국은 매년 3000 달러의 회비를 지급토록 요구함

6 . 健議事項

1) 아시아 · 태평양지역 국가에 대한 지위 향상 및 친선도모를 위하여 제15차 인구센서스 회의(1993년 가을 예정)를 한국에서 유치하였으면 함

  * 역대 회의개최 시기, 장소 및 향후 계획

	시 기	장 소
제 7차 회의	1979. 9. 24 - 9. 29	미국 하와이
제 8차 회의	1981. 9. 28 - 10. 2	한국 서울
제 9차 회의	1983. 3. 1 - 3. 5	일본 동경
제10차 회의	1985. 4. 29 - 5. 3	미국 하와이
제11차 회의	1987. 2. 9 - 2. 13	호주 시드니
제12차 회의	1988. 9. 5 - 9. 9	중국 북경
제13차 회의	1990.12. 10 - 12.14	미국 하와이
제14차 회의	1992년 3월 예정	일본 동경
제15차 회의	1993년 가을 예정	한국 서울

2) 동회의를 주관하고 있는 미국 하와이 대학교 부설 동서센터에서는 회의를 참가하고 있는 각국 회원국들에게 회비(약 3000달러)를 요청하고 있는 바, 이에 대한 예산 조치 및 지원이 필요로 됨.

3) 각국간 특히 한국과 미국의 인구 및 주택 총조사 자료를 활용하여 국제간의 심층 비교 분석 작업의 착수가 요구됨

4) 인구 관련 종사자들의 자질을 향상시키기 위한 각종 국제 회의 및 훈련프로그램애 계속하여 적극적인 참여가 요청됨

Ⅱ. 参考資料

參加者 名單, 職位 및 機關

性　　名	職　　位	機　　關	國　名
Gerard BAUDCHON	Research Fellow	East-West Population Institute	USA
B. E. BRYANT	Director	Bureau of the Census	USA
L. J. CHO	Vice-President	East-West Center	USA
Glenn COCKING	Assistant Statistician	Population Census & Surveys Branch, Australian Bureau of Statistics	Australia
Soma DE SILVA	Senior Deputy Director	Department of Census and Statistics	Sri Lanka
Luisa T.ENGRACIA	Director II	National Censuses & Household Surveys, Department National Statistics Office	Philippines
FENG Nailin	Division Chief	Department of Foreign Affairs, State Statistical Bureau	China
Maria Elena FIGUEROA	Directora de Comunicacion Censal	Instituto Nacional de Estadistic Geografia e Informatica	Mexico
Frederick Wing Huen HO	Deputy Commissioner for Census & Statistics	Census & Statistics Department	Hong Kong
Sasithorn HOTIKASTHIRA	Director	Population Survey Division, National Statistical Office	Thailand
John KALAMOROH	Assistant National Statistician	National Statistical Office	Papua New Guinea

性　名	職　位	機　關	國　名
Teik Huat KHOO	Chief Statistican	Malaysia Department of Statistics	Malaysia
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性　名	職　位	機　關	國　名
Chintana PEJARANONDA	Chief	Population Statistics Branch, Population Survey Division, National Statisticl Office	Thailand
Robert D. RETHERFORD	Research Associate and Assistant Director for Graduate Study	East-West Population Institute	Honolulu
Bryant ROBEY	Assistant to the Director	Office of International Relations,Office of the governor	Honolulu
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SUN Jingxin	Deputy Director-General	State Statistical Bureau	China
Nick SUVULO	Acting National Statistician	National Statistical Office	New Guinea
Sandra E. WARD	Senior Editor	East-West Population Institute and Editor, Asian and Pacific Population Forum	Honolulu
Soetjipto WIROSARDJONO	Vice Director General	Gentral Bureau of Statistics	Indonesia

討 論 議 題

1 . 調査 遂行上 問題點 關聯

o 개인의 비밀 침해등과 관련하여 조사 응답율이 부진(미국의 경우 1차 우편
  조사 응답율이 1980년 75 % 에서 1990년에는 63 % 로 감소)

o 조사원 안전 문제(일본, 미국에서 조사원이 살해됨)

o 조사표 분실 문제(일본)

o 예산배정, 국회의석 할당 등의 이유로 일부지역에서 인구를 실제보다 많은 것
  으로 조사(가공 또는 중복조사) (미국, 필리핀 등)

2 . 人口 센서스의 重要性 關聯

o 의회 대표자수 및 선거구 조정에 이용 (미국 등)

o 지방정부 예산 배정의 근거(미국, 필리핀 등)

o 각종 정책 자료로 이용

3 . 資料 處理 技術의 開發 關聯

o 신속한 자료 처리·보급 및 활용을 위하여 고성능 콤퓨터 및 각종 자료 처리
  패키지(CONCOR, CENTRY 등) 도입 및 이용

o 자료 처리 및 보급 기능의 지방 분산화 (조사표 수송·보관 부담 제거, 비용
  절약, 오류조사표·수정 용이, 자체 자료 분석 기능 강화 목적)

4 . 資料提供의 專門化 關係

o 센서스 자료 종류의 목록화 및 홍보

o 이용자 파악 및 이용 장려

o 자료제공의 저렴화를 위한

  - 저렴한 자료제공 수단 개발
  - 신속·저렴한 자료처리 기술개발
  - 정부 보조

o 자료제공 기능의 지방분산(한국, 미국, 일본 등)

o 산업·직업의 세밀한 분류 자료 제공

o 자료 제공 수단의 다양화 (보고서, 특별제표형식, 마그네틱 테이프,
                            데이타베이스 , CD-ROM 등)

o 특별주제 관련 자료 제공 및 분석 강화

  - 주제별 (인구이동, 노령화, 노동력, 출산력, 사망력, 가구 등) 데이타
    베이스로 구축 또는 마그네틱 테이프 등으로 제공

  - 주제관련 세미나 개최 및 특별분석 보고서 발간(미국, 일본, 호주 등)

5. OMR 시스템 補給 및 改善 關聯

o OMR 시스템의 장점(한국, 일본, 미국 등)

o OMR 시스템 이용의 확산

o 특수용지·잉크 등 특수시설 및 재료구입의 곤란, 조사표 취급 및 보관의
  난해, 오류발생 등 문제점 개선(한국, 일본, 미국 등)

6. 小地域 統計 情報 作成 및 利用 關係

o 데이타 베이스 및 소지역 정보 씨스템(GIS)와 연계하여 소지역 사회·경제

  및 인구학적 개발에 이용(한국, 홍콩 등)

o 조사구 설정 대한 심층적인 연구

o 통계적 신뢰성 및 정확성 구축을 위한 지역별 상이한 표본 추출율 적용

7. 事後調査 關係

o 조사지역 오류(인구의 누락 및 중복) 및 내용 오류의 보정을 위하여 사후조
  사 기능의 강화(미국, 중국, 한국 등)

o 특히, 미국과 필리핀의 경우 실제보다 부풀린 인구수의 조정에 사후조사 결과 이용

8. 效率的인 資料 評價 및 分析 關聯

o 최종보고서 이후 주제별 특별보고서(Monograph) 연구

o 자료 분석 및 평가를 위한 국내외 연구기관 등과 협력

o 분석 및 평가결과에 대한 세미나 개최

o 각종 분석 및 평가보고서 발간

9. 調査項目 關聯

o 사회·경제 현상의 복잡화에 따른 필수조사항목수 증가

o 보다 상세하고 정확한 산업·직업 자료 및 소득자료를 얻기 위한 항목 고안

o 일부 국가에서 출산에 관한 항목 감소 계획

10. 센서스와 他 人口 資料와의 關係

o 센서스 자료 평가를 위한 타 자료 이용관계 (미국 : Current Population Survey 등)

o 센서스 자료와 동태자료와의 관계 연구(미국, 호주 등)

o 상주인구조사, 주민등록조사 등 타 인구조사가 센서스 결과에 미치는 영향 (한국)

會 議 日 程

日　　時	會議 日程 및 業務 遂行 活動
12. 10 （月）	
08:30 - 09:00	회의 준비물 배부
09:00 - 10:15	개 회 식
	o 개회사(조리제 박사)
	o 회의 주지 사항
10:45 - 12:00	최근 인구센서스의 촛점
	o 중국의 1990 센서스 자료 이용에 관한 의견
	o 미국의 1990 센서스
13:00 - 16:00	최근 인구센서스의 촛점(계속)
	o 일본의 1990 센서스
	o 한국의 1990 센서스
	o 말레이시아의 1991 센서스
	o 멕시코 현대화 과정에서 인구센서스
12. 11 （火）	
09:00 - 12:00	제표 및 보급 계획
	o 인도의 1991 센서스의 제표 및 보급 계획
	o 태국의 센서스 제표 계획
	o 피지의 센서스 보급
	o 스리랑카의 1991 센서스 자료 처리 및 발간 계획
13:30 - 16:30	제표 및 보급 계획(계속)
	o 가구 추계를 위한 센서스 이용(HOMES 프로젝트)
	o 방글라데시의 1991 센서스 제표 계획
	o 네팔의 1991 센서스 제표 및 보급 계획
12. 12 （水）	
09:00 - 12:00	센서스 자료의 상품화
	o 호주 센서스 자료의 상품화 고안

日　　時	會議 日程 및 業務 遂行 活動
	o 필리핀 센서스의 상품화 전략 o 베트남의 1989 센서스
12:00 - 13:00	리셉션 참석
12. 13 (木)	
09:00 - 12:00	소지역 자료, 출산력 및 사망력 추계, 편집
	o 홍콩의 사회 계획을 위한 소지역 자료 이용 o 파푸아뉴기니의 1990 센서스의 소지역 자료 활용 계획 o 인도네시아에서 1990 센서스의 소지역 자료 활용 o 인도의 여성 문맹율과 출산력 관계
13:30 - 16:00	1990 센서스 자료를 이용한 출산력과 사망력 추정
	o 인도의 출산력과 영아사망율 추정 o 센서스 자료 편집의 발달 o 적생아 방법을 이용한 출산력 추정
12. 14 (金)	
09:00 - 12:00	태평양 도서 국가의 센서스
	o 프랑스령 영토의 인구 o 태평양 도서에서 뉴질랜드로 인구 이동 o 미국령 영토의 센서스 및 인구 통계 o 아시아 및 태평양 센서스 포럼지 계획
13:00 - 15:00	향후 계획
	o 향후 활동
15:30 - 16:30	폐회식
	o 폐회사(조리제 박사)
18:00 - 20:00	리셉션 참석

Ⅲ. 各國의 發表報告書

THIRTEENTH POPULATION CENSUS CONFERENCE

East-West Population Institute
Honolulu, Hawaii

December 10-14, 1990

SOME IDEAS ON THE UTILIZATION OF DATA
FROM
CHINA'S 1990 POPULATION CENSUS

Sun Jingxin

State Statistical Bureau
People's Republic of China

SOME IDEAS ON THE UTILIZATION OF THE DATA FROM

CHINA'S 1990 POPULATION CENSUS

Sun Jingxin
State Statistical Bureau
People's Republic of China

I. BACKGROUND

China conducted its fourth population census in July of 1990. The census was carried out when the migration of the population kept increasing, as a result of the steady development of the socialist commodity economy. In spite of the gigantic size of work involved as compared with the limited time available for census preparation, the effective leadership of governments at all levels, the extensive mobilization of people and the scientific working methods and procedures have contributed to the smooth conduct of the census. Rich and valuable information will be obtained through the census concerning the size and the geographic distribution of the Chinese population, the composition of population by ethnic group, by marital status and by educational attainment, the industrial and occupational structure of the employed population, and the fertility status of women. Such information is of great significance for the scientific formulation of economic and social development plans, for the preparation of government policies on population, education, minority nationalities and employment, for the arrangement of material and cultural life of people, and for the modernization of the country.

This paper aims at elaborating some ideas on how to best utilize the data from China's 1990 population census, how to bring in to play the social benefits of the census data, and how to remedy some defects with respect to the utilization of census data that occurred in China's last census, all of which, we believe, are of concern for many people.

II. THE SOCIAL BENEFITS OF THE CENSUS DATA

What are the contents, the format and the time-table of the population census results that are to be made available, and how can we return the census information in a timely way to the society? The following are some of our ideas.

A. Composition of Population Census Data

The 1990 population census of China will furnish us with rich information on the current status of China, which consti-tutes a data bank for studies on population situation of the country. The results of China's 1990 census comprise mainly two

parts:

1. Manual tabulation of major population figures. In terms of the way of tabulation, such figures include: population size, population by sex, educational attainment and ethnic group, natural growth of population, and population by urban and rural residence, all aggregated at village, township, county, prefecture/city, provincial and national levels. The results of the manual tabulation have been released in the four communiques by the State Statistical Bureau, the first of which came. out on October 30, 1990, or some three months after the completion of the field enumeration (see Annex).

Results of the manual tabulation of major figures from China's 1990 population census will be compiled for publication in national, provincial, prefecture and county volumes.

2. Computer tabulation, which is composed of three formats:

1) Advance sample tabulation. Data for a selected sample of 10% of urban neighbourhood committees (or rural villager committees) will be processed by computers first. The work is scheduled to complete by the end of May, 1991, and the results will be compiled for publication in national, provincial, prefecture and county volumes.

2) Tabulation of all census data. According to planned schedule, computer processing of all records from the census will be completed by the end of September of 1992. As is in the case of advance sample tabulation, the results of computer processing are to be published in national, provincial, prefecture and county volumes.

It is worthwhile to mention that, compared with the 1982 census, new items have been included in the current census, and the tabulation plan has been improved to produce more tables. Given only one set of tables that are to be printed for each of the counties, prefectures, provinces and for the country as a whole,. we would have 36,000 pages of national tables, 970,000 pages of provincial tables, 5,770,000 pages of prefecture/city tables and 3,074,000 pages of county tables, totalling 9,850,000 pages. Piled together, these printouts will reach 940 metres in height.

3) Census data base. The provision of aggregated data is not the only format through which the census information is made available to users. In fact, such data can not meet the need for further and detailed analysis. It is therefore necessary to build up population census data bases, especially data bases located in the government statistical system. Integrated with other basic and related economic and social data bases maintained also by the government statistical system, such as those on industrial, agricultural, investment, trade, cultural, educational and health statistics, the population and demographic data base is of great importance to the intensive utilization of population census data

and to the study of Chinese population in relation to the country's social and economic development.

The population census data bases can be classified into several categories:

i) **Micro data base of sample households** selected by a given sampling fraction (1 % for instance). This type of data base is built up at national and at provincial levels by selecting the record of 1 household out of each 100 households from the census data tapes. As the basic data base of census information, the micro data base allows statisticians and demographers to manipulate and tabulate census data in any format they wish to meet the needs for special analysis.

ii) **Subject-specific data base.** This includes data base on the industrial and occupational structure of the employed population, on nationality characteristics of the minority population, on the fertility information of women at child-bearing ages, or on the mortality information of the deaths, etc. With clear focus on the subjects under study while saving storage space and facilitating in-depth analysis, such subject-specific data bases help to provide better consultancy services to users.

iii) **Macro data base** (also called aggregation data base). With each county and higher administrative area as a recording unit, the macro data base include such population and demographic aggregates as total population, population by sex, population by specific age groups (children, labour force, old population etc.), birth rate, death rate, number of women at child-bearing ages, total fertility rate, general fertility rate, infant mortality rate, average expectancy of life at birth, population by industry, occupation or educational attainment, etc.. Easy for retrieving figures and for making comparison, this type of data base is particularly useful for government leaders, decision makers and other relevant agencies, and can timely meet the needs of different users.

B. Return the Census Information in Time to the Society

The 1990 population census is another major survey on the condition and the strength of the country that China has undertaken. The census has been of concern by people of various circles both at home and abroad. The governments at all levels have made significant input of human, material and financial resources into the census through careful organization and co-ordination. The 7-million dedicated census takers have been working very hard, and the people of all nationalities have responded to the government's call by supporting and cooperating with the census. While all these have contributed to the success of this largest census ever in the world, it is natural that the governments, the census takers and the people in general are concerned with the results of the census. Statistical agencies therefore bear the responsibility to return the rich information from the census to them as early as possible, 'so that such in-

formation can be widely utilized and the social benefits of the census can be achieved.

1. Based on census data, comprehensive or subject-oriented analytical reports containing both basic situation and policy analysis and recommendations will be prepared by statistical agencies and other departments concerned. These reports will be submitted to the governments as a reliable basis for the scientific decision-making.

2. Statistical agencies and other departments concerned will make use of mass communication media, such as TV and radio broadcasting, newspapers and magazines, to disseminate the achievements and results of the census in the forms that are accepted and loved by the people. Extensive education and publicity programme on the population situation of China will be launched to enhance the "population awareness" of the Chinese people and to propagate the importance and the urgency of continuing the family planning programme to check the growth of population. It is also important to improve the quality of population, to help people establish the "per capita" concept, with the aim of integrating the solution of population issues with the overall objective of economic and social development.

At the same time, government statistical agencies at all levels will also engage themselves in providing consultancy and services for the analysis and utilization of 1990 census data.

Some feedback has been received after the timely release of census results through the publication of population census communiques. In Shaanxi Province for instance, the result of the census showed that the crude birth rate and the natural growth rate there in 1989 were both 0.3 percentage point higher than the national average, with the total population of the province growing from 13.17 million in 1949 to 32.88 million in 1990. The local government leaders were alerted by the figures. While recognizing the severe situation of population in the province, they think that the findings of the census have further affirmed the necessity of taking the family planning as the basic policy of the country, and decide to exercise new efforts during the next five years to make a breakthrough in the family planning work.

III. PLAN FOR THE UTILIZATION OF CENSUS INFORMATION

The ultimate purpose of the census is the utilization of census information. The analysis and researches based on the utilization of census data constitute a key component in the whole process of population census.

Early analysis and research work can be started in one year after the field enumeration (i.e. July of 1991), when results of the advance computer tabulation of 10% of the census data can be

used. From our experience in the 1982 census, most of the results of this advance tabulation have a fairly good representation.

In what way could we organize the analysis, studies and utilization of the census data?

---Government statistical agencies will organize their own research staff to do analysis and researches by utilizing census data. Governments at each administrative level (i.e. national, provincial, prefecture, county level) in China all have their own statistical agencies, which have been involved in the population census. They should become the professional team also engaged in the the analysis and researches. Of course, it seems necessary that they should have proper training on relevant skills and techniques, including the use of analytical software packages on computers, in order to strengthen their capability of carrying out analysis and researches and of using advanced techniques, and to improve and promote analysis activities in the government statistical agencies.

---Universities, research institutions and social organiza-tions will be encouraged to participate in the analysis, researches and utilization of census data under the central coordination by the government statistical agencies. This is beneficial to the improvement of theoretical and academic studies of population science.

---International cooperation will be enhanced. As China is the most populous country in the world, the current status and the trend of development of the Chinese population is of interest to the international community. On the other hand, statisticians and demographers in China need to learn the good experience and practice of other countries, and to acquaint themselves with evaluation methods, analytical techniques and computer software packages that are used internationally to improve their own capability. In this context, China is willing to strengthen international cooperation in the field of population statistics and demographic analysis. Workshops and lectures by foreign experts in China, training of Chinese population statisticians and demographers abroad and joint research projects on specific topics are just some examples of possible forms of cooperation. The aim is to make full use of China's 1990 population census data in the study of population issues by both domestic and foreign researchers, and to make our due contribution to the progress of the human being.

---In-depth analysis on some special topics will be orga-nized with the involvement of different agencies and insti-tutions. Such topics may include:

1. Evaluation on the quality of census data. Proper evalu-ation process will help us verify the quality of the census data and assess how accurately the census data reflect the actual population situation in China (i.e. the reliability of census data). Following evaluation methods will be adopted:

i) Post-enumeration survey. Upon the completion of the field enumeration and field checks of the 1990 census, a post-enumeration sample survey was conducted according to Regulation on Sample Check of the Quality of Census Enumeration, with a sample size of 173,409 persons. The results of this survey are as follows:

Total population: 0.1 per thousand of over-reporting,
0.7 per thousand of under-reporting,
0.6 per thousand of net coverage error;
Error rate in reporting sex: 0.14 per thousand;
Error rate in reporting age: 3.07 per thousand;
Error rate in under-reporting of births: 1.03 per thousand;
Error rate in under-reporting of deaths: 4.9 per thousand.

ii) Internal consistency check of census data.

iii) External consistency check of census data with other official data in China.

iv) Consistency check by calculation of some internationally accepted indices, such as Whipple's index, Myer's index, UN age-sex accuracy index, etc..

v) Assessment of data by using indirect technique and other demographic analysis approaches.

2. Population size and its urban-rural and geographic distribution: change of population between censuses, effect of population control measures, change in the structure of city/town/county population, classification of urban/rural population.

3. Migration of population: trend, direction and size of population migration in China, reasons and problems of migration.

4. Age and sex composition of population: studies on sex ratio and on ageing of population.

5. Population by ethnic group: change in the size of population of different ethnic groups, growth of minority population and its relation with economic development.

6. Education attainment and literacy: change in the educational attainment of population, status of illiterate population.

7. Family and marriage: change in the family structure between censuses and in the marital status of population.

8. Natural growth of population: fertility status of women, regional differentials in births and deaths, effects of family planning programme on the growth of population.

9. Industrial and occupational composition of population: change in employment structure since economic reform was introduced in China.

10. Population and economy: impacts of population growth on the economic performance and on the reform of economic system.

11. Population and resources.

12. Trend and projection of population development: studies on the population development of China towards the year 2000.

---Publication of population series. On the basis of researches and studies of the 1990 population census data and data from previous censuses and from other sources, the State Statistical Bureau, in collaboration with other institutions, will compile a series of books on Chinese population. It is envisaged that the series will contain provincial volumes and a national volume.

---National seminars. National seminars on the analysis of the census results are proposed, following the in-depth analysis activities, to evaluate the census data, to share the results of analysis and to promote further analysis in all provinces. Proceedings containing papers submitted at the national seminars will be compiled.

---International seminar. It is also proposed that an international seminar be organized at an appropriate time, where experts and scholars in China and from abroad will sit together to evaluate the results of China's 1990 population census and to exchange views and ideas on the analysis of census data. This seminar is beneficial to the improvement of census taking and to the strengthening of analytical capability in China. Papers submitted at the international seminar will also be compiled in a seminar proceedings.

Annex: Communiques on the Main Results of 1990 Population Census (No.1--No.4)

Communique of the State Statistical Bureau
of the People's Republic of China
on Major Figures of 1990 Population Census
(No. 1)

October 30, 1990

In accordance with the decision of the State Council, China carried out its fourth national population census in July of 1990. Thanks to the leadship of government at all levels and the support and cooperation from people of various nationalities, the field enumeration was successfully completed through the painstaking efforts and hard work of nearly seven million census workers. The post-enumeration check by sample survey shows that the quality of enumeration is comparatively high. At present, the manual tabulation on the major figures has been finished and all the data collected are being processed by computers. The following are the major figures obtained through the manual tabulation.

I. Total Population. China has a population of 1,160,017,381.

The total population of the 30 provinces, autonomous regions and municipalities (excluding Jinmen and Mazu islands of Fujian Province) and of servicemen on the mainland of China was 1,133,682,501. This figure was obtained, with zero hour of July 1, 1990 as the reference time, through face-to-face interview to the people holding citizenship of the People's Republic of China and residing on the mainland of the country.

The population of Taiwan Province and of Jinmen, Mazu and a few other islands of Fujian Province was 20,204,880 '.

The population of Chinese compatriots in Hongkong and Macao was 6,130,000'.

Compared with the population of 1,008,175,288 at the zero hour of July 1, 1982, the total population of the 30 provinces, autonomous regions and municipalities and of servicemen on the mainland of China increased by 125,507,213 persons, or 12. 45 percent, over the past eight years. The average annual growth was 15,688,402 persons, or a growth rate of 1.48 percent.

The household registration status of the people enumerated in the 30 provinces, autonomous regions and municipalites was as follows:

— —There were 1, 100,727,541 perosns, or 97.37 percent of the total population, who resided and held the household registration in the same county/city;

— —There were 19,829,712 persons, or 1.75 percent of the total population, who had resided in the county/city for more than one year by the census time but held the

household registration elsewhere;

—There were 1, 523, 911 persons, or 0.14 percent of the toal population, who had resided in the county/city for less than one year, but had been away from their place of household registration for more than one year by the census time;

—There were 8, 164, 236 persons, or 0.72 percent of the total population, who happened to live in the county/city at the census time with their household registration unsettled;

—There were 238,001 persons, or 0.02 percent of the total population, who used to reside in the county/city, but did not hold the permenant household registration at the census time as they were working or pursuing study in a foreign country.

II. Population of family households. In the 30 provinces, autonomous regions and municipalities, there were 276,947,962 family households with a population of 1,097, 781. 588 persons, which accounted for 97.1 percent of the total population(excluding servicemen) . The average size of family household was 3.96 persons.

III. Sex composition. Of the people enumerated in the 30 provinces. autonomous regions and municipalities and servicemen. 584,949,922 persons or 51.6 percent of the total population were males, while 548,732,579 or 48.4 percent were females. The sex ratio (female=100) was 106.6.

IV. Composition of nationality. Of the people enumerated in the 30 provinces, autonomous regions and municipalities and servicemen, 1,042,482, 187 persons or 91. 96 percent were of Han nationality, and 91,200,314 persons or 8.04 percent were of various national minorities. Compared with the 1982 census data, Han people increased by 101, 602, 066 persons or 10.8 percent; while the population of various national minorities increased by 23,905,147 persons or 35.52 percent.

V. Composition of educational attainment. Of the people enumerated in. the 30 provinces, autonomous regions and municipalities and servicemen. 16,124, 678 persons had finished university education (referring to junior college and above); 91,131,539 persons had received senior secondary school education (including secondary technical school education) ; 264,648,676 persons had received junior secondary education, and 420, 106, 604 persons had had primary school education(the educated persons includes graduates and studentsin schools).

Compared with 1982 population census data, the following changes had taken place in the number of people with various educational attainments of every 100, 000 people. number of people with university education increased to 1,422 from 615; the number of people with senior secondary school education increased to 8,039 from 6,779; the number of people with junior secondary school education increased to 23,344 from 17,892; the number

of people with primary school education increased to 37,057 from 35,237.

Of the people enumerated in the 30 provinces, autonomous regions and municipalities and servicemen, 180,030,060 persons were illiterate or semi-literate (i. e. people over 15 years of age who can not read or can read very little). Compared with the 22. 81 percent of illiterate or semi-literate people in the 1982 population census, this proportion had dropped to 15.88 percent.

Ⅵ Birth rate and death rate. In the 30 provinces, autonomous regions and municipalities, 23,543,188 persons were born in the period from July 1, 1989 to June 30, 1990, while 7. 045,470 persons died during the same period. The birth rate is 20.98 per thousand, the death rate is 6.28 per thousand and the natural growth rate is 14.70 per thousand.

Ⅵ Total population of cities and towns. In the 30 provinces, autonomous regions and municipalities, there were 296,512,111 persons who lived in cities and towns, which accounted for 26.23 percent of the total population. Of these people, 211,230,050 persons or 18. 69 percent of the total population lived in cities; 85,282,061 persons or 7.54 percent lived in towns.¹

Ⅷ Results of the post-enumeration sample survey. According to the Regulation on the Sampling Check on the Quality of Enumeration Work, a post-enumeration check was carried out after the field enumeration and the verification work had completed in the 30 provinces autonomous regions and municipalities. The size of the sample was 173,409 persons. The results of the post-enumeration survey indicated that the field enumeration of the census was satisfactory, as is shown in the following:

Coverage of population: overreport 0.1 %, underreport 0.7%, net error 0.6%;

Net error rate of sex: 0.14%;

Net error rate of age: 3.07%;

Births: underreport 1.03%;

Deaths: underreport 4.9%.

Note: 1.Referring to population at the end of March, 1990, as was released by the Taiwan authority.

2. Population of Hongkong and Macao was obtained from data at the end of 1989, which were released by Hongkong and Macao governments.

3. Population in cities refers to people living in the districts of cities which are divided into districts, and those living in street committees of cities which are not divided into districts. Population in towns refers to people living in neighborhood committee of towns under the jurisdiction of cities which are not divided in to districts and living in neighborhood committees of towns directly under county's jurisdiction.

Major Figures of the 1990 Population Census

	unit	1990 population census	1982 population census	comparison of 1990 with 1982 census
I. Total Population'	person	1,133,682,501	1,008,175,288	+12.45%
II. Natural movement'				
Crude birht rate	‰	20.98	20.91	+ 0.07
Crude death rate	‰	6.28	6.36	- 0.08
Natural growth rate	‰	14.70	14.55	+ 0.15
III. Average size of family household	person	3.96	4.41	- 0.45
IV. Sex Ratio(female=100)	%	106.6	106.3	+ 0.3
V. Nationality				
Han	person	1,042,482,187	940,880,121	+10.80%
Nationa manority	person	91,200,314	67,295,167	+35.52 %
VI.People with various educational attainments of 100000 people				
University	person	1,422	615	+131.22%
Senior Middle	person	8,039	6,779	+ 18.59%
Junior Middle	person	23,344	17,892	+ 30.47%
Primary	person	37,057	35,237	+ 5.17%
VII. Illiterate & Semi-literate'				
Number of people	person	180,030,060	229,964,474	-21.71%
% of the total population	%	15.88	22.81	- 6.93
VIII.Population of cities &towns'				
Number of people	person	296,512.111	206,588,582	-
% of the total population	%	26.23	20.60	-

Note:1.The total population:Referring to the population of the 30 provinces, autonomous regions and municipalities and of servicemen excluding the population of Chinese compatriots in Taiwan Province, Hongkong and Macao.

2.The period of natural movement:Referring to the data of 12 months before the reference time in 1990 census; to the data of 1981 in 1982 census.

3.The population of illiterate or semi-literate:Referring to people over 15 years of age who can not read or can read very little.

4.Population in cities and towns : In 1990 census, population in cities refers to people living in the districts of cities which are divided into districts, and those living in the street committees which are not divided into districts; and population in towns refers to people living in neighborhood committees of towns under the jurisdiction of cities which are not divided into districts and those living in neighborhood committees of towns directly under county's jurisdiction. In 1982 census, population in cities refers to people living in cities(excluding people in counties); population in towns refers to people living in towns under the county's jurisdiction.

Communique of the State Statistical Bureau
of the People's Republic of China
on Major Figures of 1990 Population Census
(No. 2)

November 6, 1990

The following are the figures of the geographic distribution of population. population density, and natural growth of the 30 provinces, autonomous regions and municipalities on the mainland of China as well as population in cities and towns based on the data of manual tabulation of 1990 population census.

I. Geographic distribution of population. The total population of the 30 provinces, autonomous regions and municipalities on the mainland of China and of servicemen are as follows:

Beijing Municipality	10,819,407
(including the population of 3,456,982 in eight counties under the direct administration of Beijing)	
Tianjin Municipality	8,785,402
(including the population of 2,930,334 in five counties under the direct administration of Tianjin)	
Hebei Province	61,082,439
Shanxi Province	28,759,014
Inner Mongolia Autonomous Region	21,456,798
Liaoning Province	39,459,697
Jilin Province	24,658,721
Heilongjiang Province	35,214,873
Shanghai Municipality	13,341,896
(including the population of 5,127,460 in nine counties under the direct administration of Shanghai)	
Jiangsu Province	67,056,519
Zhejiang Province	41,445,930
Anhui Province	56,180,813
Fujian Province	30,097,274
(including the population of 49,050[*] in Jinmen and Mazu and a few other islands)	
Jiangxi Province	37,710,281

Shandong Province	84,392,827
Henan Province	85,509,535
Hubei Province	53,969,210
Hunan Province	60,659,754
Guangdong Province	62,829,236

(the population of the Dongshan Islands not available for the time being)

Guangxi Zhuang Autonomous Region	42,245,765
Hainan Province	6,557,482
Sichuan Province	107,218,173
Guizhou Province	32,391,066
Yunnan Province	36,972,610
Tibet Autonomous Region[1]	2,196,010
Shaanxi Province	32,882,403
Gansu Province	22,371,141
Qinghai Province	4,456,946
Ningxia Hui Autonomous Region	4,655,451
Xinjiang Uygur Autonomous Region	15,155,778

Taiwan Province[3]	20,155,830
Chinese compatriots in Hongkong and Macao[4]	6,130,000
Serviceman	3,139,100

II. Population density. The population density per square kilometre of the 30 provinces, autonomous regions and municipalities on the mainland of China(including servicemen) is 118 persons which means an increase of 13 persons as compared with 105 persons per square kilometre in 1982. and it varies from province to province. Arranging in descending order, it exceeds 500 persons per square kilometre in six provinces and municipalities, namely Shanghai, Tianjin, Jiangsu, Beijing, Shandong and Henan; it ranges between 200 to 499 persons per square kilometre in nine provinces, namely Zhejiang, Anhui, Guangdong, Hebei, Hubei, Hunan, Liaoning, Fujian and Jiangxi; the population density is between 50 to 199 persons per square kilometre in ten provinces and autonomous regions, namely Hainan, Sichuan, Shanxi, Guizhou, Guangxi, Shaanxi, Jilin, Yunnan, Heilongjiang and Ningxia; there are five provinces and autonomous regions with population density under 50 persons per square kilometre, which are Gansu, Inner Mongolia, Xinjiang, Qinghai and Tibet.

Major Figures of 1990 National Population Census
(second)

Province	Total Population (person)			Population Density (persons/km²)		Natural Movement(‰)			% of People Living in Cities & Towns
	1990 census	1982 census	growth(%)	1990	1982	CBR	CDR	NGR	1990
Total	1133682501	1008175288	12.45	118	105	20.98	6.28	14.70	26.23
Beijing	10819407	9230687	17.21	644	549	13.35	5.43	7.92	73.08
Tianjin	8785402	7764141	13.15	777	687	15.50	5.98	9.52	68.65
Hebei	61082439	53005875	15.24	325	282	19.66	5.76	13.90	19.08
Shanxi	28759014	25291389	13.71	184	162	22.31	6.25	16.06	28.72
Inner Mongolia	21456798	19274279	11.32	18	16	20.12	5.79	14.33	36.12
Liaoning	39459697	35721693	10.46	270	245	15.60	6.01	9.59	50.86
Jilin	24658721	22560053	9.30	132	120	18.40	6.12	12.28	42.65
Heilongjiang	35214873	32665546	7.80	78	69	17.51	5.33	12.18	47.17
Shanghai	13341896	11859748	12.50	2118	1913	11.32	6.36	4.96	66.23
Jiangsu	67056519	60521114	10.80	654	590	20.54	6.07	14.47	21.24
Zhejiang	41445930	38884603	6.59	407	382	14.84	6.10	8.74	32.81
Anhui	56180813	49665724	13.12	404	356	25.04	5.79	19.25	17.90
Fujian	30018224	25873259	16.14	248	213	23.45	5.70	17.75	21.36
Jiangxi	37710281	33184827	13.64	226	199	24.47	6.59	17.88	20.40
Shandong	84392827	74419051	13.40	539	486	18.86	6.25	12.61	27.34
Henan	85509535	74422739	14.90	512	446	24.03	6.18	17.85	15.52
Hubei	53969210	47804150	12.90	290	255	24.32	6.84	17.48	28.91
Hunan	60659754	54008851	12.31	286	257	24.03	7.07	16.96	18.23
Guangdong	62829236	53631551	17.15	353	301	21.96	5.34	16.62	36.77
Guangxi	42245765	36420960	15.99	178	158	20.71	5.96	14.75	15.10
Hainan	6557482	5667669	15.70	193	167	22.95	5.22	17.73	24.05
Sichuan	107218173	99713310	7.53	188	176	17.78	7.06	10.72	20.25
Guizhou	32391066	28552997	13.44	184	162	23.77	7.13	16.64	18.93
Yunnan	36972610	32553817	13.57	94	83	23.59	7.71	15.88	14.72
Tibet	2196010	1892393	16.04	1.8	1.6	27.60	9.20	18.40	12.59
Shaanxi	32882403	28904423	13.76	160	141	23.49	6.49	17.00	21.49
Gansu	22371141	19569261	14.32	49	43	22.85	5.92	16.93	22.04
Qinghai	4456946	3895706	14.41	6	5	22.65	6.84	15.81	27.35
Ningxia	4655451	3895578	19.51	90	59	24.56	5.07	19.49	25.72
Xinjiang	15155778	13081681	15.85	9	8	24.67	6.39	18.28	31.91

Note: CBR:crude birth rate; CDR:crude death rate; NGR:natural growth rate

1.The total population includes the servicemen.

2.The period of natural movement refers to the 12 months before the reference time of 1990 census.

3.% of population in cities and towns:population in cities refers to people living in the districts of cities which are divided into districts, and those living in the street committees which are not divided into districts; and population in towns refers to people living in neighborhood committees of towns under the jurisdiction of cities which are not divided into districts and those living in the neighborhood committees of towns directly under county's jurisdiction.

Communique of the State Statistical Bureau
of the People's Republic of China
on Major Figures of 1990 Population Census
(No. 3)

November 14, 1990

The following are the figures of population of various nationalities* of the 30 provinces, autonomous regions and municipalities and of servicemen on the mainlandof China, based on the data of manual tabulation of 1990 population census.

Han	1,042,482,187
Mongolia	4,806,849
Hui	8,602,978
Tibet	4,593,330
Uygur	7,214,431
Miao	7,398,035
Yi	6,572,173
Zhuang	15,489,630
Bouyei	2,545,059
Korean	1,920,597
Manchu	9,821,180
Dong	2,514,014
Yao	2,134,013
Bai	1,594,827
Tujia	5,704,223
Hani	1,253,952
Kazaki	1,111,718
Dai	1,025,128
Li	1,110,900
Lisu	574,856
Va	351,974
She	630,378
Gaoshan	2,909
Lahu	411,476
Shui	345,993

Dongxiang	373,872
Naxi	278,009
Jingpo	119,209
Kirgiz	141,549
Tu	191,624
Daur	121,357
Mulam	159,328
Qiang	198,252
Salar	82,280
Blang	87,697
Maonan	71,968
Gelao	437,997
Xibe	172,847
Achang	27,708
Pumi	29,657
Tajik	33,538
Nu	27,123
Uzbek	14,502
Russian	13,504
Ewenki	26,315
Deang	15,462
Bonan	12,212
Yugur	⌐,297
Jing	18,915
Tatar	4,873
Drung	5,816
Orogen	6,965
Hezhen	4,245
Monba	7,475
Lhoba	2,312
Jino	18,021
Unknown	749,341
Acquired Chinese citizenship	3,421

Compared with the figures of 1982 census, of the 56 nationalities, those with a population of more than one million have increased from 16 to the present 19, namely

Han, Mongolia, Hui, Tibet, Uygur, Miao, Yi, Zhuang, Bouyei, Korean, Manchu, Dong,
Yao, Bai, Tujia, Hani, Kazaki, Dai and Li; those with a population under one million
but more than one hundred thousand have increased from 13 to 15, namely Lisu, Va, She,
Lahu, Shui, Dongxiang, Naxi, Jingpo, Kirgiz, Tu, Daur, Mulam, Qiang, Gelao and Xibe;
and for the remaining twenty-two nationalities, each of them has a population under
one hundred thousand.

Compared with the figures of 1982 census, Manchu, Tujia, Gelao, Xibe, Russian
and Hezhen have increased its population by 100% in the past 8 years.

※: Figures of the population of various nationalities are calculated on the basis of
population in the areas where the census was taken.

Major Figures of 1990 National Population Census
(Third)

Nationality	Total Population(person)		Growth %	Nationality	Total Population(person)		Growth %
	1990 Census	1982 Census			1990 Census	1982 Census	
Total	1,133,682,501	1,008,175,288	12.45	Daur	121,357	94,014	29.08
Han	1,042,482,187	940,880,121	10.80	Mulam	159,328	90,426	76.20
Mongolia	4,806,849	3,416,881	40.68	Qiang	198,252	102,768	92.91
Hui	8,602,978	7,227,022	19.04	Salar	82,280	58,476	40.71
Tibet	4,593,330	3,874,035	18.57	Blang	87,697	69,102	26.91
Uygur	7,214,431	5,962,814	20.99	Maonan	71,968	38,135	88.72
Miao	7,398,035	5,036,377	46.89	Gelao	437,997	53,802	714.09
Yi	6,572,173	5,457,251	20.43	Xibe	172,847	83,629	106.68
Zhuang	15,489,630	13,388,118	15.70	Achang	27,708	20,441	35.55
Bouyei	2,545,059	2,122,389	19.91	Pumi	29,657	24,237	22.36
Korean	1,920,597	1,766,439	8.73	Tajik	33,538	26,503	26.54
Manchu	9,821,180	4,304,160	128.18	Nu	27,123	23,166	17.08
Dong	2,514,014	1,426,335	76.26	Uzbek	14,502	12,453	16.45
Yao	2,134,013	1,403,664	52.03	Russian	13,504	2,935	360.10
Bai	1,594,827	1,132,010	40.88	Ewenki	26,315	19,343	36.04
Tujia	5,704,223	2,834,732	101.23	Deang	15,462	12,295	25.76
Hani	1,253,952	1,059,404	18.36	Bonan	12,212	9,027	35.28
Kazaki	1,111,718	908,414	22.38	Yugur	12,297	10,569	16.35
Dai	1,025,128	840,590	21.95	Jing	18,915	11,995	57.69
Li	1,110,900	818,255	35.76	Tatar	4,873	4,127	18.08
Lisu	574,856	480,960	19.52	Drung	5,816	4,682	24.22
Va	351,974	298,591	17.88	Oroqen	6,965	4,132	68.56
She	630,378	368,832	70.91	Hezhen	4,245	1,476	187.60
Gaoshan	2,909	1,549	87.80	Monba	7,475	6,248	19.64
Lahu	411,476	304,174	35.28	Lhoba	2,312	2,065	11.96
Shui	345,993	286,487	20.77	Jino-	18,021	11,974	50.50
Dongxiang	373,872	279,397	33.81	Unknown	749,341	881,838	
Naxi	278,009	245,154	13.40	Acquired			
Jingpo	119,209	93,008	28.17	Chinese			
Kirgiz	141,549	113,999	24.17	citizenship	3,421	4,842	
Tu	191,624	159,426	20.20				

Note: Figures in this table include the servicemen.

Communique of the State Statistical Bureau
of the People's Republic of China
on Major Figures of 1990 Population Census
(No. 4)

November 21, 1990

The following are the figures of people with various educational attainments
and illiterate or semi-literate people of the 30 provinces, autonomous regions and
municipalities based on the data of manual tabulation of 1990 census.

I.Population with various educational attainments. The number of people with
university education(referring to junior college and above) , secondary school
education(referring to senior secondary, secondary technical and junior secondary
school) , and primary school education of the 30 provinces, autonomous regions and
municipalities are as follows:

	University	Secondary	Primary
Beijing Municipality	1.006.295	5.358.300	2.442.702
Tianjin Municipality	410.120	3.978.630	2.603.567
Hebei Province	583.175	19.618.146	22.481.188
Shanxi Province	397.987	10.944.738	10.270.840
Inner Mongolia Autonomous Region	316.557	7.623.293	7.165.823
Liaoning Province	1,024.374	17.067.957	13.522.660
Jilin Province	531.194	9,619.261	8.711.123
Heilongjiang Province	753.141	14.152.494	12.004.300
Shanghai Municipality	871.786	6,820.934	3.026.293
Jiangsu Province	988.448	23.533.880	23.329.849
Zhejiang Province	484.950	12,743.522	16.439.202
Anhui Province	495.926	14.046.291	19.486.263
Fujian Province	368.830	7.165.361	12,992.258
Jiangxi Province	373.675	9.781.475	15.337.632
Shandong Province	822.606	27.277.677	30.600.841
Henan Province	725.037	28.742.930	29,694.419
Hubei Province	844.978	17,284.462	19,338,488
Hunan Province	690.248	18,548,048	25,520,177
Guangdong Province	840.591	20,085,401	25,414,771
Guangxi Zhuang Autonomous Region	334.276	10,960,663	19,028,023

Hainan Province	81,605	2,155,675	2,267,779
Sichuan Province	1,030,290	28,967,063	47,047,108
Guizhou Province	251,613	6,015,704	12,093,646
Yunnan Province	298,466	6,614,354	14,014,622
Tibet Autonomous Region	12,610	131,129	408,384
Shaanxi Province	549,760	11,053,127	10,236,293
Gansu Province	246,988	5,520,333	6,516,016
Qinghai Province	66,388	1,160,412	1,180,613
Ningxia Hui Autonomous Region	74,904	1,316,301	1,367,955
Xinjiang Uygur Autonomous Region	279,599	4,703,456	5,520,128

Arranging the figures of provinces, autonomous regions and municipalities in descending order, there are thirteen provinces, autonomous regions and municipalities where number of people with university educational attainments out of every 100,000 people exceeds the national average of 1,422 persons, namely Beijing, Shanghai, Tianjin, Liaoning, Jilin, Heilongjiang, Xinjiang, Shaanxi, Ningxia, Hubei, Qinghai, Inner Mongolia and Jiangsu, among which Beijing, Shanghai and Tianjin have the highest number of people with university education of every 100,000 people, being 9,301 persons, 6,534 persons and 4,668 persons respectively; there are sixteen provinces, autonomous regions and municipalities where the number of people with junior secondary school education and above out of every 100,000 people exceeds the national average of 32,805 persons, namely Beijing, Shanghai, Tianjin, Liaoning, Heilongjiang, Jilin, Shanxi, Inner Mongolia, Jiangsu, Shaanxi, Henan, Hainan, Hubei, Guangdong, Shandong and Hebei; and there are fifteen provinces, autonomous regions and municipalities where the number of people with primary education and above of every 100,000 people exceeds the national average of 69,862 persons, and they are Beijing, Shanghai, Liaoning, Tianjin, Jilin, Heilongjiang, Shanxi, Hunan, Guangdong, Sichuan, Guangxi, Zhejiang, Jiangsu, Inner Mongolia and Hebei.

II. Illiterate or semi-literate population. The illiterate or semi-literate people(referring to the people over 15 years of age who can not read or can read very little) of the provinces, autonomous regions and municipalities are as follows:

	Illiterate & Semi-literate
Beijing Municipality	941,397
Tianjin Municipality	784,074
Hebei Province	9,292,541
Shanxi Province	3,250,647

Inner Mongolia Autonomous	3,302,990
Liaoning Province	3,477,917
Jilin Province	2,586,729
Heilongjiang Province	3,828,584
Shanghai Municipality	1,472,504
Jiangsu Province	11,555,083
Zhejiang Province	7,236,442
Anhui Province	13,725,817
Fujian Province	4,696,636
Jiangxi Province	6,115,258
Shandong Province	14,233,153
Henan Province	13,811,537
Hubei Province	8,523,751
Hunan Province	7,337,976
Guangdong Province	6,562,847
Guangxi Zhuang Autonomous Region	4,482,931
Hainan Province	916,226
Sichuan Province	17,413,387
Guizhou Province	7,861,879
Yunnan Province	9,405,812
Tibet Autonomous Region	975,652
Shaanxi Province	5,794,883
Gansu Province	6,248,625
Qinghai Province	1,234,755
Ningxia Hui Autonomous Region	1,027,035
Xinjiang Uygur Autonomous Region	1,932,992

Arranging the proportion of illiterate or semi-literate people to the total population in ascending order, the figure below the national average of 15.58 percent in sixteen provinces, autonomous regions and municipalities, namely Beijing, Liaoning, Tianjin, Guangdong, Jilin, Guangxi, Heilongjiang, Shanghai, Shanxi, Hunan, Xinjiang, Hainan, Hebei, Inner Mongolia, Fujian and Hubei; this proportion is higher than the national average of 15.88 percent but below 20.00 percent in seven provinces, namely Henan, Jiangxi, Sichuan, Shandong, Jiangsu, Zhejiang and Shaanxi; and there are seven provinces and autonomous regions where the proportion of illiterate or semi-literate people to the total population is higher than 20 percent and they are Ningxia, Guizhou, Anhui, Yunnan, Qinghai, Gansu and Tibet.

Major Figures of 1990 National Population Census
(Fourth)

Province	People with Various Educational Levels(persons/100000)				% Illiterate or Semi-literate People of Total Population	
	University	Senior Middle School	Junior Middle School	Primary School	1990	1982
Total	1,422	8,039	23,344	37,057	15.88	22.81
Beijing	9,301	18,974	30,551	22,577	8.70	12.43
Tianjin	4,668	15,908	29,379	29,635	8.92	13.94
Heibei	955	7,429	24,689	36,805	15.21	22.24
Shanxi	1,384	8,820	29,237	35,713	11.30	17.86
Inner Mongolia	1,475	10,056	25,473	33,397	15.39	21.91
Liaoning	2,596	10,933	32,321	34,270	8.81	12.87
Jilin	2,154	12,701	26,308	35,327	10.49	16.04
Heilongjiang	2,139	11,729	28,460	34,089	10.87	15.87
Shanghai	6,534	19,532	31,592	22,683	11.04	14.33
Jiangsu	1,474	8,670	26,426	34,791	17.23	26.84
Zhejiang	1,170	7,006	23,741	39,664	17.46	23.93
Anhui	883	5,035	19,967	34,685	24.43	31.80
Fujian	1,227	6,979	16,867	43,238	15.63	25.15
Jiangxi	991	7,097	18,841	40,672	16.22	21.38
Shandong	975	7,140	25,182	36,260	16.87	27.49
Henan	848	7,069	26,545	34,729	16.15	26.28
Hubei	1,566	8,862	23,164	35,832	15.79	23.08
Hunan	1,138	8,010	22,567	42,071	12.10	17.48
Guangdong	1,338	8,928	23,041	40,451	10.45	16.09
Guangxi	791	6,804	19,141	45,041	10.61	16.94
Hainan	1,244	10,345	22,528	34,583	13.97	19.48
Sichuan	961	5,371	21,646	43,880	16.24	23.03
Guizhou	777	3,927	14,645	37,336	24.27	29.90
Yunnan	807	4,095	13,795	37,905	25.44	31.49
Tibet	574	2,122	3,850	18,597	44.43	46.13
Shaanxi	1,672	9,255	24,359	31,130	17.62	24.09
Gansu	1,104	7,825	16,851	29,127	27.93	32.42
Qinghai	1,490	8,275	17,761	26,489	27.70	29.15
Ningxia	1,609	8,000	20,274	29,384	22.06	26.96
Xinjiang	1,845	10,372	20,662	36,423	12.75	20.29

Note: 1.Proportion in the total includes the servicemen.

2.% illiterate or semi-literate people refers to the proportion of people over 15 years of age who can not read or can read very little to the total population.

THIRTEENTH POPULATION CENSUS CONFERENCE

East-West Population Institute
Honolulu, Hawaii

December 10-14, 1990

THE 1990 U.S. CENSUS: SOON IT WILL BE THE USER'S TURN

Barbara Everitt Bryant
Director, Bureau of the Census, U.S.

The 1990 U.S. Census: Soon It Will Be The User's Turn

by
**Dr. Barbara Everitt Bryant
Director, Bureau of the Census**

**Presented at the Thirteenth Population Census Conference
East-West Center
Honolulu, Hawaii**

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The 1990 United States Census of Population and Housing marks

200 hundred years of census-taking in America. The results of

the enumeration of people and their housing units every 10 years

reflect the ever-changing social fabric of American life.

Accurate counts from the 1990 census will be the basis for

redistributing political power according to population shifts,

planning our communities, making business decisions, and

accomplishing a host of other activities during the last decade

of this century.

The data collected will influence:

o   Political Power - Taking a census was written into our
       Constitution as the means for apportioning the number of
       representatives in the House of Representatives of our
       Congress among the states. Also, the boundaries of
       districts from which these representatives are elected must
       be redrawn every 10 years after the census. Our districts are required
       to be of equal population within each state.

o   Federal and State program funds - Census data are used by
       Federal and state governments to distribute billions of
       dollars each year to the Nation's local governments for a
       wide variety of public purposes.

o   Planning for the future - Census data are vital in planning
       community, private, and public facilities and services, such
       as roads, bus routes, schools, shopping centers, factories,
       and hospitals.

Taking the 1990 census and producing and distributing its results is a decade-long effort that began in 1984 with planning, public meetings, user conferences, and Federal forums to consider content. It will end in 1993 when the Census Bureau releases the last of the reports, computer tapes, and CD-ROMs with the data from the 1990 census.

In between, we conducted test censuses, and a dress rehearsal census, developed a Master Address List, and this month will complete the data collection.

The basic design for the 1990 census was to enumerate as many households as possible by mail. The Census Bureau conducts in-person visits at those housing units for which good mailing addresses could not be developed and those for which we did not receive census forms by mail.

In addition, there are separate enumeration procedures based on sending census enumerators into the field to count:

    Persons in shelters for the homeless and in street
    locations.

    Persons in transient quarters such as hospitals, and
    campgrounds.

    Persons in group quarters such as university dormitories,
    nursing homes, military barracks, and jails.

We worked with other Federal and state government agencies to obtain counts of overseas military and Federal Government employees and their dependents, and to help ensure whether persons on probation or parole are included on the census forms for the households listed as their legal addresses. If they are not included, we add them to the household count.

Because the largest proportion of our population is enumerated by mail, the work of developing the Master Address List is a monumental set of tasks. It included purchasing lists from commercial mailing list companies, assigning the addresses on these lists to 1990 census blocks, canvassing areas to create lists where no acceptable commercial list was available, checking and improving these lists, and having the U.S. Postal Service check our lists in 1989 and again just prior to the mailout last March 23rd. The USPS delivered forms to almost 90 million addresses in these areas, 95 percent of housing units in the United States. In other areas, census enumerators delivered about 10 million forms for mailback.

Sixty-three percent of housing units in mailback areas returned their census forms by mail by late April, a drop of 12 percentage points from the proportion who did so in 1980. This meant an addition to the expected workload for personal calls at the nonresponding households, raising the number to be called upon to 37 million. Those calls were completed by the end of July 1990.

For mailback areas, all but 3 percent of households were reached by mail or in-person. For the remaining 3 percent in mailback areas, information was obtained from neighbors, landlords, and postal carriers.

By the end of July, most of the enumeration for the 1990 census was completed. All identified housing units have been enumerated. However, the Census Bureau knows from experience that it cannot develop a totally complete list of housing units or count of all persons on the first try. Extra efforts will always produce a small percentage of additional units and additional people. That's why we do coverage improvement projects.

The check on whether parolees and probationers had been counted was one of these coverage improvement projects.

Another was to recheck all housing units identified as vacant or uninhabitable at the time we followed up on housing units that had not returned census forms. In fact, a check 6 weeks to 2 months after the first contact showed that about 8 percent of those identified as vacant had been occupied on Census Day (April 1), and about 5 percent of those identified as uninhabitable or nonexistent were reinstated and enumerated.

Throughout the summer, the Census Bureau conducted a "Were You Counted?" campaign. Anybody who thought he or she had been missed in the census could fill out publicly available forms or call a toll-free number. We received 400,000 "Were You Counted?" forms or calls. When forms from their households were checked, we found one-half of them had already been counted but the remaining one-half were new names.

The Housing Coverage Check Recanvass was a Census Bureau effort to identify blocks where housing units might have been missed on the basis of many types of data available to the Census Bureau—local reports, new construction permits, clusters of calls to our 800-numbers. Nationally, we recanvassed 15 percent of blocks to identify missed housing units and enumerate the people in them.

We gave most local governments two chances, pre- and post-census, to check the housing unit counts by block for their areas using their own data sources. All governments were able to participate in the post-census review. Both times the Census Bureau sent maps and counts of housing units and group quarters population by block. After each check, we recanvassed blocks on which their figures differed from ours in order to add any missed housing units and people to the count.

We completed these coverage improvement operations in November. The 20 percent of the Nation's neighborhoods that are hardest to count, likely have been canvassed or recanvassed three or four times. To complete followup calls we hired enumerators who speak 52 languages.

By December 31, 1990, the Census Bureau, through the Secretary of Commerce, will provide to the President the population of the Nation by State and report the number of representatives each state is entitled to. By April 1, 1991, the Census Bureau will provide to each state detailed population counts so that the boundaries of Congressional and legislative districts can be determined.

CONTENT

Information from the 1990 census comes either from questions asked of the entire population (100-percent questions), or from questions asked of only a sample (one out of six) of the population. The 1990 census questions are similar to those asked in the 1980 census. This fulfills the need to have comparable data for assessing changes occurring over the decade and to meet Federal, State, and local requirements. However, there were some changes, additions, and deletions between 1980 and 1990 to reflect changing user interest or changes in society.

Tabulations of data from the 100-percent questions will be prepared for areas as small blocks, as well as for larger areas. Tabulations from the sample questions will be prepared for areas as small as block groups and for governmental units such as cities, counties, states, and American Indian reservations.

WHAT WE EXPECT THE 1990 CENSUS WILL SHOW

The U.S. population is aging. Our largest population segment is persons born after World War II in the years 1946 to 1964--what we call the Baby Boom generation. Not as many have been born in any 18 year segment since. Also, people are living longer.

1. The elderly population, that is, persons 65 years old and older, has been growing at about 2.1 percent per year since 1980, faster than the one-percent growth rate of the population as a whole. In 1980, the elderly accounted for 10.8 percent of the population. By 1987 we estimated that they were 12.2 percent.

2. The oldest old, those 85 and over, also have been growing at a rate faster than the national average-- about 3.3 percent annually since 1980.

3. The median age of the population, the age at which half the population is older and half is younger, has increased over the past decades. It now stands at

33 years. It was only 17 years when we first started

recording age in the 1820 census.

Household size continues to decrease and what was once considered

the typical American family may not be so typical after all.

    1.   In 1790, the average U.S. household consisted of six
             persons--a mother, a father, and 3 or more children and
             assorted relatives. This number has fallen
             consistently over the past 200 years. By 1950, the
             average household size was 3.7 persons; by 1970 it had
             fallen to 2.75 persons. It is currently estimated at
             2.63 persons.

    2.   About 24 percent of our households have only one person
             living alone.

The fastest growing segments of our population are Asian and

Pacific Islanders and Hispanics.

    1.   The Asian and Pacific Islander population grew by about
             80 percent between 1980 and 1989 to become nearly
             3 percent of our population.

    2.   The Hispanic origin population grew by 39 percent and
             now makes up 8 percent of our population. (Note:
             Hispanic origin persons may be of any race.)

    3.   The Black population grew at a rate of 14 percent.
             Blacks make up 12 percent of the population.

    4.   By comparison, Whites grew by 7 percent.

Within the U.S., the West and the South will continue to grow.

    1.   Between 1980 and 1989, one-half (11.1 million) of the
             U.S. population growth was accounted for by 3 states:
             California, Texas, and Florida.

2. The fastest growing states between 1980-89 were all
    located in the South and West: Nevada (38.8 percent),
    Alaska (31.1 percent), Arizona (30.8 percent), Florida
    (30.0 percent), and California (22.8 percent).

1990 DATA PRODUCTS AND SERVICES

Data products from the 1990 census will be available in a variety

of new and traditional media. We expect the traditional media

forms--printed reports, and computer tapes--to provide the

largest amount of 1990 census data to users. We also will

release a number of products for the first time in a census on

laser disks called or CD-ROMs. The availability of census data

on CD-ROM leads to what I call "democratization of the data." In

prior censuses only users with mainframe computer systems could

manipulate census data. Now anyone with a personal computer and

a CD-ROM reader will be able to do so. CD-ROM products will be

developed in response to the increasing use of personal computers

for data analysis. In addition, the release of data extracted

from the 1990 census geographic data base--the TIGER file--is

providing users with a new tool for mapping, and analyzing and

displaying census data. There will be a number of series of

reports, computer tape files, maps, and other products that will

be released from 1991 through 1993.

Printed Reports

Printed reports will be the most convenient and readily available

source of data for many users. Data presented in the 1990 census

reports will be similar to the information contained in reports

resulting from the 1980 census, but the 1990 reports will
generally contain more data. There will be nine general-purpose
report series and two special report series produced from the
1990 census. There will be reports for States and their
political and statistical subdivisions, for metropolitan areas,
for American Indian and Alaskan Native areas, as well as for the
U.S. as a whole.

Report series that present data at the small-area level, such as
census tracts, will contain limited subject-matter detail.
Reports that include greater amounts of subject-matter detail
will include less geographic detail; for example, detailed
occupation data will be provided for states or large metropolitan
areas. Selected series will present only population
characteristics, other series will present only housing
characteristics, and yet others will present both.

Computer tapes

Decennial census data have been available on computer tape since
the 1960 census. We provide much more data on tape than in
printed reports. All tabulated data, whether in print or not,
appear on computer tape. Computer tapes provide users with the
ability to manipulate, aggregate, or otherwise process census
data in their own way.

The first 1990 census product to provide data for areas smaller than states will be made available on computer tape on a state by state basis beginning in mid-winter 1991 and completed by April 1, 1991. These tapes, which will be used by states to realign local election districts, will include for a state the total population and the total number of housing units, the number of persons in specific racial groups, the number of Hispanic-origin persons, and the number of persons over 18, in that state. The information will be available for areas as small as a city block and will be provided in printed form.

In addition, to this redistricting file, we will offer summary tape files, public use microdata sample files, and special files.

Summary Tape Files (STFs) are designed to provide statistics with greater subject detail for more geographic areas than is feasible to provide in printed reports. They contain the same types of information as the printed reports. Some highlights:

o   STF1B will present almost 1,000 cells of basic demographic data for each of the over 7 million blocks delineated for the 1990 census.

o   STF3 will present almost 2,300 cells of social and economic characteristics for each of almost 40,000 5-digit ZIP code areas in the United States.

Public Use Microdata Sample Files present a sample (5 percent or 1 percent) of unidentified housing unit records.from the one-in-six sample for large geographic areas. Each housing unit

sample record will present essentially all the census data collected about each person in that sample household plus the characteristics of the housing unit. Of course, the file will not contain information that might identify an individual or housing unit.

Microdata files enable users with special needs to prepare customized tabulations and cross tabulations of virtually any item on the census questionnaire. The minimum population size of any area identified is 100,000 persons. This limit allows all states and many large counties and cities to be identified separately.

Special Files will present detailed occupation data by race, Hispanic origin, and sex for counties or will examine 1985 to 1990 migration flows between states and counties.

Compact Discs

For users who want access to the census information via a personal computer, the Census Bureau will release selected summary tape information on compact discs--CD-ROM. One CD-ROM can hold the contents of approximately 1,500 flexible diskettes, or three or four high density tapes. Users can purchase a compact disc reader to use with their personal computer and some software for less than $1,000.

On-line Service

We began an on-line information service called CENDATA in 1984 to provide up-to-date information on the availability of data products. This service will also carry selections of 1990 census data. CENDATA is offered through two national information vendors, CompuServe and DIALOG.

Custom Data Programs

Special services will also be offered for a fee to those users who require unique tabulations that are not available from the standard data products. The user will be able to get data for user defined areas.

1990 GEOGRAPHIC PRODUCTS

Maps

Census maps are necessary for virtually all uses of small-area census data. They are needed to locate specific geographic areas and to study the spatial relationship of the data for analytic purposes. Over 65,000 unique maps will be prepared and made available to census data users. These maps will show census blocks, census tracts, places, county subdivisions, and where appropriate their underlying visible physical features.

TIGER

The great technological breakthrough of the 1990 census is the development of an automated computer mapping system.

The Census Bureau, in cooperation with the U.S. Geological Survey, developed an automated geographic data base, known as the TIGER (Topologically Integrated Geographic Encoding and Referencing System), to allow the production of maps and geographic reference files for use in the 1990 census. It provides coordinate-based digital map information for the entire United States, Puerto Rico, the Virgin Islands, and the Pacific territories over which the United States has jurisdiction.

Included in the TIGER data base are records for census map features (such as roads, railroads, and rivers), feature names and classification codes, alternate feature names, the associated 1980 and 1990 geographic area codes (such as those for census tracts, blocks, cities, and townships) and, within large urban areas address ranges and postal ZIP Codes for streets.

Extracts from the TIGER database allow users who have appropriate software to analyze 1990 census data geographically, and to generate, by computer, maps at different scales for any geographic area of the U.S. In addition, the TIGER extracts are becoming a catalyst for new and exciting geographic information system (GIS) applications. Precensus releases of TIGER extract

information are being used to route vehicles, analyze markets, draw new political, administrative, and service area boundaries, delineate high-crime areas, pinpoint emergency service users, study environmental impact issues, and undertake a great variety of other applications.

SOURCES OF ASSISTANCE

For those users needing assistance in finding, accessing, or using 1990 census information, there are a variety of Federal, state, and local sources.

o   The Census Bureau's Data User Services Division sells all census data products except printed reports. It also answers inquiries by telephone, correspondence, and personal visit. From time to time, it also conducts workshops, seminars, and training courses. (301-763-4100)

o   The Census Bureau's National Services Program and its pilot National Services Information Centers Program provide a structure for cooperation between the Census Bureau and nationally based organizations that represent minorities or other segments of the population who have historically been undercounted in decennial censuses. The participants include social service, business, professional, civil rights, educational, and religious groups. The Census Bureau will provide 1990 census products to these centers in the same manner as the State Data Centers that I will discuss shortly. (301-763-1384)

o   Information specialists in each of the Census Bureau's 12 regional offices, located in major cities, have copies of reports and can provide assistance in their use. They also answer inquiries, and conduct workshops, seminars, and training courses. The Census Bureau's Seattle, Washington Regional Office services Hawaii users. (206-728-5314)

o   In each state, D.C., Puerto Rico, the Virgin Islands, and Guam, a network of state and local agencies work with the Census Bureau to disseminate information through something called the State Data Center Program. The over 1,500 participating organizations include local planning agencies, university research groups, chambers of commerce, and local libraries. These organizations receive a collection of Census Bureau publications and other products that they make available to the public. In Hawaii, the Department of Business and Economic Development coordinates an information network of 23 organizations throughout Hawaii. (808-548-3082)

o   There are also 1,400 public and university Federal Depository Libraries in the United States that receive Census Bureau reports and, more recently, data on CD-ROM.

CLOSING THOUGHTS

We soon will be able to realize the "fruits" of the Census Bureau efforts to conduct our 21st census. Soon users will get their turn, through data products in many forms, to fulfill their roles as informed decisionmakers in government, in private and nonprofit organizations, and in local communities.

THIRTEENTH POPULATION CENSUS CONFERENCE

East-West Population Institute
Honolulu, Hawaii

December 10-14, 1990

OUTLINE OF THE 1990 POPULATION CENSUS OF JAPAN

Takanobu Negi
Statistics Bureau/Statistics Center
Management and Coordination Agency, Japan

Outline of 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 was 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, 1984).
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.

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

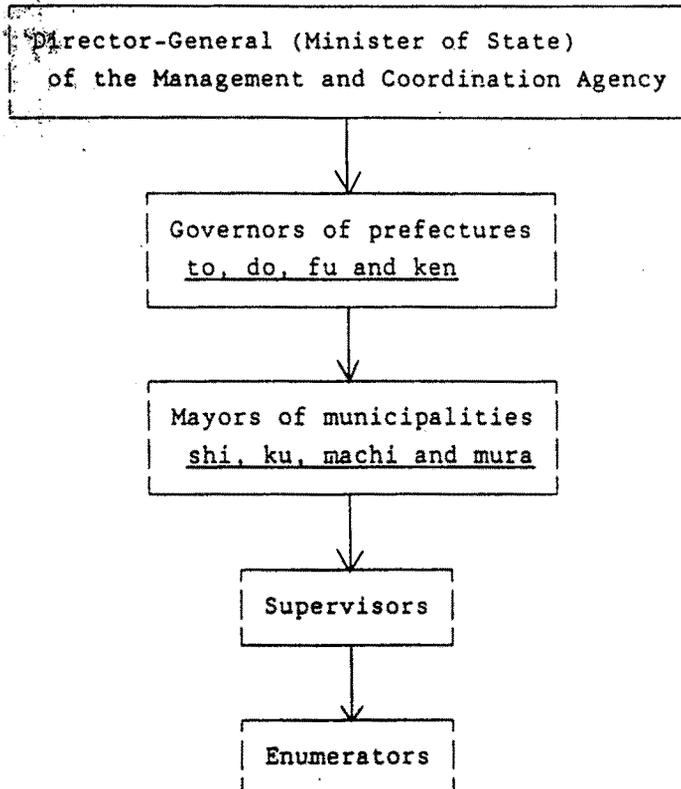7. The 1990 Census includes the following 22 questions:
(for individuals)
  (a) Name;   (b) Sex;   (c) Year and month of birth;
  (d) Relationship to the head of household;
  (e) Marital status;   (f) Nationality;
  (g) Place of residence five years ago;
  (h) Level of education (Whether in school or 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)

(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 was conducted under the direction of the Statistics Bureau, Management and Coordination Agency through the following channel:

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┌─────────────────────────────────────────────────┐
│ 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       │
            └───────────────────┘
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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.

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 750 thousand enumerators, and 80 thousand supervisors undertook 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.

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 as 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 employs 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 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 long absence, the enumerator may resort to the last measure to ask the neighbors the names, sex, and number of household members of the absent households, and fill

in the questionnaires.

III Tabulation and Publication of the Results

21. All the questionnaires are accumulated at the Statistics Center
for processing by mid-December. 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 Complete-Count Tabulation;
   iv)   The Second Complete-Count Tabulation;
    v)   The Third Complete-Count 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.

22. The Preliminary Count, which is based on the summary sheets
prepared at the municipalities, gives the population by sex and the
number of households by municipalities, prefectures, and whole
country. The Preliminary Count will be released toward the end of
December 1990.

household

23. The Prompt Sample Tabulation, which is based on 1% *household* sample
questionnaires, gives the overview of the population structure of the
country. The results are to be released by the end of 1991.

24. 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 to be released prefecture by
prefecture from June to November 1991.

25. The second phase includes tabulation by industry (major group),
labor force status, status in employment, place of work or study,
time for commuting, etc.   And the third phase includes tabulation
by occupation (major group). The second and the third phases are
separated from the first phase because industrial and occupational
coding requires much time but the statistics of the basic demographic
and household characteristics are needed much before the statistics
on industry and occupation.   The second complete-count tabulation
will be released by July 1992, and the third complete-count
tabulation is released by September 1993.

26.   The whole tabulation of the 1990 Population Census is to be
completed by the end of 1994.

IV   Main Features of the 1990 Population Census

27.   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.

28.   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 service industries. From the 1990 Census, detailed
data on the growth of service industries both at the national and the
regional levels will be obtained.

29. 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.

30. 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

31. 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 to prepare plans on specific matters.

32. 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 also establish similar organizations for mobilizing the staff of the entire offices to execute extremely large scale of

the census operation.

Pilot Surveys

33.   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;
  - 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

34.   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 preparing the census.

Meetings with Other Ministries

35. 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 called three meetings of representatives of ministries and agencies within the government. The final one was held in March 1990, and the Statistics Bureau requested all the ministries and agencies to cooperate for smooth execution of the 1990 Census.

Statistics Council

36. 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 taken to Overcome New Problems in the 1990 Census

Enumeration of Foreigners

37. Compared with the past censuses, many more foreigners who do not understand Japanese language were to be enumerated in the 1990 Census. As the languages they use are expected to be quite diverse, a booklet was prepared which comprises translation of the questionnaire and instructions in ten languages. In the past censuses, only English version questionnaire was prepared.

Absent Households

38. 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 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

39. 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.

40. In order to avoid the refusal to cooperate in the Census, the Statistics Bureau placed a special emphasis on publicity for those households living in such apartments and solicited cooperation from the companies responsible for maintenance of such buildings.

Protection of Confidentiality

41. 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.

42. 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, the respondents are allowed to enclose and seal the questionnaire. In addition, specific instructions and intensive training on the measures to keep the confidentiality of the contents of the questionnaires were provided to the enumerators.

VII   Some Problems encountered during the execution of the Census.

43. Although enumerators and supervisors take every care of keeping completed questionnaires in security, there were a few cases of loss and theft of questionnaires. In one case, a supervisor's private car, in which questionnaires collected from several enumerators were kept, was stolen from his garage.

44. Several hundred of accidents of enumerators were reported. The most serious case was murder of a lady enumerator at a house where she visited to collect the questionnaire. This kind of case was the very first one in the history of the Census. The Statistics Bureau has started considering safety measures of enumerators of censuses and surveys.

VIII   Post-Enumeration Survey

45. The Post Enumeration Survey (PES) is conducted as of 15 December 1990 in order to evaluate the accuracy in the coverage of the Census.

The sampling ratio of the PES is 1/200. All the households living in about 3,900 EDs are surveyed.

46. The enumerators employed in PES are 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.

47. The questionnaires of the PES will be compared with those of the Census to check whether a person was correctly enumerated in the Census, or enumerated at two or more places, or not enumerated at all.

48. According to PES of the 1985 Census, the persons who were correctly 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.

POPULATION CENSUS QUESTIONNAIRE

October 1, 1990

Statistics Bureau
Management and Coordination Agency

On the Population Census

The Population Census is to be taken throughout Japan as of October 1, 1990.

The Population Census, which has been conducted every five years since 1920, is one of the most important statistical surveys in this country and enumerates all inhabitants to obtain statistical data on their demographic and socio-economic characteristics. Statistics to be compiled from the census returns will be used not only by the central and the local governments but also by a variety of other users.

You are requested to report in this questionnaire on all persons who usually live in your household. Please fill in the questionnaire before the enumerator will visit you again to collect it.

Your answers are strictly confidential. This questionnaire will be used only for statistical purposes. Please answer the questions to the best of your knowledge.

Please read before filling-in

■ Fill in this questionnaire on all persons who usually live in your household.

Persons who usually live in your household refer to those who have been living, or are going to live, in your household *for three months or more*.

Special attention should be paid to the following cases.

● Persons who are temporarily absent from your household for travelling or working elsewhere:

They shall be reported at their homes if their period of absence is less than three months. If they have been, or are going to be, absent from home for three months or more, they shall be enumerated at their destination.

● Students and pupils living in a school dormitory or a boarding house:

They shall be reported at the dormitory or the boarding house but not at their homes regardless of the period of stay in the dormitory or the boarding house.

● In-patients in a hospital:

They shall be reported at the hospital if they have been hospitalized for three months or more. If not, they shall be reported at their homes.

● Crew of a ship:

They shall be reported at their homes.

● Persons in a prison or a detention house whose penalties have been fixed, and persons in a reformatory or the women's guidance home:

They shall be reported at the institutions.

● Persons who have no domicile where they have lived, or are going to live, for three months or more:

They shall be reported at the places where they stay at the census date.

■ This questionnaire should be filled in separately for each household.

Special attention regarding the coverage of household members should be paid to the following cases.

● Lodgers:

Lodgers such as roomers and boarders living apart from their relatives shall be reported individually as a separate household. Lodgers living with their relatives shall be reported together with their relatives as one household.

● Living-in employees:

All living-in employees shall be reported together with their employer's family.

● Single persons living in a boarding house of a company:

Persons who live in a boarding house for unmarried employees of a company shall be reported individually as a separate household.

● Students in a school dormitory:

Those students who live in a school dormitory shall be reported together as one household.

■ If you wish to keep the contents off the eyes of the enumerator, you may seal the questionnaire.

	MEMO
The census enumerator will call on you to collect this questionnaire on October .... Please fill this out by that time. If you have any question, please ask the enumerator or the city, ward, town or village office.	

	Col. Number	1	2	3
1	**Name and sex** Write the names of all persons who usually live in your household. Read explanations on page 1 for the coverage of persons to be included.	1 Male 2 Female	1 Male 2 Female	1 Male 2 Female
2	**Relationship to the head of household** If 5 is encircled, give the exact relationship such as "Granddaughter", "Grandfather", "Brother", "Nephew", "Domestic servant", "Living-in employee", etc. (For a school dormitory, "Representative", "Boarder", etc.)	1 Head 2 Spouse 3 Son or daughter 4 Father or mother 5 Other →	1 Head 2 Spouse 3 Son or daughter 4 Father or mother 5 Other →	1 Head 2 Spouse 3 Son or daughter 4 Father or mother 5 Other →
3	**Year and month of birth**	Year Month	Year Month	Year Month
4	**Marital status** Write the actual status regardless of the official record.	1 Never married 3 Widowed 2 Now married 4 Divorced	1 Never married 3 Widowed 2 Now married 4 Divorced	1 Never married 3 Widowed 2 Now married 4 Divorced
5	**Nationality** If other than Japan, encircle 2 and write the name of the country.	1 Japan →Name of country 2 Other	1 Japan →Name of country 2 Other	1 Japan →Name of country 2 Other
6	**Where did you live 5 years ago (on October 1, 1985)?** If the person was born on or after october 1, 1985, skip this question. If 2 is encircled, write the name of to, do, fu, or ken(prefecture) and shi(city), ku(ward), machi(town) or mura(village). Do not omit the name of ku, if the place is in 12 major cities(ku area of Tokyo, Sapporo-shi, Sendai-shi, Yokohama-shi, Kawasaki-shi, Nagoya-shi, Kyoto-shi, Osaka-shi, Kobe-shi, Hiroshima-shi, Kitakyushu-shi, Fukuoka-shi)	1 Same residence 2 Other place in Japan → to do / fu, ken / shi gun / ku machi mura 3 Outside Japan	1 Same residence 2 Other place in Japan → to do / fu, ken / shi gun / ku machi mura 3 Outside Japan	1 Same residence 2 Other place in Japan → to do / fu, ken / shi gun / ku machi mura 3 Outside Japan
7	**Education** Encircle an applicable number If "attending school", encircle the applicable number of the kind of the school the person is attending now If "graduated from school", encircle the applicable number of the kind of the last school completed. Non-regular schools such as a preparatory school, a dress-making school should not be considered as "school" in the context of this question.	1 Attending school 2 Graduated from school 3 Never attended school → 1 Primary school or junior high school 2 Senior high school 3 Junior college 4 College or university 5 Kindergarten 6 Nursery school 7 Baby other	1 Attending school 2 Graduated from school 3 Never attended school → 1 Primary school or junior high school 2 Senior high school 3 Junior college 4 College or university 5 Kindergarten 6 Nursery school 7 Baby other	1 Attending school 2 Graduated from school 3 Never attended school → 1 Primary school or junior high school 2 Senior high school 3 Junior college 4 College or university 5 Kindergarten 6 Nursery school 7 Baby other
8	**Did the person work at any time during the week from 24th to 30th of September?** "Work" here means any work for pay or profit. It includes work performed in a family business or a farm without pay, as well as home handicraft and part-time work. "School" in the answers 3 and 7 includes a non-regular school, such as a preparatory school, a dress-making school, etc.	1 Mostly worked 2 Worked besides doing housework 3 Worked besides attending school Fill ques. 9 to 14. 4 Had a job, but temporarily absent from work 5 Looked for a job ——End. 6 Did housework 7 Attended school— Fill ques. 9 to 11. 8 Other (infants, aged persons, etc.) —End.	1 Mostly worked 2 Worked besides doing housework 3 Worked besides attending school Fill ques. 9 to 14 4 Had a job, but temporarily absent from work 5 Looked for a job ——End. 6 Did housework 7 Attended school— Fill ques. 9 to 11. 8 Other (infants, aged persons, etc.) —End.	1 Mostly worked 2 Worked besides doing housework 3 Worked besides attending school Fill ques. 9 to 14 4 Had a job, but temporarily absent from work 5 Looked for a job ——End. 6 Did housework 7 Attended school— Fill ques. 9 to 11. 8 Other (infants, aged persons, etc.) —End.
9	**Place of work or location of school** For a person who worked and also attended school during the week, give the place of work. If 2 is encircled, write the address of the place of work or the location of school, (i.e., the name of prefecture and shi, ku, machi or mura). Do not omit the name of ku, if the address is in 12 major cities. (For 12 major cities, see Question 6)	1 At home (includes living-in employee) 2 Not at home → to, do, fu, ken / shi gun / ku machi mura	1 At home (includes living-in employee) 2 Not at home → to, do, fu, ken / shi gun / ku machi mura	1 At home (includes living-in employee) 2 Not at home → to, do, fu, ken / shi gun / ku machi mura
10	**Transportation to the place of work or school** If "at home" is encircled in Question 9, skip this question. For those using two or more means of transport, encircle all applicable ones.	1 On foot only 2 JR train 3 Other train, subway, tram, public or private 4 Bus 5 Company's or school bus 6 Private car 7 Taxi 8 Motorcycle 9 Bicycle 10 Other means	1 On foot only 2 JR train 3 Other train, subway, tram, public or private 4 Bus 5 Company's or school bus 6 Private car 7 Taxi 8 Motorcycle 9 Bicycle 10 Other means	1 On foot only 2 JR train 3 Other train, subway, tram, public or private 4 Bus 5 Company's or school bus 6 Private car 7 Taxi 8 Motorcycle 9 Bicycle 10 Other means
11	**Commuting time to the place of work or school** Write the total commuting time(one way). If "at home" is encircled in Question 9, skip this Question.	Hour(s) Minute(s)	Hour(s) Minute(s)	Hour(s) Minute(s)
12	**Employment status** "Employee" includes a part-time worker. "Self-employed" includes a proprietor of unincorporated business or a person working on own account.	1 Employee 2 Director of a firm or corporation 3 Self-employed, employing others 4 Self-employed, not employing others 5 Family worker 6 Doing home handicraft	1 Employee 2 Director of a firm or corporation 3 Self-employed, employing others 4 Self-employed, not employing others 5 Family worker 6 Doing home handicraft	1 Employee 2 Director of a firm or corporation 3 Self-employed, employing others 4 Self-employed, not employing others 5 Family worker 6 Doing home handicraft
13	**Name of establishment and kind of business** Give the name of the office, the factory or the shop where the person worked during the week and the kind of business performed there. — Name of establishment Describe the kind of business showing the kind of products or goods. Distinguish "manufacturing" from "repairing" and "wholesale trade" from "retail trade". — Kind of business			
14	**Kind of work** Describe clearly the kind of actual work the person did during the week. Write precise terms like "Electric welding", "Account clerk", etc., rather than general terms such as "Factory worker" or "Office worker".			

4	[Japanese translation]
	氏　　名
1 Male　2 Female	1 男　　2 女
1 Head	1 世帯主
2 Spouse	2 配偶者
3 Son or daughter	3 子
4 Father or mother	4 父母
5 Other →	5 その他 →
Year　　　　Month	年　　　　月
1 Never married　3 Widowed	1 未婚　　3 死別
2 Now married　4 Divorced	2 有配偶　4 離別
1 Japan → Name of country	1 日本 → 国名
2 Other →	2 外国 →
1 Same residence	1 現在の住居
2 Other place in Japan → to, do / fu, ken	2 他の場所 → 都道 / 府県
shi / gun	市 / 郡
3 Outside Japan ku machi mura	3 外国 区 町 村
1 Attend-ing school　1 Primary school or junior high school	
2 Senior high school	
2 Gradu-ated from school　3 Junior college	
4 College or university	
3 Never attended school →　5 Kindergarten	
6 Nursery school	
7 Baby·other	
1 Mostly worked	
2 Worked besides doing housework	Fill ques. 9 to 14.
3 Worked besides attending school	
4 Had a job, but temporarily absent from work	
5 Looked for a job	
6 Did housework	End
7 Attended school → Fill ques. 9 to 11.	
8 Other (Infants, aged persons, etc.) → End.	
1 At home (includes living-in employees) ro, do, fu, ken	都道 府県
shi / gun	市 / 郡
2 Not at home ku machi mura	2 その他 区 町 村
1 On foot only　5 Company's or school bus	
2 JR train　6 Private car	
3 Other train subway tram, public or private　7 Taxi	
8 Motorcycle	
9 Bicycle	
4 Bus　10 Other means	
Hour(s)	時間
Minute(s)	分
1 Employee　4 Self-employed, not employing others	
2 Director of a firm or corporation　5 Family worker	
3 Self-employed, employing others　6 Doing home handicraft	

世帯について　[Japanese translation]

(1) Number of household members

Total _____　Male _____　Female _____

Only for ordinary household or one person household

(2) Source of household income

Answer the source of income that supports the living of your household.

If there are two or more sources, encircle all the applicable answers and for the major one. circle like ①

1 Wages and salary	5 Pensions
2 Own farm	6 Remittance
3 Own non-farm business	7 Other income
4 Home handicraft job	

(3) Type and tenure of dwelling

1 Owned house or flat
2 Rented house or flat owned by local government
3 Rented house or flat owned by public corporation
4 Rented house or flat owned privately
5 Issued house (company's house, government employee's house, etc.)
6 Rented room
7 Boarding house for unmarried employees of a company etc ⎤ End.
8 Other ⎦

(4) Number of dwelling rooms

Do not count vestibules, kitchens, bathrooms and rooms used for business or rooms occupied by other households.

Count a dining-kitchen as a dwelling room.

[_____] rooms

(5) Area of floor space of dwelling

Include vestibules, kitchens, toilets, bathrooms, corridors and closets, but not include rooms used for business

[_____] square meters

(6) Type of building and number of stories

1 Detached house	1 One story or two stories
2 Tenement house	2 3 to 5 stories
3 Apartment house or flats →	3 6 to 10 stories
4 Other	4 11 stories or more

Your telephone number
Home (____) _____
Office (____) _____

Enumeration district number
[__ - __ - __]

(A) Household number
No. _____

(B) Serial number of questionnaires for this household
.... out of ....

(C) Type of household

1 Ordinary household	4 Group of in-patients in a hospital or a sanatorium
2 One person household	5 Group of inmates of an institution
3 Group of students in a school dormitory	6 Other

---

(1) 世帯員の数

総数 _____　男 _____　女 _____

一般の世帯及び一人世帯の場合のみ記入してください

2 家計の収入の種類

1 賃金・給料	5 恩給・年金
2 農業収入	6 仕送り
3 その他の事業収入	7 その他
4 内職収入	

3 住居の種類

1 持ち家
2 都道府県・市区町村営の借家など
3 住宅・都市整備公団・供給公社等の賃貸住宅
4 民営の借家又は賃貸アパート
5 給与住宅 社宅・公務員住宅など
6 住宅に間借り
7 会社等の独身寮・寄宿舎 ⎤ おわり
8 その他 ⎦

4 居住室数

[_____]

5 住宅の床面積の合計（延べ面積）

[_____]

6 住宅の建て方

1 一戸建	1 1・2階建
2 長屋建	2 3～5階建
3 共同住宅	3 6～10階建
4 その他	4 11階建以上

電話番号
自宅 (____) _____
勤務先 (____) _____

調査区番号
[__ - __ - __]

A 世帯番号
No. _____

B この世帯の調査票
.... 枚目 .... 枚のうち

C 世帯の種類

1 一般の世帯	4 病院・療養所の入院者
2 一人世帯	5 社会施設の入所者
3 寮・寄宿舎の学生・生徒	6 その他

INSTRUCTIONS

1 Name and sex

For an infant who was born before 0:00 a.m. of October 1, 1990 and not yet named, enter "Not yet named".

7 Education

The education in a senior high school, a junior college, a college or a university includes the correspondence courses which grant completed students certificates, diplomas or degrees.

Ignore the training courses provided by a company or a corporation for their employees and write about the last formal school completed.

8 Did the person work at any time during the week from 24th to 30th of September?

"Work" here refers to all types of work performed during the week preceding October 1 for wages, salaries, business profits, etc.

Household members who worked on a farm, in a store, in other places managed by their family should be treated as "worked" even when they did not receive any wage or salary.

4 *Had a job, but temporarily absent from work* .... refers to employers, self-employed persons and employed persons who did not work for less than 30 days due to illness, holidays, etc. Employed persons who did not work for 30 days or more should be also included in this category if they received wages or salaries for the absent period.

5 *Looked for a job* .... refers to those who had no job but were actively looking for a job, for instance, by applying to the Public Employment Security Office or through situation vacant columns of a newspaper.

7 *Attended school* .... does not include those who attended a non-regular school such as a Japanese conversation class or a knitting class only once or twice a week. Those children who went to nursery school or kindergarten are not included in "*Attended school*", but in "*Other*".

9 Place of work or location of school

In the following cases, place of work refers to the respective place:

○ For farmers or fishermen who worked in fields or on ships .... Home.

○ For carpenters (on own account) and peddlers .... Home.

○ For employees who worked outdoor such as travelling salesmen, drivers, etc. .... Location of establishment they belonged to.

○ Crew of a ship .... Location of the main base harbour of the ship.

12 Employment status

1 *Employee* .... includes office workers, factory workers, public servants, officers of a corporation, employees in a private retail shop, domestic servants, daily or temporary workers, etc.

3 *Self-employed, employing others*
and
4 *Self-employed, not employing others* ...... include proprietors of unincorporated shops and factories, farmers, medical practitioners, lawyers, writers, domestic helpers on own account, peddlers, etc. They should be classified into "*Self-employed, employing others*" or "*Self-employed, not employing others*" according to whether or not they employed persons for their business.

13 Name of establishment and kind of business

If a person worked in a factory or in a branch office located separately from the main office of the company, write the name and the kind of business of the factory or the branch office.

If a person worked in two or more offices, factories or shops, write the name and the kind of business of the one where he/she worked mainly.

If an establishment runs two or more kinds of business (for example, a cake retail shop and a tea house), write the kind of the major business.

If an establishment is a head office exclusively doing managerial business, write the kind of the major business performed in the branch offices or the factories.

14 Kind of work

If a person was doing two or more kinds of work, write the major work.

If a person had a job title describing clearly the kind of work he/she was doing, give the title, for instance, "Head cook".

If a person was engaged both in technical (such as manufacturing, repairing, etc.) and in sales work, write the technical work.

EXAMPLES: A person who repaired and sold shoes
......."Repairing shoes".
A person who compounded and sold medicines
.... "Pharmacist".

If a manager was engaged in work other than managerial, write the work other than managerial.

EXAMPLES: A proprietor of a restaurant who cooked
......."Cook".
A director of a hospital who performed surgical operations ...."Surgeon".

(2) Source of household income

1 *Wages and salary* .... Includes bonuses, allowances, tips, etc.

3 *Own non-farm business* ....Includes income from practising medical practitioners, lawyers and writers, etc.

(3) Type and tenure of dwelling

1 *Owned house or flat* .... includes an owned house which has not yet been registered, as well as a house which has been purchased in installments and for which payments have not yet been finished.

2 *Rented house or flat owned by local government* .... refers to rented houses managed by the prefectural or municipal government.

3 *Rented house or flat owned by public corporation* .... refers to rented houses managed by Japan Housing and Urban Development Corporation, Public Corporation for Housing Supply, Housing Association, etc., excluding issued house.

5 *Issued house (company's house, government employee's house, etc.)* .... includes a house rented by a company in which its employees reside.

6 *Rented room* .... refers to a rented room in a part of a house (that is, owned, rented or issued house) occupied by other

household. However, the room should be classified as a "*Rented house or flat owned privately*," if it satisfies the following three conditions:

a. The room is completely separated from other household's living quarter.

b. The room has a doorway to which anyone has access through common corridor, etc.

c. The room has a sink for cooking and a toilet (including the one for common use, if it is available for the roomer any time without passing through the living quarters occupied by other households).

(4) Number of dwelling rooms

Dwelling rooms refer to rooms used for living purposes, such as living room, sitting room, bedroom, guest room, study room, drawing room, dining room, dining-kitchen, etc.

(5) Area of floor space of dwelling

Give the total area of floor space of the dwelling used for living purposes which includes vestibules, kitchens, toilets, bathrooms and corridors, but excludes rooms used for business.

この調査票は、統計以外の目的には使用しませんから、ありのままに記入してください。

答えを記入する欄が □ の場合は、当てはまる □ に ■ のように該当を太く濃く記入し、その他の場合は、点線のわく内に答えを記入してください。

世帯では　表も裏も　太わくの中だけに記入してください

		1	**2**	**3**	**4**
1 氏名及び男女の別 ・ふだん住んでいる人をもれなく書いてください		男 女 □□	男 女 □□	男 女 □□	男 女 □□
2 世帯主との続き柄 ・妻・配偶者は夫に、兄弟姉妹の配偶者は兄弟姉妹に含めます ・世帯主の配偶者の父母・祖父母・兄弟姉妹は、それぞれ父母・祖父母・兄弟姉妹に含めます		世帯主 世帯主の配偶者 子 子の配偶者 孫 父母 祖父母 兄弟姉妹 他の親族 家事使用人 非親族			
3 出生の年月		明治 大正 昭和 平成 年 月	明治 大正 昭和 平成 年 月	明治 大正 昭和 平成 年 月	明治 大正 昭和 平成 年 月
4 配偶者の有無		未婚 有配偶 死別 離別	未婚 有配偶 死別 離別	未婚 有配偶 死別 離別	未婚 有配偶 死別 離別
5 国籍 ・外国の場合は、国名も書いてください		日本 外国 （国名）	日本 外国 （国名）	日本 外国 （国名）	日本 外国 （国名）
6 5年前（昭和60年10月1日）にはどこに住んでいましたか		現在と同じ場所 現在の市区町村内の他の場所 県内の他の市区町村 他の都道府県 外国	同上	同上	同上

世帯について

	総数	男	女		
(1) 世帯員の数 ・世帯員全員の数を書いてください	人	人	人	**(4) 居住室数**	1室 2室 3室 4室 5室 6室 7室 8室 9室

2～6欄は　一般の世帯及び一人世帯の場合のみ記入してください

2 家計の収入の種類	**(5) 住宅の床面積の合計（延べ面積）**
賃金・給料　事業収入　内職収入　恩給・年金　仕送り　その他の収入	平方メートル　又は　坪

3 住居の種類	**(6) 住宅の建て方**
持ち家　公営・公団・公社の借家　民営の借家　給与住宅　会社などの独身寮・寄宿舎　その他	一戸建　長屋建　共同住宅　その他　　1・2階建　3～5階建　6～10階建　11階以上

☎電話局番

世帯では右の欄には記入しないでください

国籍	5年前の住居の所在地（他の市区町村の場合）	1 2 3 4 5 6 7 8 9 0
	都道府県	
	市区町村	
世帯員の数　総数		世帯番号
住宅の床面積の合計		

裏面にも記入してください →

世帯の種類	一般の世帯	一人世帯（単身赴任・出稼ぎ・学生・生徒・病院などの入院者）の学生・生徒　病院などの入院者	社会施設の入所者	その他

調査区番号	＿＿＿

この調査票は、機械によって処理しますので、汚したり　折ったり　丸めたり　しないでください

世帯では，太わくの中だけに記入してください。

		1	2	3	4

世帯員全員について

7 教育
- 現在 学校に在学しているかどうかについて記入したうえで 矢印に従って記入してください
- 在学中の人はその学校 卒業の人は最終卒業校 中途退学した人は その前の卒業学校について記入してください

在学中 卒業 未就学

小学 高校 幼稚園 中学 旧中 保育所

短大 大学 乳 児 高専 大学院 その他

8 9月24日から30日までの1週間に仕事をしましたか
- 仕事とは 収入を伴う仕事をいい 自家営業 農業や店の仕事など その手伝い 内職 パートタイム アルバイトも含めます
- 通学には 予備校や各種学校に通っている場合も含めます

少しでも仕事をした人は

主に 家事などのほか 通学のかたわら仕事 仕事 の仕事 かわった仕事

9～14欄にも記入

仕事をしなかった人は

家事 通学

従業地 又は 通学地

9 従業地又は通学地
- 仕事や通学をしている人は その仕事をしている場所について記入してください
- 他の市区町村の場合は その都道府県名 市区町村名 12大都市の場合は区名まで 第1面の6欄参照

自宅 市区 町村 他の市区町村

都道府県 市郡庁 支庁 区 町村

10 従業地又は通学地までの利用交通手段
- 従業地・通学地が 自宅(住み込みを含む)以外の人について記入してください
- 二つ以上の交通手段を利用している場合は 該当するものすべてに記入してください

徒歩だけ 鉄道・電車 乗合バス 勤め先のバス JR 自家用車 タクシー・ハイヤー オートバイ 自転車 その他

11 従業地又は通学地までの所要時間
- 従業地・通学地が 自宅(住み込みを含む)以外の人について記入してください
- 片道の所要時間を記入してください

時間 分

12 勤めか 自営かの別
- 勤主とは 個人で事業を経営している人をいいます

13 勤め先・業主などの名称及び事業の種類
- 仕事をしている事業所 事務所・工場・店などの名称 官公庁の場合は局名まで書いてください
- その事業所で主に営まれている事業の内容をくわしく書いてください

勤め先・業主などの名称

事業の種類

14 本人の仕事の種類
- 本人が実際にしている主な仕事の内容をくわしく書いてください

世帯では 右の欄には記入しないでください

従業地 又は 通学地
「他の市区町村」の場合

都道府県 市区 町村

1 産業 2 産業 3 産業 4 産業

1 職業 2 職業 3 職業 4 職業

— 81 —

THIRTEENTH POPULATION CENSUS CONFERENCE

East-West Population Institute
Honolulu, Hawaii

December 10-14, 1990

OUTLINE OF THE
1990 POPULATION AND HOUSING CENSUS
IN THE REPUBLIC OF KOREA

Il-Hyun Kim

National Bureau of Statistics
Economic Planning Board, Republic of Korea

I . Introduction

The 1990 Population and Housing Census in Korea was conducted as of November 1, 1990. This census comprised the fourteenth census of population and the sixth census of housing in the series of census taking since 1925 (Refer to Appendix Table 1 and 2).

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 was implemented in accordance with the Population and Housing Census Regulations of Economic Planning Board Order No. 52.

The main goals of conducting the 1990 census are summarized as follows : (1) providing the data for evaluating and establishing a variety of central and local government policies in time, (2) producing small area statistics with respect to the introduction of local self-government system, (3) supplying the information needed for the private sectors(e.g. enterprises, universities, research institutes, individuals, etc.), (4) being utilized as a basis of population projection and as a population for a variety of sampling surveys, and (5) making international comparisons in various indices.

In order to effectively meet those needs, we reinforced the census in various aspects, which had been tested through four pilot surveys conducted as a pre-stage of the 1990 census. Those intensified or complemented points in the main census are ; first, the Optical Mark Reader (OMR) system for automation in data input is newly introduced in order to minimize the possible

errors in inputting data into computer and thereby to make data processing promptly, (2) the Geographical Information System(GIS) for the small area statistics is reinforced in relation to the introduction of local self-government system, (3) the sample enumeration using the long form questionnaire is adopted to meet the needs of diverse users, (4) new census items such as monthly income of a household, etc. are adopted, and (5) in-depth analysis projects on various topics with professors and research institutes will be executed and seminars with these results will be organized.

All aspects on conducting the 1990 Population and Housing Census are summarized in brief in the subsequent sections.

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 NBOS include the collection and analysis of major statistical data 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 and 11 local offices(Refer to Figure 1).

The Population Statistics Division, with a regular staff of about 30, is the principal division responsible for population statistics and the related such as carrying out the Population Census and various surveys including Continuous Demographic Survey, compiling vital statistics, analyzing and publishing

their results, etc.

Above all, the key role of the Population Statistics Division is planning and executing the census and analyzing its results which includes design of questionnaire, recruitment and training of enumerators, analysis and publishing of the results, etc. In order to successfully carry out the census, the division is to coordinate the activities of other divisions concerned with the census, among which the Data Processing Division is responsible for editing, coding, processing and tabulating the results of the census.

Along with the regular 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 experience in past census-taking as well as subject-matter specialists in various fields. The main functions of the group are to review the plan for the census and to provide technical and operational assistance for the Population Statistics Division.

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

In addition to central organization, local government hierarchy played an important role in carrying out 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 eight other large cities are sub-divided into wards (Gu), which are again sub-divided into sub-wards(Dong). The other cities cons- ist of subwards only. In all, there are 67 cities, six special cities, 73 Gu, 137 Gun, 179 Eup, 1,260 Myeon and 2,083 Dong as of 1 July 1990.

The local government hierarchy was particularly important in the designati- on of enumeration districts, recruitment and training of enumerators, and the supervision of the enumeration. The Minister of the Economic Planning Board was to direct the governors of the provinces to supervise the execution of the cen- sus operation, and to appoint census officials under the administrative heirarc- hy within their jurisdiction. The main function of the census officials at the local level was 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

a. Arrangement of the budget for the census

b. Overall planning

c. Preparation of general guide manuals for local governments

d. Preparation of guide manual for designating up enumeration districts

e. Printing and distribution of census materials

Figure 1 : Census Organization

Ⅲ. Census Costs

The total budget appropriated for the 1990 census covering the period 1989
to 1991, excluding salaries to be paid for regular staff in both central offices
and local government agencies, amounted to about 21,147 million Won(equivalent
to 31.6 million US dollars) which was more than double the budget for 1985 Popu-
lation and Housing Census. The major expenditure item was allowance paid to
temporary census enumerators, coders and field-supervisors accounting for about
75.8 percent of the total. Other major costs were printing for manuals and
questionnaires and publicity. The total budget is broken down as shown in
Table 1.

Table 1. Break-down of the Total Budget for the 1990 Census.

Items	% to the Total Budget
Total	100.0
Allowance for enumerators	75.8
Mapping	1.6
Execution of dress rehearsal	0.8
Publicity	3.3
Post-enumeration survey	0.5
Printing for manuals and questionnaires	7.6
Data input	0.9
Others	9.4

Ⅳ. Census Mapping and Establishment of EDs

The preparation of census base maps and ED(Enumeration District) maps is indispensable for carrying out the census operation successfully. The main purposes to prepare these maps are (1) to equally assign the work to each enumerator, (2) to avoid the omission or duplication of the household, and (3) to produce small area statistical maps. The 1990 census base maps were prepared for each Dong, Eup and Myeon on a single sheet where shown are location, roads and other possible landmarks by which the boundary of EDs were delineated.

In the preparation of census base maps, utilized were the following materials : (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 mapping materials, the delineation of the boundary of EDs was completed for rural areas at the end of November 1989 and for urban areas at the end of April 1990, on the basis of criteria laid down by NBOS. It was recommended that the change on the map(or EDs) after completion should be reported by the 31st of July, 1990 to the NBOS for the necessary modification of the maps. The number of EDs by type and area are presented in Table 2.

Table 2. Number of EDs by Type and Area

Type of EDs	Whole Country	Urban	Rural
Total	191,736	142,089	49,647
Ordinary EDs	185,248	138,094	47,154
Island EDs	1,486	111	1,375
Dormitory EDs	3,876	3,070	806
Social Welfare Institution EDs	747	489	258
Foreigners and Tourist Hotel Residence EDs	379	325	54

Two distinctive points in mapping work are as follows : (1) a six digit mesh code was introduced for each ED from which various small area statistical maps will easily be drawn up ; and (2) the ED maps used for the 1985 census were again utilized for the 1990 census after necessary modification.

V. Pilot Surveys

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

A. 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, and the respondents' memory bias on residence one year and five years ago)

(4) The printing quality of OMR questionnaires

B. 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 household members who are apt to be away from home

(5) Amount of work required of the enumerator

C. Third pilot survey

Date   : Nov. 1 - 8, 1989

Areas covered   : 187 EDs in whole area of Kimcheon city

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

(2) Utilization of both supplementary and OMR questionn-
aires

(3) Method of selection, assignment and training of enu-
merators

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

D. Fourth pilot survey(Dress rehearsal)

The fourth pilot survey(dress rehearsal) was conducted during April of 1990,
covering 89 thousand households in 1470 EDs scattered through all provinces.

Through the four pilot surveys conducted, recommended are the followings :

(1) The method of the self-enumeration for the entire household is too early to
be adopted in the Korean census since the response rate and the completeness
rate of questionnaires by this method appeared to be too low. Therefore,
introduction of the self-enumeration method would be appropriate only for
the households whose members are away from home.

(2) It would be 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(respondents
)as well as by enumerators.

(3) The work of marking ticks would be 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

which are needed to be referred to a certain classification book for coding, was difficult for enumerators. Thus, it would be required in the main census that the work of marking ticks on those items be done by coders recruited separately.

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

(5) Utilization of the instruction leaflet would be 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.

(6) Found was that relatively young housewives carried out their activities as enumerators more successfully than the others. Therefore, it would be recommended to encourage and recruit as many young housewives as possible for census enumeration.

(7) The lack of public awareness of the census together with respondents' refusal in account for protecting privacy made the enumeration difficult. Hence, it would be necessary to reinforce publicity and install all possible privacy protection operations.

(8) To recruit the scheduled number of enumerators, it would be needed to publicize the main purpose of census to people and to secure the budget to pay acceptable allowance for enumerators to be selected.

VI. Survey Units

A. Population

The population was 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, although the persons who were living in Special EDs were exceptionally enumerated at their respective place, they are to be allocated to the usual residence of their family. In the case of persons who had no usual residence, they were enumerated at the place where they were found at the time of the census.

Although the following persons were away from home at the time of the census, they were enumerated at the usual residence of their family : 1) civilians who were away from home for business or travel, 2) those who were in police-station detention houses(not a penitentiary), 3) those who were travelling abroad at the time of the census, 4) patients and their attendants in hospitals, 5) government officials abroad for trip or training purposes, and 6) crew in vessels, airplanes and locomotives.

Excluded from the census enumeration were 1) workers and students who were 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.

B. Housing

All housing units, classified into detached dwellings, apartments, town-houses, within the areas defined by the census were canvassed. However, excluded

were the following units :

1) Military barracks

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

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

VII. Questionnaire Design and Census Items

In the 1985 Census, information on all items was collected from the whole households. However, used in the 1990 census were two types of questionnaires (attached) : namely, a short form containing "complete items" asked of the entire popoulation and a long form containing "sample items" in addition to the complete items asked of the sample population selected systematically. The number of items surveyed in sampled areas were 45, of which 21 items were related to population, 15 items to household and 9 items were related to housing, while among 33 items surveyed in non-sampled areas, 11, 13 and 9 items were oncerning population, household and housing, respectively. The items asked of the interviewee in the 1990 census are, in comparison with those for the 1980 and 1985 censuses, presented in Table 3.

Table 3. 1990 Census Items in Comparison with Those for 1980 and 1985 Censuses

Items	1980		1985	1990	
	Complete	Sample	Complete	Complete	Sample
Total	23	38	27	33	45
(Population)	6	21	15	11	21
Name (Origin of the family name)	O	O	O (O)	O	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

Items	1980		1985	1990	
	Complete	Sample	Complete	Complete	Sample
Number of childred everborn 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		○	○		○
(Household)	9	9	7	13	15
Type of living quarters	○	○	○	○	○
Type of household classified 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	○	○	○	○	○

Items	1980		1985	1990	
	Complete	Sample	Complete	Complete	Sample
Newspaper subscriptions	(○)	(○)			
TV sets	(○)	(○)	(○)	(○)	(○)
Telephones	(○)	(○)	(○)	(○)	(○)
Refrigerators	(○)	(○)	(○)	(○)	(○)
Washing machines	(○)	(○)	(○)	(○)	(○)
Pianos or organs	(○)	(○)	(○)		
Room air conditioners	(○)	(○)	(○)	(○)	(○)
Streo systems				(○)	(○)
Video tape recorders			(○)	(○)	(○)
Private cars			(○)	(○)	(○)
Personal computers				(○)	(○)
Type of kitchen				○	○
Type of toilet				○	○
Type of bathroom				○	○
Piped water system				○	○
Disability or handicap	○	○			
Monthly average amount of Income					○
(Housing	8	8	5	9	9
Construction material of outer walls	○	○		○	○
Construction material of roof	○	○		○	○
Total area of floor space	○	○	○	○	○
Total ground area	○	○		○	○
Number of households in housing unit	○	○	○	○	○
Number of total rooms	○	○	○	○	○

Items	1980		1985	1990	
	Complete	Sample	Complete	Complete	Sample
Year of construction	O	O		O·	O
Housing facilities installed	O	O	O	O	O
Number of cooking system	(O)	(O)	(O)	(O)	(O)
Number of toilet system	(O)	(O)	(O)	(O)	(O)
Number of bathing system	(O)	(O)	(O)	(O)	(O)
Piped water system	(O)	(O)			
Type of multi-housing system			O	O	O

Note : Figures indicate the number of items.

Ⅶ. Recruitment and Training

The recruitment of census personnels including enumerators, coders and field-supervisors for carrying out the 1990 census was under responsibility of Dong, Eup and Myeon census officals.

Requirements to be qualified as enumerators, coders and field supervisors were as follows : 1) the persons who are 18 years old or over at the time of census : 2) the persons who were from the local area to which they were assigned to enumerate in order to overcome unfamiliarity with the area : 3) the persons who had at least a high school education : 4) those who kept strong responsibility ; and 5) those who were able to complete OMR questionnaires. To be qualified as census personnels those requirements should be satisfied with simultan-

eously.

In particular, priority to be selected was given to the experienced in statistical surveys, the family members of government or local officials, the retired officials, housewives, etc. in that order. Those requirements were checked by Dong, Eup or Myeon at the first stage and then by Shi/Do at the final stage.

During the period between 1 and 20 September 1990, among those applicants who applied to Dong, Eup and Myeon officies for census personnels, 154,722 applicants were selected(refer to table 4). The list of census personnels selected thus were submitted, via Gu · Shi · Gun and then Shi · Do, to the Minister of Economic Planning Board, who in turn confered a letter of appointment to enumerators through Shi · Do and Dong, Eup or Myeon.

Table 4. Number of Census Personnels

Type	Number
Total	154,722
Enumerators	105,474
Field supervisors	8,976
Coders(examiners)	34,450
Extra-enumerators	5,822

As far as the characteristics of enumerators selected thus (105,474) are concerned, the percentage distribution of those enumerators by sex, age and occupation is presented in Table 5. The number of male enumerators was more than that of female ones(53.6 percent compared to 46.4 percent). In relation to the distribution by age, enumerators were the most highly concentrated into the age group 30-39, followed with small difference by age groups 40-49 and 20-29.

The age group was accounted for by 15.6 percent. However, percentages accounted
for by the youngest(18-19) and the oldest(60 or over) appeared to be negligible.
In occupational classification of enumerators, the most pronounced percentage
was accounted for by 'the heads of Tong or Ban or Saemaul leaders'(42.9percent).
The second most pronounced one was from 'the housewives or housekeepers'(22.9
percent). Among the remaining groups, those from students at universities
accounted for 12.0 percent, but the others appeared to be almost negligible.

Table 5. Classification of enumerators by characteristics

Characteristics	Number	% to the Total
Total	105,474	100.0
Male	56,529	53.6
Female	48,945	46.4
Age Group		
18 - 19	3,042	2.9
20 - 29	24,131	22.9
30 - 39	30,774	29.1
40 - 49	29,138	27.6
50 - 59	16,409	15.6
60 +	1,980	1.9
Occupation		
Family of Governmental or local officials	2,479	2.3
The retired officals	515	0.6
Housewives	24,150	22.9
The head of neighborhood units	45,252	42.9
The members of the Women's Association	4,700	4.5
Students at universities	12,712	12.0
Others	15,576	14.8

The training of those census personnel was under responsibility of local government census officials in cooperation with the census supervisors from NBOS who in turn were trained by census headquarter staff of Population Statistics Division. All census personnels were trained on how to carry out the 1990 census which include method of completing the supplementary and OMR questionnaires, the household list, etc.

IX . Enumeration Procedures

In the 1990 census, the basic items were collected on the basis of complete enumeration using a short form questionnaire, while additional items concerning migration, fertility, economic activity, income and the amount of rental charge, etc. were on a sample basis using a long form questionnaire. On the average, two EDs in non-sampled areas and one ED in sampled areas were assigned to one enumerator.

For the three days(between 29 and 31 October, 1990)prior to the main enumeration period from November 1 to 10, each of about 107 thousands of enumerators prepared a map of his/her ED showing the locations of all households and housing units to be enumerated and a list of all households in the ED on which for each household address, name, origin of the family name and educational attainment of household head, number of household members, type of household and housing unit, etc. were recorded. Every enumerator was also instructed to paste slips of paper showing the household serial numbers in his/her ED on the entrance of housing units in order to avoid the omission or duplication of the household.

During the main enumeration period, the enumerator again visited the househ-

old and completed the questionnaires himself/herself by interviewing a member of household who were responsible for and aware well of the household. In case that the household members were away from home, the enumerator was allowed to deliver the supplementary form of census questionnaire for such a household which was requested to be completed by the household itself. In such a case, the enumerator was to revisit the household to collect questionnaires. In principle, the population count was, as mentioned earlier, made largely on the basis of the De jure concept.

After completing and examining the supplementary questionnaires, the enumerator was requested to mark ticks on the OMR(Optical Mark Reader) questionnaires in accordance with the contents on the supplementary ones. However, marking ticks for items on the relationship to the household head, place of residence one year and five years ago, and place of work or schooling was done by the coders recruited separately by Dong, Eup and Myeon and that on industry and occupation by NBOS due to their necessity or difficulty of exact classification.

The completed supplementary and OMR questionnaires, household lists and ED maps were then submitted to the Dong, Eup or Myeon offices where they were checked by supervisors and census officials, and then forwarded to the NBOS via each level of the local government.

X. 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. A variety of resources including TV, radio, new-

spaper, magazine, newsletters of enterprises, slogan, poster, puzzle, VTR, etc. were utilized for publicizing the 1990 Census. The main targets of publicity were to let people know the date of the census together with the respondence obligation of the people and security of protecting all the surveyed contents (privacy), to explain people the basic information on the censūs procedures and the importance and utilization of the census and thereby to appeal people for help.

Publicity was executed intensively for one month before the main survey began. The publicity materials were completed in July of 1990. The publicity activities were as followings : preparing materials for publicity, drafting an anouncement for broadcasting, making leaflets, offering prizes for census slogans and posters, publicizing the census on the street, distributing the printed materials to various levels of schools, making commemorative postage stamps and cigarettes, enlisting the cooperation of other organizations, etc.

In order to carry out such publicity activities successfully, established was the Advisory Committee of Publicity which were composed of personnels of the other related-ministries, newspaper companies, broadcasting stations, various research institutes, etc.

X I . 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 three OMR 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 editing and coding for occupational and industrial classification, about 500 girls with a minimum qualification of a high school degree were recruited on a temporary basis for 11 months from December 1, 1990 to October 30, 1991.

X Ⅲ . Evaluation

It is well known that almost impossible is a perfect census which is often subject to errors of both coverage and content. In order to get an estimate of the completeness of coverage as well as a measure of response variability of those items on census, a variety of checking methods are utilized.

A. Post-enumeration Survey(PES)

(1) Introduction

Recognizing the importance of evaluating the accuracy of census data, post-enumeration surveys have been conducted in each korean census since 1960.

The main objectives of carrying out the 1990 PES are (1) to verify enumeration coverage and quality of data of the 1990 Population and Housing Census, (2) to assist census data users in the interpretation of the census results, and (3) to guide improvements in future censuses.

(2) Reference date and period of the PES

Interviews refer to the census day(1st of November 1990). The survey was, however, conducted during eleven days between 30 November and 10 December, 1990.

(3) PES Organization

Responsible for conducting the PES is Population Statistics Division which directs the head of local officies to execute the PES with responsibility. In order to carry out the PES more effectively, the supervisors from the central office(NBOS) were dispatched to the fields of each Shi or Do ; they played a key role in (1) receiving ED maps, lists of households and supplementary questionnaires necessary for PES from special cities or provinces, (2) supporting the training and technical advises, and (3) connecting the fields with the central office. In addition, allocated were field supervisors(105), each of which was responsible for directing 6 enumerators.

(4) PES Cost

The total costs for carrying out PES amounts to 86.2 million wons(equivalent to 123 thousand US dollars).

(5) Methods of PES

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 acc-

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 1990 PES, using dependent reenumeration as in 1960, 1966, 1980 and 1985. The emphasis was on obtaining complete coverage and accurate responses and on eliminating the source of errors in the census.

The procedure identified all current residents living at the sample address at the time of PES plus all other persons who lived at the sample address on the census day. However, the PES day residents(non-movers, in-movers) were matched with the census questionnaires. In particular, although the matching of in-movers is relatively difficult and expensive,the PES tried to get the in-movers' previous addresses and their census supplementary questionnaires and to match them with the PES questionnaires.

In completing PES questionnaires, the sampled households were visited by enumerators who were selected from experienced and qualified enumerators for the NBOS and were trained by NBOS staff. They completed the PES questionnaires themselves through interviewing with the member of household who is responsible for and aware of the household under survey.

From this matching, estimates of the number and percent matched for non-movers and in-movers can also be made.

(6) Coverage

To be interviewed were 33,000 households (containing around 132 thousands of population) from 550 EDs which were systematically(by systematic sampling) selected from the 182,804 census general EDs. Each ED was assigned to one enumerator.

(7) PES Questionnaire and Survey Items

The questionnaire was designed primarily to fulfill the two main objectives of the PES, i.e. coverage and content in addition to serving the purpose of matching operation.

The following items were surveyed in the PES :

(1) Items for checking the omission and duplication of households and popul ation.

(2) Items for ascertaining the adequacy of contents on population and households.

(3) Items on the type of omitted households and populations.

(4) Items for checking whether or not the in- or out- migrant households were interviewed in a census day.

(5) Items on PES respondents.

(8) Office Matching Operation

The matching operation is to identify the correct census records corresponding to the PES questionnaires. This required a person-by-person match between the PES and the census records. For this operation, a set of matching rules was

developed for use by matchers and computer.

   (9) Report

o   Provisional Report :

   Report on the total error rate by province through presenting the cross-
   tabulations on a basis of results of PES.

o   Main Report :

   Report on the estimated omitted population and its correction coefficients
   by age group(5years)on which the future population projection will be based.

o   Report on the in-depth analysis of PES results :

   -   Evaluating the 1990 Population and Housing Census in terms of its content
       and coverage.

   -   Accertaining the type of errors and their causes.

   B. The Other Methods

   In addition to the PES, data from the vital registration and resident regis-
   tration will be utilized to estimate the completeness of the coverage. The pre-
   vious censuses will also be used to diagnose the quality of the 1990 census
   through checking the time trends in various items, calculating census survival
   ratios, etc.

   For example, evaluation of the question on attendance at an educational ins-
   titution is possible by comparing the aggregated data against statistics on enr-
   ollment collected by the Ministry of Education. For 1985 census these statisti-
   cs on student enrollment are comparable to census data on educational attendan-
   ce, with the differences being minor as shown in Table 6.

Table 6. 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
Universith & Over	971,914	1,035,711

X Ⅲ. 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, the advance sample tabulation of the main characteristics on population size and structure, migration, fertility, households and housing units will be made on the basis of a two percent smaple 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 Acti·
vity 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 strengthen the use of the census results, the National
Bureau of Statistics will have a research project on various topics with profes-
sors at universities and researchers at research institutes. Thereafter, semin-
ars on the results will be organized, since the seminar held in November 1989 on
the results of the 1985 census was found to be very fruitful and encouraging.

X Ⅳ. Conclusion

It may be underscored that the population and housing census at any time is
an essential and fundamental data to establishing effective planning and progra-
mme for progressing socioeconomic development and setting up the social welfare.

However, the census could make successful contributions to such purposes
only if the results derived from the census are reliable or fully evaluated. In
trying to get the reliable results of the census, the most important is to pre-
pare effective plans for and to carry out all phases of census operation succes-
sfully.

Although it is well known that the Korean censuses have been characterized
by the high quality, the Government has made great efforts for the further

improvement of the 1990 census data.   In addition, in order to speed up the processing of the 1990 census data and thereby to meet the urgent and various needs of users, the new methods of data processing and data provision systems were introduced.

Those efforts made for carrying out the 1990 census successfully can be summarized as follows ;

(1) The Optical Mark Reader(OMR)system for automation in data input was adopted.

(2) The systems for the provision of 1990 census data were reinforced through
·   the Geographical Information System(GIS) to provide as small area statistics as possible such as for Dong/Eup/Myeon and enumeration districts (EDs),
·   the data provision in.the form of magnetic tapes(of raw data), database and specially requested tabulations,
·   in-depth analysis projects on various topics and seminars on their results.

(3) New items such as the average amount of income, etc. were introduced.

(4) The sample enumeration on sample items together with the complete enumeration were conducted.

(5) The highly qualified enumerators were selected.

(6) The period up to releasing the final report will be reduced.

In addition, the main characteristics or problems of the 1990 census are as following :

(1) The introduction of OMR system to the 1990 census but relatively low allowance payment caused not many people to apply for the enumerators. As a result, the average age of enumerator selected became older than that in the 1985 census. In addition, there is a possibility that the illegal enumeration activities by census officials of administrative units to compensate for the shortage of enumerators may lead to inaccuracy of the counting.

(2) Although the publicity in the 1990 census achieved its goal to a great extent by virtue of T.V., it was suggested that obtaining help from T.V. without paying the due expenses will be difficult in the future census and therefore, getting an appropriate budget for the publicity will be necessary.

(3) To intensify the evaluation of the 1990 census, it has been needed to expand the budget for the evaluation activity, by which the research institutes, foreign consultants, experts, etc. will be invited.

(4) The other sources of population data might have an effect on the census in Korea. They are Year-end Population Counting Survey and Residence Registration which are made under the responsibility of the Ministry of Home Affairs by the minor administrative unit such as Dong, Eup and Myeon. In particular, since the results of the former one were used for the budget allotment, reclassification of an area into city, etc., they are usually counted more than the actual one on purpose, which in turn might affect the census result.

(5) Despite the necessity of the more detailed and diversified information in Korea, asking the questionnaires on those items pertaining to the individual's secret or privacy becomes difficult, as the standard liviving level and educational level of Korean rise. Although the impact of confidentiality problem was not significant in the 1990 census, it was suggested that the future censuses can not success without overcoming the confidentiality problem.

(6) The number of items was complained to be too many. However, it was taken for grant that including those items in the 1990 census was needed for providing the fundamental data for the socioeconomic development plan, as the Korean society becomes complex. Accordingly, it is suggested for us to study on limitting the number of items, particularly in relation to the confidentiality of the items selected.

(7) In final, so far, we have met a lot of difficulties in carrying out the censuses because only one small section has been responsible for all the procedures of census. However, maybe by the 1st of January, next year, the census division will be established in accordance with the expansion of NBOS organization.

Appedix Table 1 : 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 tabulatio 2) First housing census
1966	Oct. 1	Population Census	De jure	10% smaple enumeration on labor force and fertility
1970	Oct. 1	Population & Housing Census	De jure	10% smaple enumeration on labor force, fertility, migration and some specific items of housing
1975	Oct. 1	Population & Housing Census	De jure	5% smaple enumeration on labor force, fertility, migration and some specipic items of housing
1980	Nov. 1	Population & Housing Census	De jure	15% smaple enumeration on labor force, fertility and migration
1985	Nov. 1	Population & Housing Census	De jure	Complete enumeration for all items

Appedix Table 2 : 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

Republic of Korea

1990 Population and Housing Census

(A Complete Questionnaire)

All information obtained from the questionnaire is to be used only for statistical purpose in compliance with the Statistical Law No. 8 and 9

Designated Statistics No.1 and 2.

Shi · Do	Gu · Shi · Gun	Dong · Eup · Myeon

Enumeration district No.	Living quarters No.	Household No.	No. of Questionnaires used for the household	No. of Household members

(Items on Population)

		1	2	3	4	5
1. Name						
2. Relationship to household head						
3. Sex	① Male ② Female					
4.	Counting age	Years				
	Year of birth					
	Zodiacal sign					
	Date of birth	① Solar ② Lunar Date				
	Complete age	Years				
5. Place of birth	① The current place ② The current Gu · Shi · Gun ③ The different Gu · Shi · Gun Shi · Do _____ Gu · Shi · Gun					

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6. Educational attainment
(For HH members aged 5 or over)
① Never attended ⓐ Graduated
② Primary ⓑ Attending
③ Middle ⓒ Incompleted
④ High
⑤ Junior college
⑥ College or higher
⑦ Graduate school

7. Commuting status
(If yes, ask on 8, 9 and 10)
① Yes ② No

8. Place of work or school
①The current Dong · Eup · Myeon
②The different Dong · Eup ·
Myeon
Shi · Do
Gu · Shi · Gun
Dong · Eup
· Myeon

9. Time of departure from home and arrival to place of work or school
① Departure time
② Arrival time

10. Usual means of transportation to the place of work or school (mark all used means)
① An urban bus
② A seat bus
③ A cross-country bus
④ A commution bus
⑤ A streetcar, subway or railroad
⑥ A taxi ⑦ On foot
⑧ A private car ⑨ Others
⑩ A bycycle

11. Marital status
① Single
② Currently married
③ Widowed
④ Divorced

(Items on household)

1. Type of living quarters
① Detached dwelling
② Apartment
③ Row house(Town house)

5. Source of drinking water(mark only the main one)
① Public piped water system ② Local piped water system
③ Indoor piped water system ④ Manual pump ⑤ Well ⑥ Others
6. Fuel used for cooking(mark only the main one)

④ Coal briquet ② Oil ③ Gas
④ Electricity ⑤ Wood ⑥ Others

7. Heating facilities(mark only the main one)
 ① Traditional fuel hole system ② Coal-briquet fuel hole system
 ③ Pipe coal-briquet boiler system ④ Single piped oil boiler system
 ⑤ Single piped gas boiler system ⑥ Central heating system
 ⑦ Electrictic boiler system ⑧ Others

8. Type of household appliances(mark all owned ones)
 ① T.V. ② Refrigerator ③ Washing machine ④ Telephone ⑤ Audio
 ⑥ V.T.R. ⑦ Room air conditioner ⑧ Personnal computer ⑨ Private car

9. Facilities of kitchen, toilet and entrance
 (1) Kitchen : ① Sole use ② Use with others or none
 (2) Toilet : ① Sole use ② Use with others or none
 (3) Entrance : ① Sole use ② Use with others or none

10. Type of cooking system : ① Conventional ② Modern ③ None
11. Type of toilet system : ① Conventional ② flush ③ None
12. Type of bathing system : ① Hot & cold water ② cold water only ③ None
13. Piped water system : ① Exist ② None

② Attached house for dual purpose
③ Dwelling units in the building not intended for human habitation
④ Hotels, inns and other lodging houses
⑤ Domitories and institutions
⑥ Officetel
⑦ Others

2. Type of household(if the type of household is collective, do not ask on the following items)
 ① Representative
 ② Attached
 ③ Collective

3. Tenure of ownership

① For only living
 ① Owned
 ② Rented with deposit
 ③ Monthly rented with deposit
 ④ Monthly rented without deposit
 ⑤ Free

② For living and business

4. Number of rooms occupied
 ① 1 ② 2 ③ 3 ④ 4 ⑤ 5 ⑥ 6 or over

(Items on housing units) ※ Only for the representative households of which living quarters are detached dwelling, apartment, row house, attached house for dual purpose or dwelling units in the building not intended for human habitation.

14. Construction material of outer wallers
 ① Wood ② Red brick, stone ③ Cement
 ④ Ferro-concrete ⑤ Soil, soil brick ⑥ Others
15. Construction material of roof
 ① Tile ② Slate ③ Slav
 ④ Zinc ⑤ Straw, reed ⑥ Others
16. Total area of floor space :
17. Total ground area :
18. Number of total rooms :
19. Number of households occupied :

20. Year of construction
 ① Prior - 1950 ② 1950-1959 ③ 1960-1969 ④ 1970-1979 ⑤ 1980-1985
 ⑥ 1986 ⑦ 1987 ⑧ 1988 ⑨ 1989 ⑩ 1990
21. Number of housing facilities installed
 ① No. of kitchens
 ② No. of toilets
 ③ No. of entrances
22. Type of muti-housing system

Name of a respondent		Signature	
Name of a enumerator		Signature	

Republic of Korea

1990 Population and Housing Census

(A Sample Questionnaire)

All information obtained from the questionnaire is to be used only for statistical purpose In compliance with the Stat istical Law No. 8 and 9

Designated Statistics No.1 and 2.

Shi · Do	Gu · Shi · Gun	Dong · Eup · Myeon	Enuermeration district No.	Living quarters No.	Household No.	No. of Question-naires used for the household	No. of Household members

(Items on Population)

		1	2	3	4	5
1. Name						
2. Relationship to household head						
3. Sex	① Male ② Female					
4. Age	Counting age Years					
	Year of birth					
	Zodiacal sign					
	Date of birth ① Solar ② Lunar	Date				
	Complete age Years					
5. Place of birth	① The current place ② The current Gu · Shi · Gun ③ The different Gu · Shi · Gun Shi · Do —————— —————— Gu · Shi · Gun					

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12. Place of residence one year ago (For HH members aged 1 or over)
① The current place
② The current Gu · Shi · Gun
③ The different Gu · Shi · Gun
Shi · Do _____
Gu · Shi · Gun _____

13. Place of residence five years ago
① The current place
② The current Gu · Shi · Gun
③ The different Gu · Shi · Gun
Shi · Do _____
Gu · Shi · Gun _____

6. Educational attainment
① Never attended
② Primary
③ Middle
④ High
⑤ Junior college
⑥ College or higher
⑦ Graduate school
① Graduated
② Attending
③ Incompleted

7. Commuting status (If yes, ask on 8, 9 and 10)
① Yes ② No

8. Place of work or school
① The current Dong · Eup · Myeon
② The different Dong · Eup · Myeon
Shi · Do _____
Gu · Shi · Gun _____
Dong · Eup · Myeon _____

9. Time of departure from home and arrival to place of work or school
① Departure time
② Arrival time

10. Usual means of transportation to the place of work or school, (mark all used means)
① An urban bus
② A seat bus
③ A cross-country bus
④ A commuting bus
⑤ A streetcar, subway or railroad
⑥ A taxi ⑦ On foot
⑦ A private car ⑧ Others
⑧ A bycycle

14. Economic activity status (ask on 15, 16 and 17 only for those who are economically active)	(Economically active) ① Mainly worked ② Worked besides doing house-keeping ③ Worked besides attending school ④ Worked besides doing the others ⑤ Temporarily lay-off (Economically inactive) ⑥ Looking for work ⑦ House-keeping ⑧ Attending school ⑨ Doing nothing ⑩ Others(the old, etc.)					
15. Industry	Main activities undertaken by business or enterprise : Title of business or enterprise :					
16. Employment status of worker	① Employer ② Self-employed ③ Unpaid family worker ④ Employee					
17. Occupation	The kinds of work : Department and position :					
11. Marital status	① Single ② Currently married ③ Widowed ④ Divorced					
18. Age at first marriage (For HH members married and aged 15 or over)	_____ Years ① Before birth date ② After birth date Year of marriage _____					

For HH members aged 1 or over

19. Children ever born, surviving (For women married and aged 15 or over)	Male : Female : Total :				
20. Children ever born, dead (For women married and aged 15 or over)	Male : Female : Total :				
21. Children ever born (For women married and aged 15 or over)	Male : Female : Total :				

(Items on household)

1. Type of living quarters
   ① Detached dwelling
   ② Apartment
   ③ Row house(town house)
   ④ Attached house for dual purpose
   ⑤ Dwelling units in the building not intended for human habitation
   ⑥ Hotels, inns and other lodging houses
   ⑦ Domitories and institutions
   ⑧ Officetel
   ⑨ Others

2. Type of household(If the type of household is collective, do not ask on the following items)
   ① Representative
   ② Attached
   ③ Collective

3. Tenure of ownership
   ① Owned
   ② Rented with deposit
   ③ Monthly rented with deposit
   ④ Monthly rented without deposit
   ⑤ Free
   (① For only living   ② For living and business)

23. Amount of rental charge
    Deposit : _____ Won
    Monthly charge : _____ Won

4. Number of rooms occupied
   ① 1 ② 2 ③ 3 ④ 4 ⑤ 5 ⑥ 6 or over

5. Source of drinking water(mark only the main one)
   ① Public piped water system ② Local piped water system
   ③ Indoor piped water system ④ Manual pump ⑤ Well ⑥ Others

6. Fuel used for cooking(mark only the main one)
   ① Coal briquet ② Oil ③ Gas
   ④ Electricity ⑤ Wood ⑥ Others

7. Heating facilities(mark only the main one)
   ① Traditional fuel hole system ② Coal-briquet fuel hole system
   ③ Pipe coal-briquet boiler system ④ Single piped oil boiler system
   ⑤ Single piped gas boiler system ⑥ Central heating system
   ⑦ Electrictic boiler system ⑧ Others

8. Type of household appliances(mark all owned ones)
   ① T.V.set ② Refrigerator ③ Washing machine ④ Telephone ⑤ Audio
   ⑥ V.T.R. ⑦ Room air conditioner ⑧ Personnal computer ⑨ Private car

9. Facilities of kitchen, toilet and entrance
   (1) Kitchen : ① Sole use ② Use with others use or none
   (2) Toilet : ① Sole use ② Use with others use or none
   (3) Entrance : ① Sole use ② Use with others use or none

10. Type of cooking system : ① Conventional ② Modern ③ None
11. Type of toilet system : ① Conventional ② flush ③ None
12. Type of bathing system : ① Hot & cold water ② cold water only ③ None
13. Piped water system : ① Exist ② None

24. Monthly average amount of household income(in thousand Won)
    ① Less than 200 ② 200 - 300 ③ 300 - 500 ④ 500 - 700 ⑤ 700 - 1000
    ⑥ 1000 - 1500 ⑦ 1500 - 2000 ⑧ 2000 - 3000 ⑨ More than 3000

(Items on housing units) ※ Only for the representative households of which living quarters are detached dwelling, apartment, row house, attached house for
dual purpose or dwelling units in the building not intended for human habitation.

14. Construction material of outer wallers
　① Wood　　　② Red brick, stone　③ Cement
　④ Ferro-concrete　⑤ Soil, soil brick　⑥ Others
15. Construction material of roof
　① Tile　　　② Slate　　　③ Slav
　④ Zinc　　　⑤ Straw, reed　⑥ Others
16. Total area of floor space　　　　：
17. Total ground area　　　　　　　：
18. Number of total rooms　　　　　：
19. Number of households occupied　：

20. Year of construction
　① Prior - 1950　② 1950-1959　③ 1960-1969　④ 1970-1979　⑤ 1980-1985
　⑥ 1986　　　⑦ 1987　　　⑧ 1988　　　⑨ 1989　　　⑩ 1990
21. Number of housing facilities installed
　① No. of kitchens
　② No. of toilets
　③ No. of entrances
22. Type of muti-housing system

Name of a respondent		Signature	
Name of a enumerator		Signature	

Use of the Population and Housing

Census Data in the Republic of Korea

National Bureau of Statistics

Economic Planning Board

Seoul

Republic of Korea

I. Introduction

The crucial interrelationship between population and development planning has been universally recognized. The rapid population growth necessitated a radical change in the economy by creating Malthusian dilemma in predominantly agrarian countries. Since the rapid population growth in Korea also proved to be a formidable barrier to the nation's efforts toward industrial development around the late-1950s, population was integrated in the first five-year economic development plan. Thereafter, the more complex the sociefy becomes, the more population is needed to be integrated into country development plan, particularly in interrelations with resources and environments.

In such a context, the most important is to produce and analyse the data related to population size and structure and their characteristics and to provide them for a variety of users in time. The major source of population data is the Population and Housing Census which provides a comprehensive source of statistical information for socio-economic development planning and the related activities.

With recognizing the importance of use of the Population and Housing Census, the use of the census data, focused on the 1990 census data, will be discussed in the subsequent sections.

II. Utilization of Census Items

One of the most important results of the Korean censuses including the 1990 census is to get the total population of the country as a whole and the population at each level of administrative units at a specified time, which are used

for calculating a variety of socioeconomic indicators such as per capita income, unemployment rate, etc. Those indicators, although some of them need additional data which should be obtained through other sources of data, will be utilized for evaluating the level of life conditions. The classification of the population by age and sex is important in planning various fields of a society such as employment, education, social welfare, etc.

The Korean censuses have been designed to obtain information on educational attainments of individuals which are utilized in planning and estimating the supplementary school facilities and educational personnels. It has been ensured that the educational planning in urban areas is established differently from that for rural areas, since the population structure by age in urban areas is different from that in rural areas.

The censuses were trying to get the statistical information on economically active population classified by industry and occupation and employment status of workers. Such data are utilized in analyzing the present situation and in planning for the future with regard to socioeconomic development. The cross-tabuation of these data with the other items such as education, age, sex, etc. would be more useful for establishing the socioeconomic plans by sub-group of population. In particular, in order to cope with the problems associated with the demand excessive to the supply of economically active population in recent years and in future and the occurrence of the structural unemployment, the 1990 census data will be used for estimating the demand and supply of the labor force by industy, age and sex.

The population change in the population distribution in Korea has been the increased concentration in large cities, especially Seoul and the capital area including Seoul, Incheon-Shi and Kyeonggi-Do, principally as results of internal

migrations.   In order to cope with a variety of socioeconomic problems related to the excessive population concentration,   the Government is undertaking urban planning and rural develpment schemes.

In relation to high population concentration and imbalanced regional develo-pment,   the 1990 census was aimed at collecting the basic data on migration and distribution of population through asking of current place of residence,   the place of birth, the place of residence one year and five years ago.   These data will   enable   the policy-makers   to assess   the level and pattern together with determinants of Korean migration and the distributional status and thereby to analyze the problems of over-crowding,   lacking of urban facilities,   inadequacy of life environments, etc.

Traditional   Korean culture encouraged high fertility and made the decision to have a large number of children reasonable.   Since the population growth were recognized as a main barrier to the nation's efforts   toward   industrial develo-pment,   a vigorous national campaign to slow down   the rate of population growth was launched in the early 1960s with the implementation of a population control program as an integral part of the first five-year economic develepment plan.

During   the past decades,   a rapid decline in fertility   and   mortality has occurred ; the total fertility rate has declined from about 6.0 in the early 60s to 2.1 in 1985,   while the life expectancy of about 57 years increased to about 65 years for men and 71 years for women,   during the same period.   As a result, korea reached the population growth rate below 1% at the mid-1980s.   Korea is now at a turning point in population trends with continuous decline in fertility and mortality.

The plan for birth control depends on when Korea will reach a zero population size and what age strucure will be at an optimal situation. In order to provide an aid at determining such a plan on fertility and mortality, the 1990 census was aiming at obtaining the data on the number of children ever born classified by their survival status.

The 1990 census also included those items on the traffic such as commuting status, place of work or schooling, departure and arrival time to the place of work or school and principal means of transportation, which will be very important in establishing the traffic and transportation-related policies, particularly in large cities.

In addition to data collected about individuals, the 1990 census was to collect and tabulate data on households and housing conditions. Data on the number of households, size and composition will be utilized for estimating the demand for housing and in planning utilites, household appliances and other consumer goods and services. In addition, the number of houses by type and other conditions will be used in planning the supply for the house and the improvement for the housing conditions.

The 1990 census data are very important in the estimating the future population for the whole country and by region and subgroup of population, which include :

   o The projection of population by age (one year and five years) and sex

   o Population projections for schooling population

   o The supply of labor force projection

   o Projection of households

In particular, the population projection using 1990 censn will be made by the small administrative unit, namely Dong, Eup and Myeon,

Ⅲ. Type of the Census Data To Be Disseminated

Dissemination of the census data can roughly be divided into two areas : namely, one is in the form of printed materials and the other electronic media.

(1) Publication

a. Preliminary Report

Like most countries. NBOS issues the preliminary report which contains provisonal counts of population, households and housing units in minor administrative units (i.e. Dong, Eup and Myeon) based on the field control forms completed by the enumerators. Despite obvious limitations, preliminary report is found very useful and provide in advance users with the current total population. The preliminary report for the 1990 census which is to include 17 tables (summary, whole country and each of 15 Shi · Do) will be released by March 1991.

b. Advance Estimates of Population and Housing Census

Census processing is always long and involved. In order to reduce the time of census processing, NBOS has made efforts; for example, NBOS introduced the automation system of data input (Optical Mark Reader System) in the 1990 census. However, it still needs relatively long time up to publishing the final report.

Therefore, to meet the urgent needs for census data and enable the most imporant users to access to data at an early stage, NBOS publishes the advance reports. The report is based on 2 percent sample tabulation on the main characteristics of population, including tables on size and structure, commuting status, migration, fertility, economic activity,monthly average amount of income of household, households and housing units. The number of tables included thus is 21, among which 10 tables are related to population, 7 tables to households and 4 tables are related to housing. The advance report for 1990 census will be released by June 1991.

c. Final Reports

The final report, based on the complete tabulation on the basic characteristics, consists of the volumes : a report for whole country, and separate reports for the 15 provinces or special cities. In addition, 3 volumes of special report on migration, fertility and economic activity are also published.

Those volumes for the 1990 census will be released at different times. Four volumes of reports on the sampled items will be released by December 1991. Among these reports, a report for migration is to include 19 tables, reports for fertility and economic activity are to include 16 tables respectively and that for the amount of rental charge and montly household income is to include 21 tables. Those volumes on the items collected from the entire households on a complete basis consist of 3 reports : namely a report for the whole country which is to include 9 tables on housing, 21 tables on household and 12 tables on housing ; a report for each of 15 Shi · Do which is to include 6 tables on population, 12 tables on household and 12 tables on housing ; and a report for commution to work place or school which is to include 14 tables.

The report containing 7 tables on the economic activities classified by the detailed subgroup of industry and occupation will be released by February 1993.

(2) Establishing the Computerized Data

The data on the report are often insufficient for some users, since contents to be published are too limitted. In order to maximize the use of census data, NBOS is willing to provide census data upon request in the form of special tabulations and in magnetic tapes, diskettes, computer read-outs or terminals containing raw data for important users such as planners, etc. In addition, NBOS established the database covering the census data as well as the other statistical information which are useful for planners, researchers and decision-makers. The Database was launched in 1977, using a batch process. The system was further developed to be equipped with an on-line system since 1980. Ever since, NBOS has developed diverse retrieving systems for users and installed a hierachical DB system, using IMS, to fit the existing IBM4381(16MB) computer.

In order to provide small area statistics based on the 1990 census, NBOS tabulates statistical information for a wide variety of standard geographic areas which include Shi/Do, Dong/Eup/Myeon and enumeration districts. These statistics for the standard geographic areas satisfy the information needs of many users who require the infomation for unique geographic areas they may refer to in their own terms such as trade areas, service districts and consumer markets.

Meanwhile, in order to strengthen 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. Thereafter,

seminars on the results will be organized, since the seminar held in November 1989 on the results of the 1985 census was found to be very fruitful and encouraging.

Ⅳ. Users of the Census Data

The main objectives of the census is to provide the essential data to governmental planners, policy-makers, administrators and researchers at research institutes or universities. NBOS is also to meet data needs from private sectors which include cooperatives, social welfare agencies, companies, professional groups, political parts, traders, industries, etc. The main form of the census data to be provided is the printed report which is sent to libraries in universities, research institutes or government agencies or sometimes to individuals on a free basis.

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 organization, usually on an exchange basis.

However, it is difficult for NBOS to provide the report for all users, mainly from the private sector, due to the limited number of printed report. Therefore, NBOS recommends those users either to make use of those libraries including NBOS library or to purchase the reports from the Korean Statistical Association which is allowed to reproduce the reports for sale.

Other forms of providing the census data are magnetic tape, database, etc. Especially in case that those users require special tabulations not presented in the report, NBOS establishes the requested tabulations using NBOS computer facilities but at users' expense.

V. Conclusion

The main objective of carrying out the census is to provide, in time, the essential and foundamental data for a variety of users from both public and private sectors including planners, pulicy-makers, decison-makers, researchers, traders, etc. In order to meet the urgent needs of users, NBOS is aiming at releasing the preliminary report and advance report before the final report.

In particular, NBOS introduced the automation system in data input(Optical Mark Reader System) newly for speeding up the processing of the 1990 census data.

Since the provision of the census data with reliablity is of great importance, NBOS will have made efforts to ensure the reliablity of the 1990 census data at all stages from the beginning state of establishing plans to the endinng stage of publishing reports. In order for such an important purpose, a special emphasis was put on conducting post-enumeration survey.

THIRTEENTH POPULATION CENSUS CONFERENCE

East-West Population Institute
Honolulu, Hawaii

December 10-14, 1990

AN OVERVIEW OF THE POPULATION AND HOUSING
CENSUS OF MALAYSIA
1991

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AN OVERVIEW

OF THE

POPULATION AND HOUSING CENSUS OF MALAYSIA

1991

I. INTRODUCTION

1. A census of population and housing is an expensive undertaking. Being the most important and the largest statistical activity undertaken by a national statistical office, a census needs careful planning. The planning and preparation for census includes consultation with users, testing of questionnaires and methods of enumeration, identification and demarcation of enumeration areas, the conducting of a trial census, the establishment of finance and administrative procedures, the setting up of methods and procedures for manual and computer processing of the census questionnaires and the output of census, in terms of tabulations and reports.

II. HISTORICAL BACKGROUND

2. Malaysia has a fairly long history of census taking. Prior to the formation of Malaysia in 1963 (which comprises the eleven states of Peninsular Malaysia, Sabah, Sarawak and the Federal Territories of Kuala Lumpur and Labuan) the censuses have evolved from simple head counts to detailed enquiries but confined to some

parts of Malaysia only. Census counts were recorded as early as 1750 but only for the state of Malacca, one of the states of Peninsular Malaysia. The first census covering all of Peninsular Malaysia was conducted in 1911. Subsequent censuses were taken in 1921, 1931, 1947 and 1957. The states of Sabah and Sarawak had their first censuses in 1901 and 1939 respectively and their most recent census prior to joining Malaysia, in 1960.

3. The first census carried out throughout Malaysia was in 1970 and the most recent in 1980. Preparations are underway for the conduct of the next population and housing census in August 1991.

III. BASIC OBJECTIVE OF THE 1991 POPULATION AND HOUSING CENSUS

4. The basic objective of the 1991 Census is to yield information on the count of the entire population in Malaysia at a specific point in time (the Census Day). The count must be accurate and must be made available as soon as possible. To achieve this, the coverage geographically must be complete. In addition the census also provides basic information about subgroups of population by sex and age at national and sub-national levels. However to meet users' needs, the demographic and socio-economic characteristics of the population as well as their housing particulars are also collected. In

order to evaluate the quality of the 1991 Census, a post enumeration survey will be conducted.

IV. LEGAL BASIS FOR CENSUS TAKING

5.   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.   In exercise of the powers conferred by the Census Act, the Yang di-Pertuan Agong (the King) directs the census to be taken in 1991 and appoints the Chief Statistician of Malaysia to be the Commissioner to supervise the taking of the census. This has been gazetted and published on 10 May 1990.

V. CENSUS ORGANIZATION

6.   In planning   for the 1991 Population and Housing Census of Malaysia, the organization of the census is quite different from that adopted for the censuses in 1970 and 1980.

7. 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.

8. 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.

9. 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, administration, preparation of census documents,

training, 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 commissioner (numbering 16) while assistant commissioners (totalling 147) and district superintendents (totalling 465) will be drawn from each district. Supervisors will be principally drawn from serving government officers while all enumerators, on the other hand, will be recruited from the open market. It is estimated that a total of some 36,500 enumerators and 5,200 supervisors will be required for the 1991 Census.

VI. CENSUS COSTS

10. The total expenditure for the 1980 Census covering the period 1979 to 1982 amounted to about M$49 million (ringgit). The major expenditure items were 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 procurement of computers for census processing. Current estimates for the conducting of the 1991 Population and Housing Census indicate that the total cost will be in the region of M$100 million (ringgit).

VII. CENSUS APPROACH

11. The planning and preparation of the 1991 Census began early 1988. The trial census was completed by September 1990. For the 1991 Census several new approaches will be adopted as outlined below:-

(a) Increasing Role of Branch Office

12. It is envisaged that for the 1991 Population and Housing Census of Malaysia, the 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. In addition, the branch offices will also be responsible for the processing centres.

(b) Number of Stages

13. The 1991 Population and Housing Census will be conducted in one stage, unlike that in 1980. Because

of less items proposed for the 1991 Census, the census questionnaire has been consolidated into a single questionnaire, thus removing the need to have a two stage Housing and Population Census. 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 housing characteristics such 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 Day was obtained.

(c) Mapping

14. 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 of about 500 persons. Each EB will be the area of work of one enumerator. These EBs will be grouped into units of covenient size (7 blocks) to form census circles, each of which constitutes the responsibility of a supervisor. An average of about 15 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.

15.   In the 1991 Census, ·there are some additional new features. Unlike the 1980 Census, where the EB maps were prepared in different sizes which posed handling and operational problems during enumeration, the 1991 Census 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 which was not done in 1980. 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 techonology.

(d)   Census Topics and Questionnaire

16.   Compared to 1980, the 1991 Census questionnaire contains fewer topics. The topics selected in the 1991 Census represent the more important topics of national

interest and most demanded by users. The topics are basic, simple but informative. (See Appendix 1 for the detail).

17. The questionnaire covering living quarters, household and person adopts an integrated approach. Household and person characteristics can be cross-tabulated with living quarters particulars unlike in 1980. The 1991 questionnaire is designed for "keying-in" as the means for data entry rather than optical mark reading (OMR) as was done for 1980.

(e) Coverage Improvement Approach

18. Several new approaches will be adopted to improve the 1991 Census coverage, supervision and quality of data. They include:-

> (i) improving supervisor-enumerator ratio from one supervisor to ten enumerators (1:10) in 1980 to one supervisor supervising seven enumerators (1:7) in 1991;

> (ii) identification of difficult areas and pre-listing to be done before enumeration; and

> (iii) Supervisory checks with control figures (estimated) to ensure that enumeration totals are close to actual.

(f) Data Processing

19. There will be new approaches with respect to processing for the 1991 Census. Firstly, there are plans for processing to be undertaken on a decentralised basis in ten regional centres throughout Malaysia. The rationale for decentralised processing is primarily based on the need to minimise the transportation of census forms all over 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 regional centres will make it possible for the capitalization 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 headquarters for processing.

20. 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 centralised training of regional staff. In addition it is hoped that with the development of detailed and standardised instruction manuals to be used by the ten regional centres, the problem of uniformity can be resolved.

21. 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.

(g) Computer Processing

22. 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 such as the need of considerable lead time (since special

paper needs to be· used for printing and has to be ordered well in advance), stringent conditions (e.g. printing position, special ink, etc.) to be observed in the printing of the forms and limited future use of the OMR machines.

23. The rapid advances in micro-computers, bringing in its 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 package is now being tested and found to be working. The module called CENTRY of this package will be used for data entry carried out in the regional processing centres while editing and tabulations will be done using the CONCOR and CENTS modules respectively at the headquarters. The Department does not therefore have to mobilise the necessary skilled manpower to develop its own systems and programs.

(h) Publication and Dissemination of Census Data

24. The tabulation and publication plan for the 1991 Census is not very different from that adopted in 1980. The first report expected from the 1991 Census ʻwill be a

field count summary which will show the number of living quarters (vacant and occupied), households and persons (male and female) for states and administrative districts in the country. It is expected to be released within 4 months after the completion of the census.

25. 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. 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 levels for a few selected important characteristics. In addition to this, special reports focussing on certain topics of special interest will be produced.

26. For the 1991 Census, plans are underway to exploit the modern computer technology towards improving production and speedy release of census results. New technology enables the production of publication quality copy directly from computer files with minimal manual intervention. 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.

27. Advances in computer technology makes it possible to store data in table formats in the form of optical discs and CD ROM and retrieval to be performed whenever required. Plans are underway to look into the feasibility of using such an approach for data storage for the coming 1991 Census. This will save storage space and retrieval of data can be easily done.

28. In terms of the dissemination of data, it will not only be through the traditional means of publication alone but also includes a range of media such as maps, sample tapes, diskettes, and other electronic media.

VIII. CONCLUSION

29. The new approach adopted for the 1991 Census is expected to provide a good count of the population with minimal undercoverage at a minimum cost. The result of the census is also expected to be timely. In addition, the obvious benefits of the new approach is in enhancing the role of the Department's branch offices and the availability of the microcomputers at the end of the census.

Department of Statistics,
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November 1990.

PROPOSED TOPICS IN THE POPULATION AND HOUSING CENSUS, MALAYSIA, 1991

A.   Living Quarters

1.   Location of Living Quarters

2.   Type of Living Quarters

3.   Construction Material of Outer Wall

4.   Year of Construction (Completed)

5.   Occupancy Status

6.   Ownership

7.   Water Supply

8.   Type of Lighting

9.   Toilet Facilities

10. Shared Toilet Facilities

B.   Household

1.   Number Of Persons In Household

2.   Number of Household

3.   Household Items

C.   Person

1.   Place Where Present At Time Of Census

2.   Relationship To The Head of Household

3.   Sex

4.   Date of Birth

5. Age*

6. Place of Birth

7. Marital Status

8. Ethnic Group

9. Religion

10. School Attendance

11. Highest Educational Attainment

12. Highest Educational Qualifications

13. Place of Usual Current Residence

14. Usual Place of Residence 5 Years Ago

15. Citizenship Status

16. Employed

17. Reasons For Not Working

18. Previous Working Experience

19. Hours Worked

20. Occupation

21. Industry

22. Employment Status

* Only if date of birth cannot be obtained.

POPULATION AND HOUSING CENSUS OF MEXICO, 1990:

A PRELIMINARY PROGRAM OF DISSEMINATION OF RESULTS.

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POPULATION AND HOUSING CENSUS OF MEXICO, 1990: A PRELIMINARY PROGRAM OF DISSEMINATION OF RESULTS

INTRODUCTION

The modern history of census taking in Mexico goes back to the end of the last century. Starting in 1895 and thereon from 1900 every ten years (except in 1921) this long tradition has permitted to accumulate a rich experience on census taking in Mexico. In every new round, within the particular circumstances of each census, considerable effort has been made to make the best use of available methodological and technical advances, to meet the various needs of census information. This is certainly so for the 1990 population and housing census just completed last March.

The ongoing National Development Plan 1989-1994 states firmly the intention of fostering the modernization of Mexico on three fundamental domains: political, social and economic. Very specific information needs stem out of this mandate. One is to provide more abundant, opportune and accurate statistical information to an increasingly informed society, more politically organized and more productive. Another derives from the need that the ever more complex processes of decision making require increasingly detailed information and analysis, more firmly grounded on accurate facts, and on which to be able to base realistic strategies and goals.

The institutional compromise to modernize the National Institute of Statistics, Geography and Informatics pursue six basic programmatic goals. Let me rewiew briefly each of these.

1. Decentralization. Here the most salient steps in this process were the moving out of Mexico City of the headquarters of the Institute, and the creation of ten Regional Directorates with offices in every State. A more prompt and adequate response to the needs of local and regional demands for information is one of the most prominent results of this policy.

2. Specialized training of personnel. The Institute is currently implementing an ambitious training program concentrating on increasing the technical skills of mid-level personnel in the central and regional offices. At the same time, it provides training for various Federal Departments and State Government offices. Plans are in progress also to establish a Regional Training Center for Latin America with the auspices of the United Nations, the Organization of American States and the World Bank.

3. Furthering the use of advanced methodology. In this respect, concerted programs with the scientific community incentivate the development and application of advanced methods in various fields of the Institute's endeavours.

4. Widening the use of modern technologic instruments and

infrastructure. Here the aim is to increase the productivity of the Institute. Areas on which these advances are currently under utilization are satellite transmissions and aerial photo.

5. Concertation with social sectors. Here dialogue mechanisms with the social, private and governmental sectors are currently in opoeration to design a common frame to produce and disseminate information more usefully, eficiently and promptly.

6. Communication and dissemination of information. One preeminent aim in this respect is to enhance the demand of information products from the Institute. Here the users are invited to participate in the definition of various projects, and particularly in delineating their expected results and better forms for their dissemination.

THE 1990 POPULATION AND HOUSING CENSUS.

The 1990 Population and Housing Census incorporated important changes. Its planning required a series of experiments and trials to ensure the feasibility of the new improvements.

The goals of the 1990 Census derived from a thorough evaluation of the 1980 Census: a more complete coverage of population and houses, to improve the quality of information and to obtain opportune results.

To meet these goals a general strategy was implemented including: widening the period of the census taking period from one to five days; adequate the questionnaire to the new conditions of the census taking; setting a wide publicity program; and decentralizing the planning, processing and dissemination of the information.

THE CENSUS PUBLICITY CAMPAIGN

An important activity of the 1990 Census constituted the sensitization campaign oriented to inform the whole population about the census taking, to motivate their participation and to orient their answers on question relatively complex. The campaign utilized all the available means of communication, seeking to reach all segments of the population by conventional and non conventional means.

Within the former a wide arrangement of mass means were used: newspapers, radio, television, cinema, leaflets, posters and billboards. The later consisted on. concerted actions with public and private institutions to participate in the census with publicity promotions such as: having the census logo printed on the packs of mass consumption goods; on diverse publications; talks to explain the census to their personnel and regional branches; reproduction of posters, leaflets and other printed materials. This

was the first time in the history of census taking in Mexico of

such an unconventional publicity approach, and its results

surpassed all expectations. Altogether, over 6 000 talks and

meetings took place, 1 200 millions packs with the logo were

produced, and 33 millions of commercial bills and bank account

notes were issued with different census messages.

The support of the federal sector was extremely relevant, with

the Department of Education and the Department of Health playing

very crucial and salient roles. The former incorporated a census

chapter in all primary education text books, and talks were given

to teachers so that, a week before the census, they could lecture

elementary and secondary students on the census.

The use of mass media was extremely significant as it allowed

to reach all segments of the population on short time. Altogether,

5 000 newspaper adds were published, 2.5 million messages on radio

and television were issued, and 114 interviews took place on radio

and television.

The effects of the publicity campaign not only induced a large

response of the population but incited the curiosity of the public

about the results of the census as well as on the activities of the

Institute.

EXPECTED RESULTS OF THE PUBLICITY CAMPAIGN ON THE COMMERCIALIZATION OF CENSUS PRODUCTS.

All the above mentioned publicity efforts on behalf of the census, and the complex matrix of individual and institutional contacts that took place with public and private agencies and with the public in general, represent an opportunity to promote dissemination of the census results, some of these through commercial exchange.

Some of the current projects at the Institute to disseminate the census results comprise the following: brief messages and information notes for radio and television news; leaflets of information at state level; newspaper notes focused on particular census subjects; promotional leaflets for institutions, business, and research centers using relevant census information; articles for weekly magazines developing topics pertinent for their audiences; materials for teaching instruction. All these dissemination efforts open the way to eventual commercialization contracts either directly by the Institute or jointly with private agents.

CENSUS DISSEMINATION PROGRAM.

The essential aim of the census dissemination program is to ensure a prompt an as wide as possible spreading of the census

results. Traditionally, their presentation has been through printed tabulations. With the advances in microcomputing, work stations, expert systems and compact disks, a wide range of possibilities exist to disseminate census results in new ways.

The current dissemination program at the Institute comprises two variants. One integrated by conventional publications in paper and through diskettes, magnetic tapes and data bases. The other based on agreements with public and private agents interested in utilizing and disseminating census data. Schools, libraries, information departments in government offices and business are prime candidates for such agreements.

The "target" use of the information is the leading criterium guiding the design of the products. A tentative classification of uses is as follows:
- planning
- resource administration
- decision making
- research
- teaching
- training
- communication
- contextual information
- basic statistics
- derived statistics
- others

A further criterium to guide the exploitation of census data stems from a study (including a survey) conducted to evaluate the potential demand of census products. From it, two demands appeared as dominant: geographic breakdown of statistical information, and time series data. Efforts are under way to try to meet these requests. For this purpose, two systems of dissemination are contemplated in the program, through magnetic means and data bases. The first constitutes a mean of accessing data already tailored according to preestablished criteria. The second constitutes access to basic data, such that the user can accommodate his various demands of information, with great flexibility regarding formats and desired breakdowns.

A number of "networks" of information users was also identified from the study, each with particular information needs in various degrees of complexity. Two groups stem out as particularly important for their strategic relevance for actions bearing on social and economic development: users of information for state and regional planning, and specialized users. We denote the two as constituting information "systems".

The purpose of the first system --for the state and regional planning-- is to provide the planning areas of State governments with information relevant for their very responsibilities. The great diversity of information needs of these planning units, albeit sharing some common elements, hinders however the

possibility of developing a unified national system. Therefore, the Institute is taking steps to request each of its ten Regional Directorates to conduct a thorough assessment of the information needs for planning purposes on each of their State offices. When already in place, each of these systems will be administered by the Regional Directorates of the Institute.

A number of specialized users of census information pose also particular information needs. Here, the academic sector joints the group of users together with specialized requests from the public and private sectors. Besides the means already mentioned --special processing in magnetic means and access to data bases-- a number of specialized publications are planned to satisfy their information needs. A series of "special volumes" of census tabulations is being considered. Selected topics are: indigenous languages spoken; educational characteristics of the population; selected demographic aspects; households and families; characteristics of dwelling units; and municipal (county) indicators. These will comprise mostly selected tabulations.

A second series of publications, of a more descriptive nature, is also planned. Some selected topics for this second series are: the condition of women; children and youngsters; the elderly; the indigenous groups; social stratification; extreme poverty; population distribution in the metropolitan areas; the border zones; rural and urban areas; family income; and households.

FINAL REMARKS

The dissemination of census results constitute not a simple byproduct of the census itself, but an integral aspect of the whole endeavour of census taking. To a large extent, the rich of information emanating from every census bridges the inescapable lapses of time that separate every census taking. At the same time, an appropriate dissemination program enlarges the value and the usefulness that, without a significant effort in this regard, may remain hidden in the census information.

A thorough use of the census information requires some degree of education, which can be met thrrough deffinite efforts in extending the scope and spreading of the results. Dissemination per se, however, as a mere communication effort does not push the barrier too far. It certainly has to go hand in hand with substantive views and analyses relevant for the concerns of society in all levels, from the individual, to the local, to the aggregate level. In this last function, by the bridge it builds between producers and users, the dissemination of the census results work also in the opposite sense, that is, it entices feedback information from the users to the producers on the perceived relevance of their products, and, by that fact, sets criteria for adequateness and improvement.

THE PLAN OF TABULATION AND DISSEMINATION OF CENSUS DATA

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In India, population census is conducted decennially under the provisions of the Census Act, 1948. The next census will be conducted with 1st March 1991 as the reference date. The actual enumeration work will be spread over 20 days from 9 February to 28 February, 1991. A revisional round will be undertaken from 1st to 5th March, 1991.

2. Prior to the conduct of the census, a houselisting operation has been carried out throughout India. In this operation, all the houses were numbered wherever necessary and notional maps and layout sketches prepared. This houselisting operation has been conducted between April and September 1990. The houselisting operation has provided a frame for conducting the population census. The opportunity of houselisting was utilised to collect data on the housing conditions particularly material of wall, material of roof and material of the floor as also the amenities available to the households living therein, like, whether the households live in owned or rented house, the number of living rooms, the source of drinking water supply, whether the source is within the premises or outside the premises, availability of electricity and availability of toilet facilities etc. Data on the type of fuel used for cooking was also collected. Whether the head of the household belongs to scheduled caste or tribe was also enquired into. The schedule used for houselisting may be seen from the tabulation plan circulated separately.

Household schedule and individual slip:

3.   The "Household Schedule" and the "Individual Slip" will be canvassed in the census during February - March, 1991. The formats of these schedules may also be seen from the tabulation plan. The household schedule will be filled up in two stages. In stage one, columns 1 to 7 would be canvassed in the field for all the members of each household taken together. The remaining columns of the household schedule would be copied from the Individual Slip, by the enumerator after doing his day's work. The individual slip would be the main schedule canvassed for each individual. This is the main document based on which a large number of tables would be brought out. The individual slip would be processed on computer. The purpose of the household schedule is to bring out the provisional results quickly. It will also enable the generation of primary census abstract of the smallest area manually on a 100 per cent basis.

Processing of the census data:

4.   In the 1991 census a judicious mix of manual and computer tabulations would be resorted to for bringing out data as quickly as possible. It is proposed to release the following series of tables.

A-Series   General Population Tables

B-Series   General Economic Tables

C-Series   Social and Cultural Tables

D-Series   Migration Tables

F-Series   Fertility Tables

H-Series   Tables on Houses and Household Amenities

SC-Series   Special Tables for Scheduled Castes

ST-Series   Special Tables for Scheduled Tribes

and

Village & Town Directories

A copy of the tabulation plan is enclosed. This gives the details of the tables proposed to be generated.

5.   In each of the series a number of tables are proposed to be generated. While most of the tables have the same format as in the previous census, a number of new tables have been included after considerable discussion with data users. The data users consisted of some of the international bodies (like UNDP), Government departments, research institutions, universities and individual scholars.

Sampling for Tabulation - A few considerations:

6.   One of the important aspects of data collection which was discussed in detail at the advisory committee meetings is the detailed scope of the tabulations required and the sample size required to present such detailed tabulation at lower area levels. The sample size required would obviously depend on the area levels of presentation and the details of classification requi- red. If the data are not required for very small area levels and too many classifications are not required, then sampling can be used successfully. However, if the sampling is to be adopted for presenting tables with detailed classifications, like the econo- mic and occupational classifications, then the area level for which data can be presented would have to be necessarily big. For ex- ample, in the Indian census the industrial classification is to be presented at 3 digit level for 379 minor groups. Similarly occupational classification has to be presented for 462 families. To reduce the work-load at collection stage, and coding stage, Indian census traditionally collects details of industry and occupa- tion, only for those who are not cultivators or agricultural labour- ers. Cultivators and agricultural labourers constitute about two- thirds of the total workers. The remaining labour force engaged

in activities other than cultivation and agricultural labour constituted about 11 per cent of the population in 1981. In the rural areas such workers constitute less than 5 per cent. In particular, female workers other than cultivators and agricultural labourers constitute less than 1 per cent of the total population in rural areas. Presenting detailed classification of industry and occupation for levels lower than districts would require a very large sample size.

7.   In the 1981 census, a 20 per cent sample of enumeration blocks was selected for canvassing certain detailed questions on fertility and migration. The questions on industrial classification and occupational classification of individuals were included in the universal slips which was canvassed in all areas. Due to difficulties in processing of such large volumes of data it was decided to bring out the tables pertaining to the economic activity also on the basis of sample. Theoretical requirement would suggest that one should have selected different samples for different questions and the sample size may vary from question to question. However, in a large scale operation like the Census of India, this becomes very difficult to achieve. In view of this, it was decided in 1981 that in the first stage, B series tables would be generated on the same area sample selected for the canvassing of fertility and migration questions. The tables based on 20 per cent sample of enumeration blocks were generally acceptable for fertility and migration characteristics. However, because of the clustering effect and detailed classifications of industry and occupation, the tables of the B series giving the economic classification of the population were subjected to large standard errors. The Census Commission later on had to process the economic tables and social and cultural tables, on the basis of a 20 per cent sample of individual slips.

8.   For the 1991 census this experience has been taken into account and it has been decided that all the questions will be canvassed on a universal basis for all individuals in all areas. Since the cross tabulations are not very detailed in case of fertility, migration and social characteristics, it has been decided that at stage-1, a 10 per cent sample of individual slips would be selected to provide most of the tables required at national, state and district level. All the B series tables to be presented on the sample basis have been reviewed in the light of the sample size and details of classification reduced wherever required. Similarly in the C series tables, tables relating to mother tongue and religion etc., which provide data on small groups have been separated out for processing on a 100 per cent basis from the household schedule.

9.   To present data for smaller area levels based on detailed industrial and occupational classifications of the population, it was decided that slips relating to workers other than cultivators and agricultural labourers and those relating to marginal workers and persons seeking work would be entered on 100 per cent basis at stage-2 of processing. The files relating to these slips together with the slips entered in stage-1 relating to workers other than cultivators and agricultural labourers, would be merged and a new file created for processing of data relating to economic questions. This would provide estimates of industrial and occupational classifications at very low (small area) levels. In fact, it may be possible to provide data at Community Development Block level, if required.

10.   There are certain special categories of population like Scheduled Castes(SC) and Scheduled Tribes (ST) for whom a number of target-specific programmes have been initiated by Government. For these groups detailed information would be required on liter-

acy, school attendance, industrial and occupational profiles at much lower (smaller area) levels. In view of this, it has been proposed to process all the individual slips relating to scheduled castes and scheduled tribes at stage-3. Some of the occupations on which these castes were traditionally engaged have been identified in advance and included in the occupational classification at three digit levels, so that data could be provided on these occupations.

11.   Because the data on marginal workers are being computerised on a 100 per cent basis it would be possible to provide more exhaustive and comprehensive information about the work-force at lower (smaller area) levels. Both in the 1981 and 1971 censuses, only a few selected tables were prepared for "marginal" workers. Most of the tables giving detailed industrial and occupational classifications were prepared only for "main" workers i.e., persons who had worked for more than 6 months during the year preceding the count. This was done purely from sampling considerations. This had one undesirable consequence. Most of the marginal workers were females. In view of this the census could not bring out a complete picture of the total work force in general and female work force in particular. A number of groups looking into the special problems of female work force had specifically requested the Census organisation to bring out these tabulations. With the modifications proposed in the 1991 census relating to tabulation of marginal workers on a 100 per cent basis, a number of tables would be generated for marginal workers also. This, it is felt, would enhance the utility of 1991 census data on work force.

Small area data:

12.   One of the important uses of census is to produce data at lower area levels. However, in view of the large volume of data to be processed, resort has to be made to sampling. With sampling it would not be possible to produce detailed classifications and cross-tabulations in a comprehensive manner at small area level. This problem has been very closely examined while

framing the 1991 census tabulation plan. As explained in the pre-
vious paras statistics required at small area levels have been
identified and these alone are being processed on a 100 per cent
basis. Items on which statistics are required at higher area levels
or on which the cross-classifications are not too detailed are
proposed to be covered on a sample basis. This approach seems
to be a via-media between 100 per cent processing and sampling
processing.

Tables to be generated manually:

13.   The Primary Census Abstract (PCA) which is published
at Village/Ward level would be based on manual tabulation from
household schedules. The primary census abstract gives sexwise
data on population, number of literates, number of main and margi-
nal workers and the industrial composition of the main workers
at village and urban blocks separately. This is considered as
primary data produced by Indian Census for the smallest local
area levels. Apart from the PCA, data on language and religion
would also be generated manually from the household schedules.
All other tables would be generated based on individual slips.
Based on the population figures in PCA, other tables of A-Series
would be prepared. Tables relating to mother tongue, religion
and household composition in C-Series and the tables on ex-service-
men would also be generated by manual tabulation. The PCA relating
to SC/ST would be generated from household schedules. All these
tables will be based on 100 per cent processing of data.

Tables to be generated on computer:

14.   The individual slips of smaller states (population less
than 10 million) and Union Territories will be processed on a
100 per cent basis on the Computer. The processing of indivi-
dual slips for bigger states would be undertaken in three stages
as explained below.

15.   In the first stage, a 10 per cent sample of individual slips will be used to prepare all the tables in F-Series and most of the tables in B, C and D-Series. In the second stage, all slips relating to workers other than cultivators and agricultural labourers, marginal workers and those seeking/available for work will be processed on a 100 per cent basis for providing detailed tables on economic activity. In the third stage, all slips relating to Scheduled Castes/Scheduled Tribes will be processed to generate the tables for SC/ST.

16.   As mentioned earlier, the tables in B-Series will be generated in two stages. In stage one, some essential and broad details relating to 'workers' and 'non-workers' would be given. Since there will be some time gap between the availability of the data from the two stages (stage-1 and stage-2) it is proposed to bring out in stage-1, some of those tables in condensed forms. For example, the industrial cum occupational category in stage-1 would be only four fold, namely, cultivators, agricultural labourers, those engaged in household industry and other workers. The detailed tabulation of the same will be available from stage2. This will provide the data users with estimates of the important variables from stage-1, though not as detailed as will be available from the second stage. In a few cases the detailed tables would be available at state level in first stage and at district or smaller area (sub-district) level in the second stage. Those tables relating to all workers including cultivators and agricultural labourers will be generated from the first stage only, as the data on cultivators and agricultural labourers will not be processed in the second stage.

17.   In C-Series most of the tables will be generated from the sample. As already pointed out, tables relating to mother tongue and religion will be generated manually on full count. All the tables in D-Series except tables D-12 and D-14 will be generated in the first stage from the sample. Tables D-12 and D-14 which relate to migrant workers other than cultivators and agricultural labourers will be generated in the second stage on full count.

18.   Most of the fertility tables will be generated in the first stage from the sample. The tables on fertility characteristics relating to Scheduled Castes/Scheduled Tribes will be generated only in the third stage from 100 per cent entry of the SC/ST data.

19.   H-Series tables which give data on houses and household amenities will be based on data collected at the Houselist stage and will be processed on the computer on the basis of a 20 per cent sample of census houses.

Village Directory and Town Directory:
20.   The Village Directory gives a list of villages, their areas, population, amenities such as schools and drinking water, etc., available in the village and land use. The Town Directory gives for each town the area, population in 1991 and past censuses, growth rates, density, sex-ratio, physical aspects of town, communications, municipal finances, civic, medical, educational and other amenities and trade, commerce, industry and banking facilities.

Time Schedule for dissemination of 1991 Census Data:
21.   After the census enumeration is over in the first week of March, 1991, the provisional results for the country, states and union territories giving the basic statistics of population classified by sex and literacy are proposed to be released in the last week of March, 1991, through Paper 1 of 1991. Later on, some time in September 1991, Paper 2 of 1991 giving provisional rural and urban distribution of population of the country, the states and the union territories is proposed to be released. Paper 3 of 1991, giving provisional data of the 1991 census on the distribution of population by workers and non-workers is proposed to be released by December 1991. The provisional results to be published in papers 1, 2 and 3 will be based on quick tabulation of field totals compiled from the enumerators' abstract. The state volumes of these provisional papers will contain data at state, district and city levels.

22.   The Primary Census Abstract giving the smallest area basic data based on manual tabulation is expected to be released by September 1992. Based on the data contained in the PCA, A-Series tables will be compiled and released from February 1993 onwards. The tables on religion and mother tongue are proposed to be released around March 1993.

23.   Based on the computer processing of the houselist, the tables of the H-Series would be released by the end of 1991. Tables based on processing of stage-1 slips, stage-2 slips and stage-3 slips may be released by end of 1993, end of 1994 and end of 1995 respectively.

Data User Services:

24.   In 1981 census, for the first time data for both rural and urban areas were available on tapes. These tapes are being made available to the various national users on a payment basis. In the 1991 census also it is proposed that similar services would be available. While the basic data tapes were made available, all tables generated were disseminated only through printed books. In the 1991 census it is proposed that all the tables generated may be transferred to floppy disks. The floppy disks may be made available to the data users in addition to printed books. This may fulfill the requirement of most of the data users.

ANNEXE-I
CENSUS OF INDIA 1991
HOUSELIST

Name of State/UT .... Code No. .... Name of village/town .... Code No. ....
Name of District .... Code No. .... Name or No. of ward/muhalla/hamlet .... Code No. ....
Name of Tehsil/Taluk/P.S./ .... Code No. .... Enumeration Block No. ....
Dev. Block/Circle, etc.

Name of Dev Block .... Code No. ....

Line No.	Building No. (Municipal or local authority or census No.)	Census house No.	Predominant construction material of census house — Wall	Predominant construction material of census house — Roof	Predominant construction material of census house — Floor	Purpose for which census house is used (if wholly or partly used for running one or more enterprises, fill enterprise list)	Household No.	Serial No. of the household	For Head of Household only, write — Name	Male (1)/Female (2)	SC (1)/ST (2) (if SC ascertain religion and write 'H' for Hindus and 'S' for Sikhs within brackets after code 1)	Does the household live in owned or rented house? Write 1 for owned, 2 for rented 3 for others	No. of living rooms in the occupation of household	Drinking water supply — Source	Drinking water supply — Within premises (1)/Outside premises (2)	Electricity : Yes (1)/No (2)	Toilet : Yes (1)/No (2)	Type of fuel used for cooking	Is the household or one or more members of the household engaged in one or more enterprises outside this census house and without premises or in the open air? If yes, fill enterprise list	No. of persons normally residing in the household — Males	No. of persons normally residing in the household — Females	No. of persons normally residing in the household — Persons	Remarks
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
0																							
*Total						*Total														Total			

*Count the number of entries and give total

Key to Codes:

WALL (Col. 4): Grass, leaves, reeds or bamboos (1) Mud (2) Unburnt bricks (3) Wood (4) Burnt bricks (5) G.I. Sheets or other metal sheets (6) Stone (7) Cement concrete (8) Ekra (9) and Others (10)

ROOF (Col. 5): Grass, leaves, reeds, thatch, wood, and unburnt bricks or bamboos (1) Tiles, slate or shingle (2) Corrugated iron, zinc or other metal sheets (3) Asbestos cement sheets (4) Brick, Stone and lime (5) Stone (6) Concrete R.B.C./R.C.C. (7) and Others (8)

FLOOR (Col. 6): Mud (1) Wood/Planks (2) Bamboo or log (3) Bricks, Stone etc. lime (4) Cement (5) Mosaic/Tiles (6) and Others (7)

SOURCE OF DRINKING WATER SUPPLY (Col 15): Well (1) Tap (2) Handpump/tubewell (3) River/canal (4) Tank (5) Others (6)

TYPE OF FUEL USED FOR COOKING (Col 19): Cowdung cake (1) Electricity (2) Coal coke/lignite (3) Charcoal (4) Cooking gas (5) Wood (6) Bio-gas (7) Kerosene (8) and Others (9)

Signature of Enumerator .... Date ....

Signature of Supervisor .... Date ....

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CENSUS OF HOUSEHOLD

Book No. .... Form No. ....

Location code ....

Serial number of household ....

Sl No	Name	Relationship to head	Sex		Age	Marital status	Mother tongue	Religion	Whether SC(1) or ST(2)	Name of scheduled caste/tribe	Literate	Illiterate	Male			
			M	F									Entry in 14A		Entry in 14B	
													Yes	No	Yes	No
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Total**																

	SC	ST
M		
F		
P		

**In the boxes give the total after counting the entries.

Signature of Enumerator ....

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INDIA 1991

SCHEDULE

Type of household (Institutional or Houseless)* ....

Code No. of Development Block ....

Sl. No.	Male — Entry in 15A				Literate	Illiterate	Female — Entry in 14A		Entry in 14B		Entry in 15A				Name of establishment	If OW in 15A indicate — Nature of Industry, trade or service	Description of work
	C	AL	HHI	OW	Literate	Illiterate	Yes	No	Yes	No	C	AL	HHI	OW			
	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
1																	
Total																	

Checked and found correct

Signature of Supervisor ....

For office use only

Category	M	F	Category	M	F	Category	M	F
III	-	-	VI			IX Marginal Workers		
IV			VII			X Non-Workers		
V(b)			VIII					

* For Institutional write I
For Houseless write 0

Signature of Coder ....

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CENSUS OF INDIA 1991   INDIVIDUAL SLIP   CONFIDENTIAL

Location Code............................(   ) Sl. No. of Household   [   ] Pad No. .....

Code No. of Development Block ....   Slip No. ....

1   Name........

2   Relationship to head.................   8   Religion........................

3   Male (1)/Female (2)   9   Whether S.C. (1) or S.T. (2) ....

4   Age   10   Name of Scheduled Caste/Tribe......

5   Marital status........................

6   Mother tongue.................   11   Literate (1)/Illiterate (2) ....

    12   Educational attainment ....

7   Two other languages known

    13   Attending school/college, Yes(1)/No(2)

14A   Did you work any time at all last year? $\dfrac{\text{Yes}}{\text{No (H/ST/D/R/B/I/O)}}$

    (including unpaid work on farm or in family enterprise)

14B   If 'Yes' in 14A, did you work for major part of last year? Yes(1)/No(2)......................

15A   Main activity last year? $\dfrac{\text{Yes in 14B (C/AL/HHI/OW)}}{\text{No in 14B (H/ST/D/R/B/I/O)}}$

    If HHI/OW in 15A

    (i)   Name of establishment ....

    (ii)   Nature of industry, trade or service ....

    (iii)   Description of work ....

    (iv)   Class of worker..

15B $\dfrac{\text{'Yes' in 14B—Any other work any time last year? Yes (C/AL/HHI/OW)/No}}{\text{'No' in 14B—Work done any time last year? (C/AL/HHI/OW)}}$

    If HHI/OW in 15B

    (i)   Name of establishment..

    (ii)   Nature of industry, trade or service ....

    (iii)   Description of work..

    (iv)   Class of worker..

16A   If 'No' in 14A, seeking/available for work? Yes (1)/No(2)......................

16B   If 'Yes' in 16A, have you ever worked before? Yes (1)/No(2)......................

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17A Whether you are an Ex-serviceman? Yes(1)/No(2)............................☐

17B If 'Yes' in 17A, Pensioner(1)/Non-Pensioner(2)..................................☐

18 Birth place

   (a) Place of birth............................

   (b) Rural (1)/Urban (2)..................... ☐

   (c) District ....

   (d) State/Country.........................

19 Last residence

   (a) Place of last residence.............

   (b) Rural (1)/Urban (2)..................... ☐

   (c) District..............................

   (d) State/Country.........................

20 Reasons for migration from place
of last residence (Code)*................ ☐

21 Duration of residence at the village or
town of enumeration.................... ☐

22 For all ever-married women only

   (a) Age at marriage................... ☐

   (b) Number of children surviving
at present

   Male ☐   Female ☐   Total ☐

   (c) Number of children ever born alive

   Male ☐   Female ☐   Total ☐

23 For currently married women only

   Any child born alive during
last one year.............................. ☐

| Employment (1) | Business (2) | Education (3) | Family moved (4) |

| Marriage (5) | Natural calamities like drought, floods, etc. (6) | Others (7) |

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THIRTEENTH POPULATION CENSUS CONFERENCE

East-West Population Institute
Honolulu, Hawaii

December 10-14, 1990

TABULATION PLANNING

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and
Chintana Pejaranonda

National Statistical Office, Thailand

Tabulation Planning

by

Mrs. Sasithorn   Jotikasthira

and

Ms. Chintana   Pejaranonda

For Presentation at the 13 th Population Census Conference

December 9-15, 1990

Organized by

East West Population Institute, Hawaii. U.S.A

Tabulation Planning

It has long been recognized that the most important source of population data is the Population and Housing Census which is a large-scale nation-wide project, Since the quantity of the collected data is very large, it needs a complicate system of filing which means also the complexity of retrieval of such data. In general it is very costly either in terms of budget or time in processing census tabulations. It is therefore necessary to make an advanced perfect rigid plan of tabulation of the census data. Many attempts have been made in order to collect requirements of various users, for instance known users of census data were requested to advise the NSO of their specific needs from the census, collecting those requirements from the population seminars and conferences both at internal and international levels and from users directly come to the NSO to utilize the prior census data etc..

The tabulation plan for the 1990 Population and Housing Census consists of the following stages :

1. **Census Publications**

    1.1 **Preliminary report** is planned to be released within 6 months after the end of the enumeration period. The number of population by sex and household by province, region and whole kingdom will be presented in this report. Population growth during the inter-censal period 1980-1990 will also be published for each province. The preliminary report will consist of 4 tables as appear in appendix I, and about 500 copies will be published for dissemination.

1.2 Advance report:

Advance tabulations were generated from a 1.5 per cent sample data which will be systematically drawn from the whole cleaned census data and will be released within 1 year. The advance tabulation publicat-tions presented an over-all view of Thailand population on sex, age, marital status, literacy, education, number of children ever-born, economic activities, type and average size of household and housing characteristies in 16 tables. All the tables were produced at regional level and the whole kingdom (see appendix II) and the report will be published 500 copies.

1.3 Final report:

After the publication of the advance tables, the final tables will be produced on basic characteristics of population which was cross-classified by sex and age-group. These tabulations were made by some comparisons with the previous census tables and try to serve needs from users of census data. Some major changes that have been introduced in the latest census tabulations may be summarized as follows:

1. Interval of age-group used in cross-classified population tables is 5 year age-group and single year age-group are also available for basic population tabulations.

2. New question on disability provides table of population by type of disability cross-classify by sex and 5 year age-group.

3. Migration of population include person in 0-4 year age-group.

4. The lower age limit of population used for work force inclusion is 13 years of age, usually 11 years of age in the previous censuses.

5. The ended age-group of basic tabulations has been extended from 65 years and over to 70 years and over.

6. Table on private households by source of drinking water, water supply and cooking fuel will be classified into major used and minor used of such items.

The final tables were published in 78 volumes, one whole kingdom volume, 4 regional volumes and 73 provincial volumes. Each volume will contain 29 tables of population data and 14 of housing data (for more details please see appendix III). The number to be published will be 700 copies for each volume of the provincial series, 1,000 copies for each volume and 2,000 copies for the whole kingdom volume.

1.4 <u>Analytical Reports</u> Further detailed tabulations will be done on 1.5 percent sample tape. Various analytical studies will be done by the National Statistical Office staff and other experts in the form of jointly researching projects. The results of the studies will be published and disseminated to the public. The topics under studies will focus on the focal point of interest areas necessary for policy planning eg;

- Migration

- Labour Force

- Fertility and Family Planning at national and Provincial levels

- Nuptiality

- Aging Population

- Household Structure and Factors effecting size of household. etc.

About 500 copies will be published for each volume.

All of the publications will be distributed free of charge to the users according to the NSO!s mailing list eg., government departments, library, universities and international organization. Other users from government agencies can also obtain free publications with formal letters of request from their offices.

2. Detailed Tabulation Storage

In addition to those selected tabulations presented in the reports mentioned earlier, there will be detailed tabulations by province in a more detailed geographical area, municipal and sanitary disrict. Since a considerable requirement was on small area data which is too costly to be process, NSO plans to prepare a program to tabulate the detailed tabulation mentioned above on the district level on requested.

3. Special requested Tabulations

Apart from the above tabulation planning, the NSO has also plan to provide services for preparing special tabulations from the sample tape result in further demand of users from government sectors throughout the inter-censal period, in order to maximize the utilization of census data.

In the past NSO has problem on tabulating special requested tables on a small geographic data out of our storage mention on 2 that can not be tabulated from the sample tape. The new program need to be written and has to be tabulated on 100% and 20% data. In order to do this, it is quite costly in term of man power, time consuming and computer cost. This problem will be more relevance in 1990 and NSO still do not have a definite plan to serve this problem.

4. Census Sample Tape

As described before, the 1.5 percent sample tape of 1990 census will be provided mainly for our analytical subject reports. About 8 topics of interest will be analyzed which will take time about 2 years after census period. However, after the completetion of our research projects, this tape can be make available to other users especially to Thai government researchers in population institute in Thailand or international institute which part of their project must be shared by Thai scholar. Most importantly, great care will be exercised to ensure that the confidentiality of individual information will be maintained according

to the 1965 Statistical Act when releasing the sample tapes.

The sample tape is not for the commercial purpose.

5. 1990 Population and Housing Database

After reports for detailed characteristics of population and housing by province, region and whole kingdom are completed, single variables of population and housing census will then be compiled in data base at district level as was done in 1980 census

Information in census data base will be allowed for the users upon the requests to NSO.

Data Processing Procedure

All statistical tables to be tabulated from the 1990 census are programmed by the Data Processing Division staff of NSO.

New main frame computer, IBM 4381 with 32 MB will be installed at NSO to replace the present one by the end of this year. There fore all tabulations will be processed by this new computer.

For manual editing and coding, returned questionnaires were sent to NSO to be edited and coded by a specially trained staff. There were two steps to the procedure of 1990. First step editing was to check the completeness of the questionnaire with the listing form. Second step comprised detailed editing in which each field was checked and coded according to the instruction prepared by the subject matter. The supervisor will recheck the questionnaire on 100% verification on the first step, using only the sample basis on the second step. The instruction manual will be more simple and cope with checking the field that is hard to detect by machine editing. The questionnaires of both the short and long form are keyed separately by key to disk system. The verification will be checked 100% for both the identification and the contents.

The machine editing

Machine editing are divided into two parts:

1. Structural Editing for Identification and Completeness Check. The identification codes of each household and completeness will be checked against control listing prepared from listing form

2. Range and Consistency editing, All the possible codes of each field are checked and corrected automatically. Hot deck is used for correcting sex and age. The program also consists of consistency check for editing both the individual by verifying the

information of one field against another within the same record and at

household level by checking the field of one record against another

record of the same household to ensure the best correction.

An E.D. diary report for structural, range and consistency

edit in each E.D./village with a high error rate will be considered

to determine whether any E.D./village will be re-edited.

Preliminary Report

TABLE 1 POPULATION BY SEX, REGION, CHANGWAT AND AREA

TABLE 2 HOUSEHOLDS BY TYPE, REGION, CHANGWAT AND AREA

TABLE 3 POPULATION, HOUSEHOLDS AND AVERAGE SIZE OF HOUSEHOLDS BY

REGION, CHANGWAT AND AREA

TABLE 4 AVERAGE ANNUAL RATE OF POPULATION GROWTH BETWEEN 1980 AND 1990

BY REGION, CHANGWAT AND AREA

Advanced Report

Report by Changwat

Population Tables

Population Tables (contd.)

Population Tables (contd.)

TABLE 26 LAST YEAR EMPLOYED POPULATION 13 YEARS OF AGE AND OVER BY OCCUPATION, WORK STATUS, SEX AND AREA

TABLE 27 LAST YEAR EMPLOYED POPULATION 13 YEARS OF AGE AND OVER BY INDUSTRY, WORK STATUS, SEX AND AREA

TABLE 28 LAST YEAR EMPLOYED POPULATION 13 YEARS OF AGE AND OVER BY OCCUPATION, SCHOOL COMPLETED, SEX AND AREA

TABLE 29 HOUSEHOLD STRUCTURE BY TYPE OF FAMILY, AGE GROUP AND SEX OF HOUSEHOLD HEAD

Note :   *From the 20 per cent sample tabulation

TABLE   1   PRIVATE HOUSEHOLDS BY TYPE OF LIVING QUARTERS, BUSINESS

USED AND AREA*

TABLE   2   PRIVATE HOUSEHOLDS BY TENURE OF LIVING QUARTERS, BUSINESS

USED AND AREA*

TABLE   3   PRIVATE HOUSEHOLDS BY TYPE OF LIVING QUARTERS AND CONSTRUCTION

MATERIALS OF DWELLING UNIT AND AREA

TABLE   4   PRIVATE HOUSEHOLDS BY OWNER AND TYPE OF LIVING.QUARTERS   AND

AREA*

TABLE   5   PRIVATE HOUSEHOLDS BY LAND OWNERSHIP AND TYPE OF LIVING

QUARTERS AND AREA (FOR OWNER OR HIRE PURCHASER OF LIVING

QUARTER ONLY*)

TABLE   6   PRIVATE HOUSEHOLDS BY TYPE OF LIVING QUARTERS, MONTLY RENT

AND ADVANCED PAYMENT AND AREA*

TABLE   7   PRIVATE HOUSEHOLDS BY SIZE OF HOUSEHOLD, TYPE OF LIVING

QUARTERS AND AREA*

TABLE   8   PRIVATE HOUSEHOLDS BY TYPE OF LIVING QUARTERS, NUMBER OF BEDROOM

NUMBER OF OTHER ROOM USED FOR SLEEPING AND AREA*

TABLE   9   PRIVATE HOUSEHOLDS BY SIZE OF HOUSEHOLD, NUMBER OF BEDROOM,

NUMBER OF OTHER ROOM USED FOR SLEEPING AND AREA*

TABLE 10   PRIVATE HOUSEHOLDS BY TYPE OF LIVING QUARTERS, SOURCE OF

DRINKING WATER, WATER SUPPLY, LIGHTING AND AREA*

TABLE 11   PRIVATE HOUSEHOLDS BY TYPE OF LIVING QUARTERS, TOLIET

FACILITY AND AREA*

TABLE 12   PRIVATE HOUSEHOLDS BY TYPE OF LIVING QUARTERS, TYPE OF KITCHEN,

COOKING FUEL AND AREA*

TABLE 13 PRIVATE HOUSEHOLDS BY TYPE OF LIVING QUARTERS, TYPE OF DURABLE HOUSEHOLD APPLIANCE AND AREA*

TABLE 14 PRIVATE HOUSEHOLDS BY TYPE AND NUMBER OF DURABLE HOUSEHOLD APPLIANCE AND AREA*

Note :   *From the 20 per cent sample tabulation

The Detailed Tables

Include all tables in Appendix III classified by
municipal area and sanitary district, with extra following tables:

TABLE A   NUMBER OF DWELLING UNITS BY TYPE AND AREA (BY AMPHOE)

TABLE B   NUMBER OF DWELLING BY TYPE OF DWELLING UNITS AND CONSTRUCTION

MATERIAL AND AREA

TABLE C   POPULATION BY LANGUAGE, AGE GROUP, SEX AND AREA

TABLE D   NUMBER OF HOUSEHOLD HEAD BY AGE GROUP, SEX AND AREA

TABLE E   DISABLED PERSONS 13 YEARS OF AGE AND OVER BY LAST WEEK OCCUPATION

(POPULATION EMPLOYED DURING THE WEEK PRIOR TO THE CENSUS DATE)

AGE, SEX AND AREA

(ONLY PERSON WHO IS BLIND, DEAF, DUMB OF PARTIAL LOSS OF ARM/LEG)

TABLE F   OWN-CHILDREN , 0-14 YEARS OF AGE BY AGE OF MOTHER AND AREA

The Use of Census Data for Household Projections:
An Overview of Results from the HOMES Project

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I. INTRODUCTION

WHAT IS HOMES?

HOMES, Household Model for Economic and Social Studies, is a computer model developed at the East-West Center to forecast the number and demographic characteristics of households. By applying the model to standard population projections, the user is provided projections of the number of households; the age and sex of the household head; average household size; the number, age, and sex of household members; and, other basic demographic information about households. This demographic information is used, in turn, to forecast related social and economic trends and to examine the links between population growth and economic development.

Although one of the primary objectives of the model is to project the total number of households, four types of households are distinguished in the analysis: (1) intact households, *i.e.*, those in which the head and spouse are both present; (2) single head households, *i.e.*, households in which the head's spouse is not present; (3) one-person households; and, (4) primary individual households, *i.e.*, those consisting of unrelated members. These four categories, further distinguished by the sex of the household head, encompass all members of the population except the military and institutionalized populations, which are projected separately.

WHERE HOMES HAS BEEN APPLIED

HOMES has been applied to problems of national planning and to the analysis of interactions between economic and demographic change in Japan, in collaboration with the Statistics Department and the Nihon University Population Research Institute, in Thailand, in collaboration with the National Statistics Office, the National Economic and Social Development Board and Thamassat University, and in South Korea. Additional studies are planned or under way utilizing HOMES in Indonesia, Singapore, China, Nepal, Sri Lanka and the Philippines. Financial support for this work has been obtained from a number of sources, but major support has been provided by the Asian Development Bank through Technical Assistance grants to the governments of Thailand, Indonesia, and the Philippines.

WHY HOUSEHOLD PROJECTIONS?

Why is it important to have this information? Changes in the number and demographic characteristics of households are known to influence saving and labor force participation rates, school enrollment, the demand for housing and consumer spending patterns, and systems of familial support. HOMES provides basic demographic information necessary to analyze these issues and assess the importance of demographic change for the development of a wide range of social and economic policies.

An increasing body of research points to the importance of the household as a determinant of social and economic behavior. Women who have young children behave differently than women who do not. Children raised in homes with both parents present differ from those raised by a single parent. What the household buys and what the household owns varies with the number of members, their age, and their sex. The standard of living of most people depends as much on the earnings of other members of the household as it does on their own. Thus, improving the availability of information about households and how they will change can assist in developing more effective policy and in improving social and economic planning.

Change in the supply of labor provides one example. In many countries changes in labor force participation are dominated by the employment decisions of women, which, in turn, are closely connected to childrearing responsibilities and the presence of other wage earners in the household. Thus, accurate forecasts of labor supply can not be prepared if the changing family circumstances of women are ignored.

Another example is economic security. In industrialized and developing countries alike, but particularly in developing countries where extended or multigenerational households prevail and government sponsored social security programs are limited, the household is the basic provider of economic security. Household members are protected from bouts of unemployment if there are many workers in the household. Old age security is also effectively handled by multi-earner, extended households. For example, in Thailand, family households with a head over 65 typically have two or more wage earners, reducing the need to rely on saving and government support.

Few would deny that the household is an important institution, but many might argue that it's role need not be explicitly modeled except in a limited number of cases, e.g., the demand for housing. This view would have some merit if the household were a stable and unchanging institution, but such is not the case. Many developing countries, but especially those in Asia, are experiencing major demographic changes that are having a profound impact on the household. For example, throughout East and Southeast Asia, Japan aside, the average size of households is dropping rapidly, the average age of the head is increasing, the number of dependent children is declining, and so on. Moreover, in some countries, e.g., Japan, the extended family may be declining in importance, replaced by nuclear households.

The remainder of this paper has two purposes: to provide an overview of the HOMES projection model and to present new households projections for six countries: China, Indonesia, Japan, Korea, Thailand, and the Philippines. The rules governing living arrangements are based on special tabulations from the most recently available censuses for Indonesia, Japan, Korea, and Thailand; China's 1987 1% Population Sample Survey; and the 1988 National Demographic Survey for the Philippines. Recently published World Bank population projections are used to describe the underlying demographic trends for each country.

An appendix to this paper provides a very limited selection of summary tables and figures for each of these six countries. More comprehensive reports are available

for Indonesia, Korea, and Thailand and will soon be available for the Philippines and Japan. Detailed projections for China will be prepared and made available at a later date.

II. HOMES FORECASTS

INTRODUCTION

HOMES can be conceptualized as consisting of two stages.[1] In the first stage, the rules governing household formation and composition are determined using base year data tabulated from a census or demographic survey. In stage II, the number and composition of households are projected combining the results of stage I with population projections. Stage II is run repeatedly to assess the implications of alternative population projections. But stage I is run only when new information from a major survey or census becomes available.

The data requirements for HOMES are relatively modest and the package can be applied if the following data are available: population projections, including age-specific fertility rates; and, a recent census or large, representative survey which includes a household roster with the age, sex, and relationship to the household head of each household member.

PROJECTING HOUSEHOLDS

Four types of households, intact, single headed, primary individual, and one person households are projected. For all but intact households, male and female headed households are projected separately and use a standard headship rate approach. Headship rates are calculated, for the base year, as the ratio of the number of households with a head in standard five year age groups divided by the male or female household population in the corresponding age group. The projected number is obtained by multiplying the headship rate by the projected population in the corresponding age and sex group.

The projection of intact households is more complicated. Intact households are identified by the age of both the husband and wife who jointly head the household. Constant headship rates cannot be employed because of changes in the sex ratio that can be traced to changes in fertility, mortality, and migration that all countries experience. We have experimented with a number of methods described in Mason and Racelis, forthcoming. The projections presented below are based on an iterative procedure that minimizes the extent to which changes in the sex ratio affect the proportions of males or females who "head" intact households.
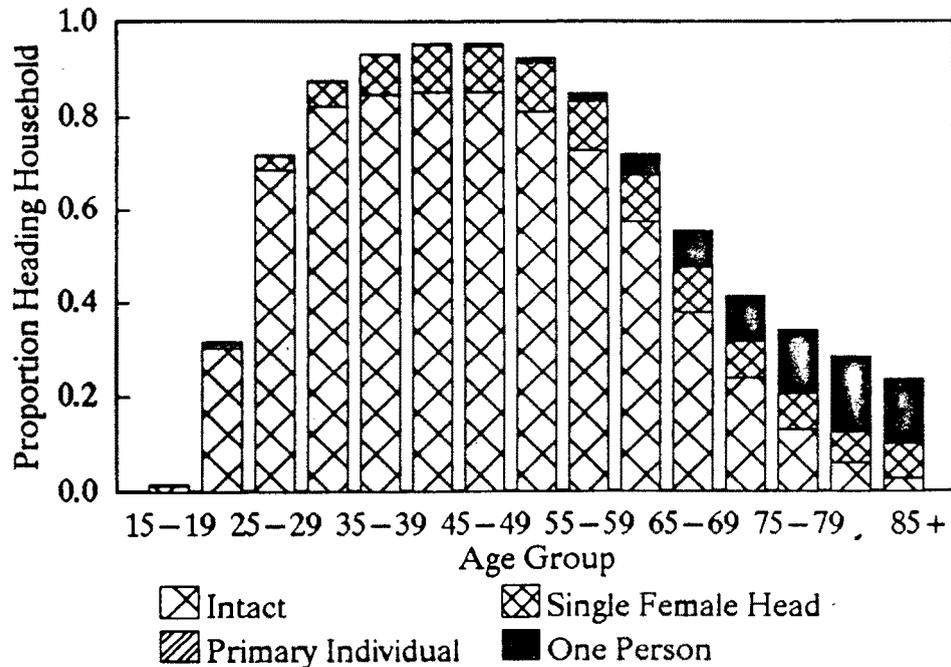
Figure 1 presents headship rates for males and females for each country. For both sexes, overall headship rises to a peak as men and women marry and establish

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[1] A detailed discussion of the HOMES household projection methodology is given in Andrew Mason, *HOMES: A Household Model for Economic and Social Studies,* Papers of the East-West Population Institute, Number 106, Honolulu, Hawaii, August 1987.
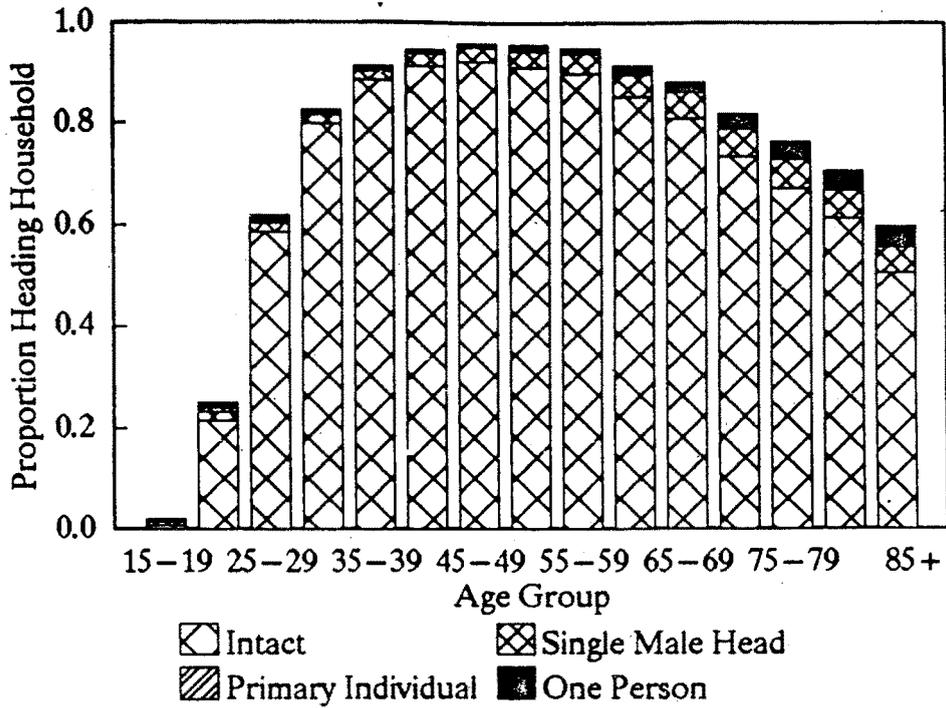
Headship Rates, Males
China

Proportion Heading Household
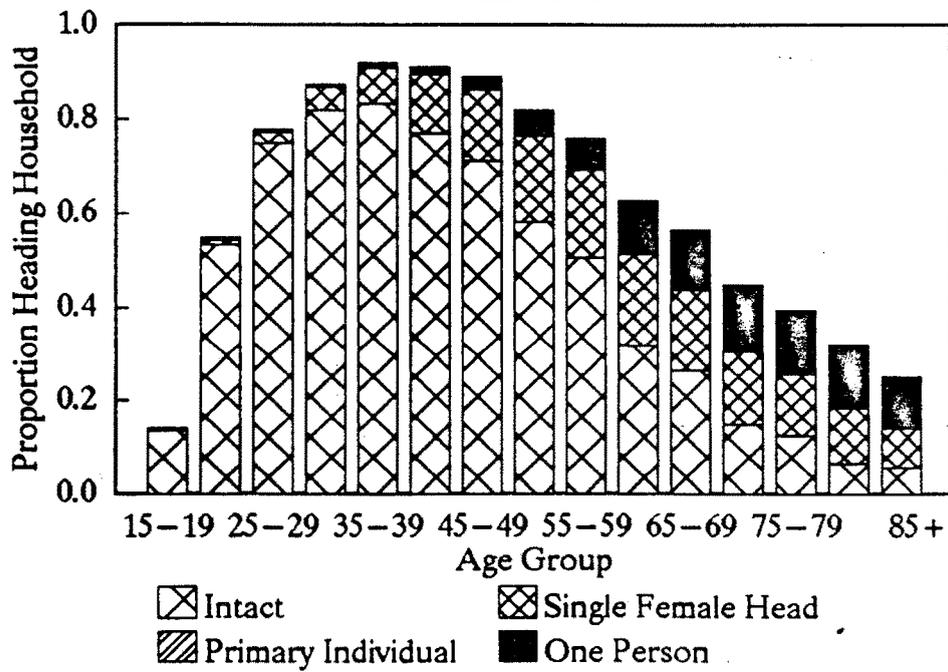
Age Group

Intact   Single Male Head
Primary Individual   One Person

Headship Rates, Females
China

Proportion Heading Household

Age Group

Intact   Single Female Head
Primary Individual   One Person

Note: Intact includes spouse of head.

Headship Rates, Males
Indonesia

Note: Intact includes spouse of head.

Headship Rates, Females
Indonesia

Note: Intact includes spouse of head.

Headship Rates, Males
Japan

Proportion Heading Household

Age Group

Intact ☒ Single Male Head
Primary Individual ■ One Person

Headship Rates, Females
Japan

Proportion Heading Household

Age Group

Intact ☒ Single Female Head
Primary Individual ■ One Person

Note: Intact includes spouse of head.

Headship Rates, Males
Korea

Headship Rates, Females
Korea

Note: Intact includes spouse of head.

Headship Rates, Males
Philippines

Intact   Single Male Head

Primary Individual   One Person

Headship Rates, Females
Philippines

Intact   Single Female Head

Primary Individual   One Person

Note: Intact includes spouse of head.

Headship Rates, Males
Thailand

Proportion Heading Household

◰ Intact	⊠ Single Male Head
▨ Primary Individual	■ One Person

Headship Rates, Females
Thailand

Proportion Heading Household

⊠ Intact	⊠ Single Female Head
▨ Primary Individual	■ One Person

Note: Intact includes spouse of head.

households, often living separately from their parents. Later in life, headship rates decline as the elderly move in with their children or the headship title passes on to children with whom the elderly are already residing. In all countries, the age pattern is quite different for males and females. Among young adults, headship rates for women are higher, mostly reflecting age differences between husbands and wives. Among older adults, males are much more likely to head households even though we have counted women who are the spouse of a household head.

The figures show each of the four household types. Intact households, those with the head and spouse present, are dominant and make up between 70 and 80% of all households. Single head households are the next most important group with the exception of Japan, where one person households are much more prevalent. In most countries, somewhere around 5% of all households are one person households, but among the young and the old, one person households are more common. Primary individual households are so rare that they do not even show up on the headship rate figures.

RESULTS FOR SIX ASIAN COUNTRIES

For all of the countries except Japan, population growth during the coming years will continue to be substantial. Table 1 presents population projections recently released by the World Bank for 1990 to 2030. The average annual rate of growth for the entire four decade period is pegged at between 0.9% and 1.2% for China, Indonesia, the Philippines, and Thailand, at 0.6% for Korea, and at 0.1% for Japan.

Table 1. World bank population projections (in 1000s), 1990–2030.

	1990	1995	2000	2010	2020	2030
China	1,121980	1,201,556	1,275,464	1,399,884	1,512,424	1,614,430
Indonesia	181,580	197,878	213,4585	241,568	269,088	293,694
Japan	123,504	126,112	128,723	131,888	131,543	129,821
Korea	42,790	44,770	46,720	50,107	52,543	54,509
Philippines	62,609	68,865	74,894	86,259	97,214	102,507
Thailand	55,801	59,765	63,802	72,065	79,336	82,584

The number of households will grow at a much faster rate than will the population in all but Japan. The number of households in the Philippines is projected to increase annually at 2.6% per year during the next forty years, resulting in nearly a threefold increase in the number of households. The number of households in Thailand and Indonesia is projected to more than double during the period as they experience 2% growth. In China, the annual growth rate is projected to be 1.5% an-
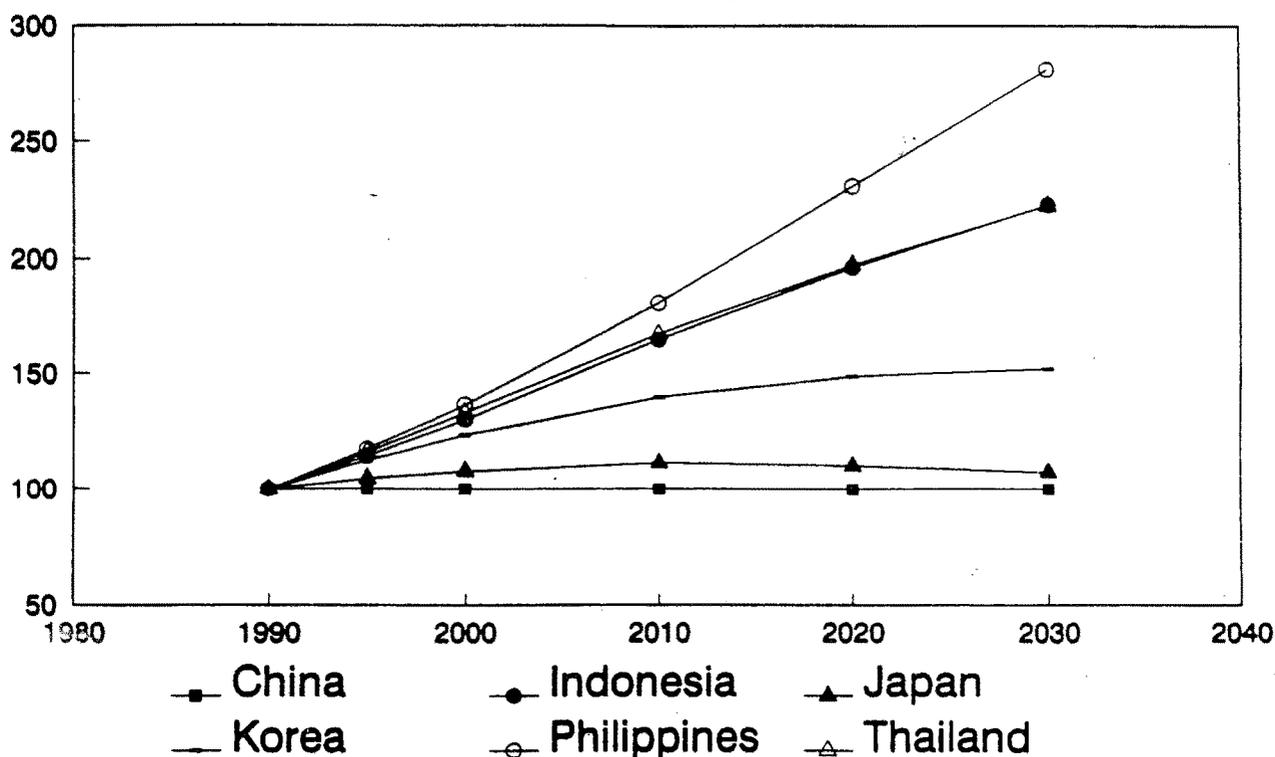
nually and in Korea 1.0% per year. In Japan, the number of households is projected to increase only by 0.2% per year.

Table 2. Household projections (in 1000s), 1990–2030.

	1990	1995	2000	2010	2020	2030
China	278,340	316,170	353,470	410,770	461,670	497,120
Indonesia	40,487	46,294	52,705	66,656	79,454	90,168
Japan	40,214	42,121	43,369	44,824	44,324	43,179
Korea	11,094	12,466	13,697	15,483	16,513	16,837
Philippines	11,634	13,639	15,876	21,033	26,852	32,649
Thailand	11,836	13,745	15,757	19,786	23,371	2b,318

Figure 2

Household Projections, 1990-2030
Base Year 1990 = 100

__ China   __ Indonesia   __ Japan
__ Korea   __ Philippines   __ Thailand

Source: HOMES Project, East-West Center

The growth in the number of households has obvious implications for housing and urban infrastructure among other sectors of the economy. In addition, we can anticipate important changes in the "age structure" of households that will also have important implications for aggregate saving and spending patterns. The upcoming changes are illustrated by two cases: Thailand and Japan.

Figure 3

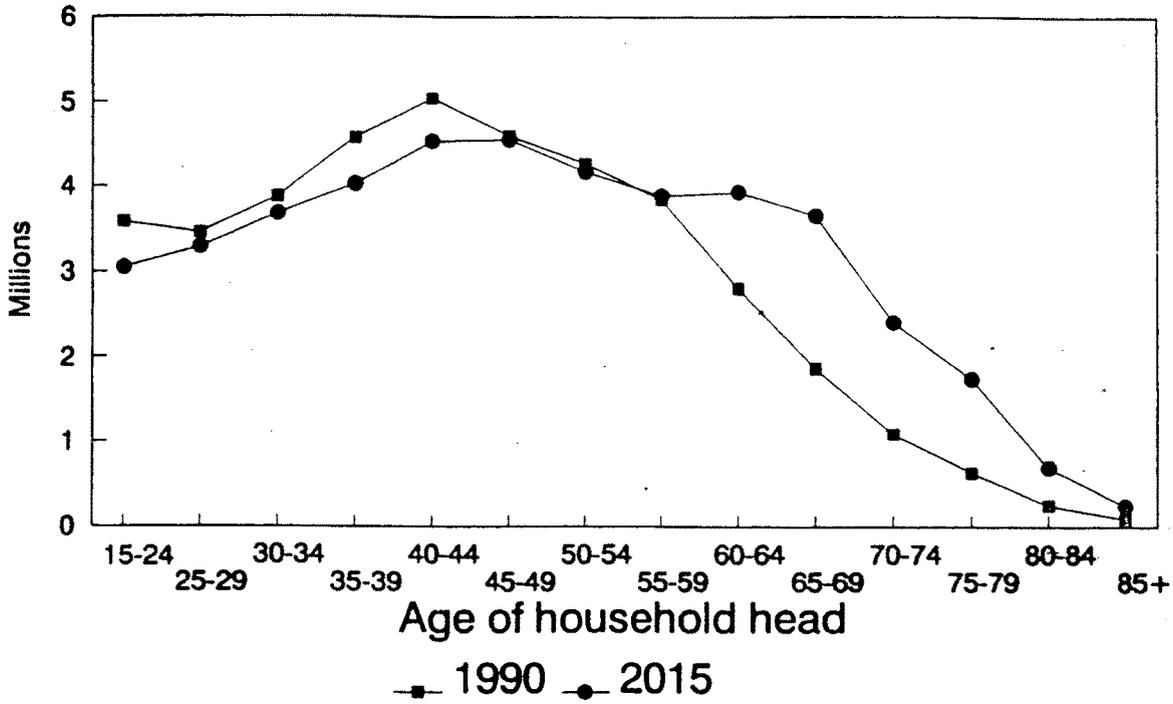## Number of Households
Thailand, 1990 and 2015

Source: HOMES Project, East-West Center

Currently Thailand has a relatively young age structure with a high percentage of households concentrated in the under 40 age of head category. During the next twenty-five years, there will be a considerable change. The number of very young households will hardly grow at all while the thirty-five to fifty-nine age groups will experience very substantial growth. In absolute terms, the number of households with a head over 60 will not grow much during the period but in-percentage terms households with an older head will grow fairly rapidly.

Japan represents a later stage in the demographic transition. In 1990, the age distribution of household heads is much older than in Thailand and considerable

Figure 4

Number of Households

Japan, 1990 and 2015

Age of household head

$\quad\_\blacksquare\_$ 1990 $\quad\_\bullet\_$ 2015

Source: HOMES Project, East-West Center

additional aging will occur during the ensuing twenty-five years. In fact the number of households with a head under age 45 will decline for every five year age group. The number 45–59 will be very nearly constant. But the number headed by persons 60 and older will increase substantially.

PROJECTING HOUSEHOLD MEMBERSHIP

One of the unique features of HOMES is the projection of household membership which provided the user with the average number of members and the age and sex distributions for each household group. HOMES uses a kinship based approach for projecting household membership. In addition to the household head, the number of spouses, children, grandchildren, parents, and other household members are projected. A similar procedure is followed for each relationship to head category. First, the number of potential household members are quantified. Then, rules governing coresidence are used to determine which individuals are living in which households. For example, for each household group the numbers of surviving

male offspring in each five year category are calculated. These values are then multiplied by the proportion of surviving male offspring of given age living in households headed by their parents.

An overview of the differences in household membership is shown in Figure 5. In Indonesia, for example, childrearing responsibilities dominate household size. Average household size rises from almost four members for households with a head 20–24 and reaches six members at the peak of the childrearing years, 35–39. Thereafter, average households size declines as children leave home. In many cases, however, children continue to live with their parents and start their own families. Among older households, grandchild is the most important relationship to head category next to heads.

Japan shows a quite different pattern. Among young households, average size is very small because family households are relatively unimportant. Once family households begin to be established, in the late twenties, average household size rises quickly to a peak at about four household members. The decline in average household size is much more gradual than in Indonesia or the other countries because survival among spouses is higher and because a higher percentage of children continue to live at home.
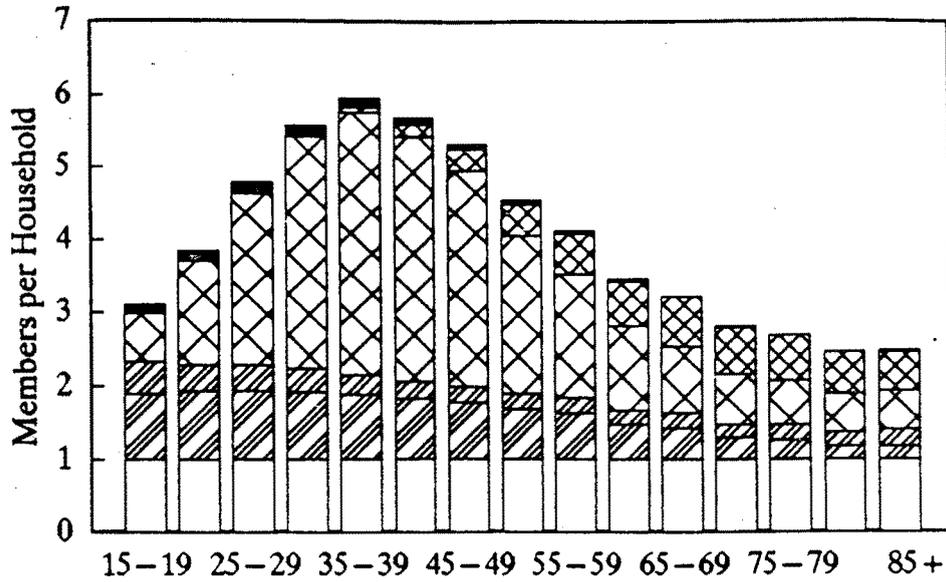
PROJECTED HOUSEHOLD MEMBERSHIP

Projected average household size is presented for each country in Table 3. In 1990, average size varied from only three members per household in Japan to 5.3 members per household in the Philippines. Average size for China, Indonesia, Korea, and Thailand ranges from 3.8 to 4.6 members. Over the forty years of the projection, average household size in Japan is essentially unchanged, but converges in the other countries. In 2030, average size varies between 3.18 and 3.25 members per household in China, Indonesia, Korea, and Thailand. Household size in the Philippines is a bit higher, at 3.55 members per household, but is dropping rapidly.

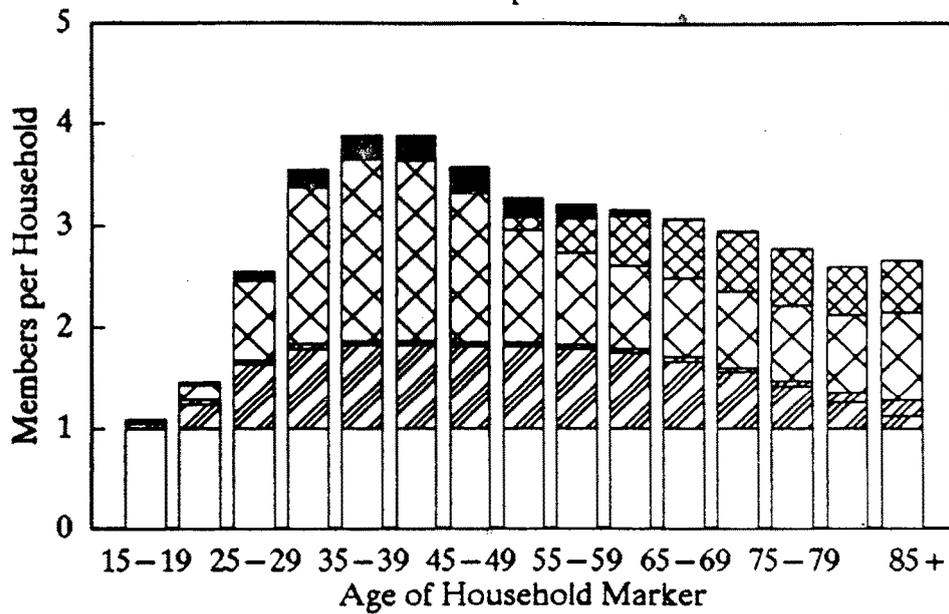Table 3. Average household size, 1990–2030.

	1990	1995	2000	2010	2020	2030
China	4.02	3.78	3.59	3.40	3.27	3.24
Indonesia	4.48	4.27	4.05	3.62	3.39	3.25
Japan	3.02	2.95	2.92	2.89	2.91	2.94
Korea	3.75	3.49	3.33	3.17	3.12	3.18
Philippines	5.29	5.06	4.83	4.36	3.91	3.55
Thailand	4.64	4.28	3.99	3.60	3.35	3.21

Figure 5

Household Membership by Age of Marker
Indonesia

Household Membership by Age of Marker
Japan

Age of Household Marker

☐ Head   ▨ Spouse   ▨ Other
☒ Child   ⊠ Grandchild   ■ Parent

Figure 6

Average Household Size, 1990-2030

Members per Household

—■— China   —●— Indonesia   —▲— Japan
—— Korea   —○— Philippines   —△— Thailand

Source: HOMES Project, East-West Center

Changes in the average household size are the product of a variety of demographic forces. First, the aging of households described above is affecting the relative number of households in the childrearing stage of the lifecycle during which household size is at its peak. Second, improved mortality conditions lead to an increased "supply" of surviving parents affecting the number of elderly living in households headed by their children. Third, and most importantly, fertility decline reduces the number of children in the typical household. Because three generation households are so prevalent in Asia, fertility decline affects average size at all stage of the lifecycle not just the "childrearing" years.

The decline in fertility, along with increased longevity, also accounts for another of the most important changes in the demography of the Asian household — the change in dependency. Figure 8 presents dependency ratios for the 1990–2040 period. Four of the countries plotted, Indonesia, Korea, the Philippines, and Thailand are in the midst of a major transition from high to low dependency. Each country is at a very different point in that transition. Korea's has nearly completed

Figure 7

Dependency Ratio

Source: HOMES Project, East–West Center

the transition. Its dependency ratio is lowest among the four and will continue its decline only until 2000. The Philippines is at the earliest point in the transition is projected to experience declining dependency four the next four decades.
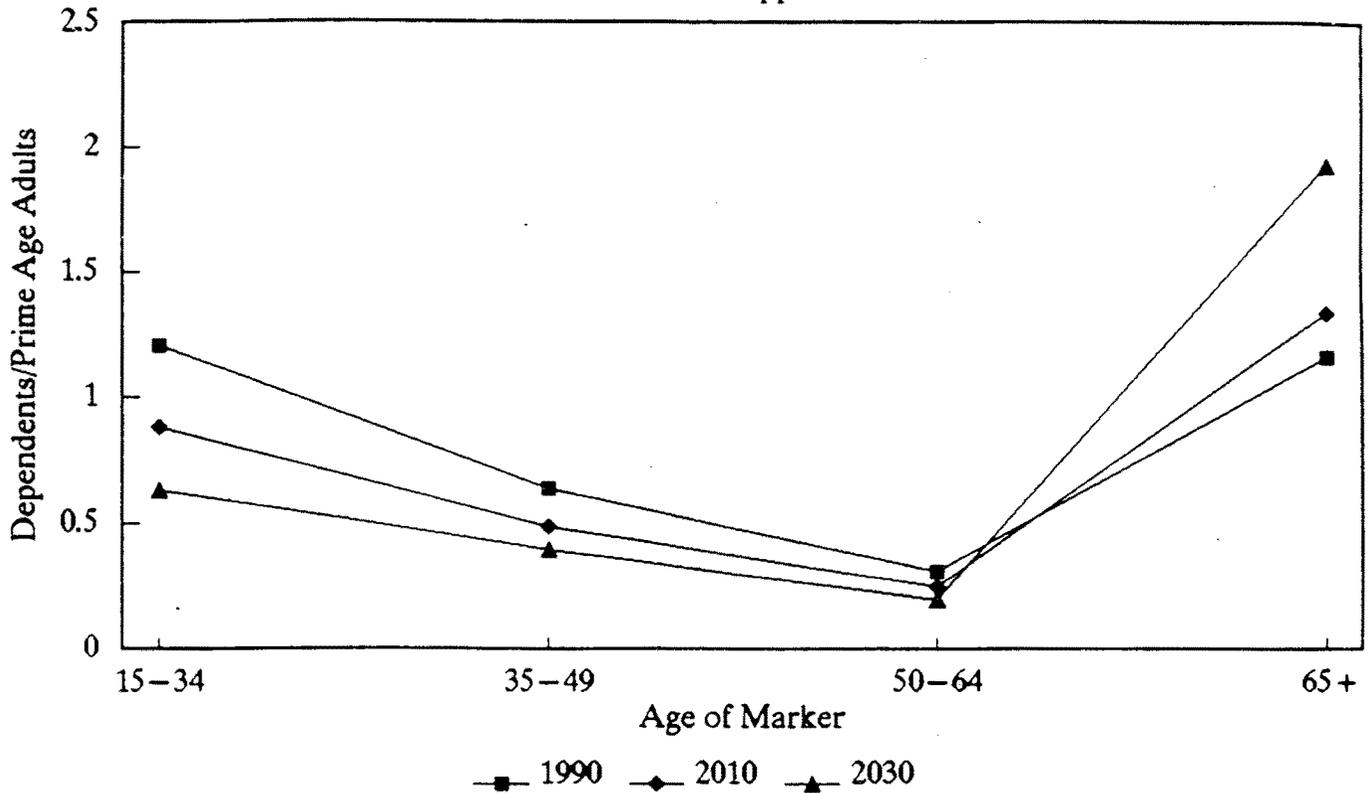
Japan is at the other end of the spectrum when it comes to dependency. The current dependency ratio is lowest among the six countries, but is increasing rapidly as a result of population aging. By 2010, Japan will have the highest dependency ratio of the six countries and by 2030 dependency will reach 7 dependents per working age adult, a level not too different than in the Philippines today.

In some respects, China's dependency trend is the most interesting because it is so different that the other countries. Although some ups and downs in dependency are projected over the twenty to thirty years, there is no clear trend in dependency. But starting in 2010, population aging is beginning to dominate dependency and the dependency ratio is beginning to rise.

A final point on dependency is illustrated in Figure 9, which shows the change in dependency in the Philippines for households at different stages of the lifecycle.

Figure 8

Dependency Ratios
The Philippines

Source: HOMES Project, East–West Center

Even in a country where overall dependency is so clearly declining, the dependency ratio for some households is rising. The greatest decline is among the youngest households, those with a head 15–34. Households with a head are projected to experience a very substantial increase in dependency as increased numbers of elderly live separately from their adult children.

CONCLUDING REMARKS

This discussion of recent trends in the demography of households in six Asian countries has focused on some of the more salient and broad features. This brief presentation has not presented any of the more detailed changes that we can anticipate nor the social and economic implications of these changes. Moreover, there are many unresolved issues about the impact of demographic, social, and economic change on the rules governing living arrangement that have not been discussed. We expect these issues to be the focus of continued research for many years to come.

ADDITIONAL REFERENCES

Andrew Mason, *HOMES: A household model for economic and social studies, Papers of the East-West Population Institute* 106 (Honolulu: East-West Center, 1987).

John Bauer and Andrew Mason, "Asia 2010: The Power of People," *Far Eastern Economic Review* 17 May 1990.

Burnham O. Campbell and Andrew Mason, "Using HOMES for Population and Development Planning," United Nations International Seminar on Population and Development Planning, Riga, Latvian Soviet Socialist Republic, 4–8 December 1989. (Also available as *HOMES Research Report*, No. 9.)

SUMMARY TABLES: China

Table 1. Household projections (in millions), 1990–2030.

	1990	1995	2000	2010	2020	2030
Number of households	278	316	353	410	461	497
Household population	1,116	1,196	1,270	1,394	1,507	1,609
Avg household size	4.02	3.78	3.59	3.40	3.27	3.24
Annual change	7.8	7.4	5.7	5.0	3.6	–

Table 2. Number of households (in millions) by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	101	116	121	104	114	113
35–49	98	114	133	167	153	154
50–64	58	62	70	102	137	151
65+	21	24	28	37	56	79
Total	278	316	353	410	461	497

Table 3. Average household size by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	3.54	3.53	3.47	3.39	3.56	3.68
35–49	4.92	4.38	3.98	3.89	3.78	3.95
50–64	3.78	3.64	3.59	3.05	2.99	2.87
65+	2.85	2.51	2.29	2.18	1.98	1.92
Total	4.02	3.78	3.59	3.40	3.27	3.24

Table 4. Average number of members 0 to 14 by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	1.36	1.28	1.24	1.07	1.14	1.12
35–49	1.30	1.16	1.11	1.03	0.90	0.98
50–64	0.40	0.46	0.44	0.29	0.28	0.24
65+	0.38	0.26	0.21	0.17	0.12	0.13
Total	1.06	0.99	0.95	0.78	0.68	0.65

Table 5. Average number of members 65 and older by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	0.10	0.11	0.11	0.11	0.21	0.30
35–49	0.16	0.16	0.17	0.19	0.25	0.36
50–64	0.19	0.20	0.20	0.19	0.22	0.32
65+	1.38	1.38	1.39	1.38	1.40	1.39
Total	0.24	0.24	0.25	0.28	0.37	0.50

Table 6. Dependency ratio by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	0.70	0.64	0.64	0.54	0.61	0.62
35–49	0.42	0.43	0.47	0.46	0.44	0.51
50–64	0.19	0.22	0.22	0.19	0.21	0.24
65+	1.63	1.90	2.32	2.50	3.33	3.82
Total	0.48	0.49	0.50	0.45	0.48	0.55

Note: Dependency ratio is number under 15 or over 64 divided by number 15 to 64.

SUMMARY TABLES: Japan

Table 1. Household projections (in 1000s), 1990–2030.

	1990	1995	2000	2010	2020	2030
Number of households	40,214	42,121	43,369	44,824	44,324	43,179
Household population	121,625	124,087	126,595	129,452	128,830	126,983
Avg household size	3.02	2.95	2.92	2.89	2.91	2.94
Annual change	381	250	146	-50	-115	–

Table 2. Number of households (in 1000s) by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	10,194	10,651	10,842	9,759	9,366	9,240
35–49	14,377	13,948	12,798	13,204	12,579	11,084
50–64	11,205	12,205	13,448	13,320	12,197	12,827
65+	4,438	5,317	6,281	8,541	10,182	10,028
Total	40,214	42,121	43,369	44,824	44,324	43,179

Table 3. Average household size by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	2.28	2.25	2.41	2.48	2.49	2.63
35–49	3.81	3.77	3.62	3.59	3.76	3.87
50–64	2.98	2.98	3.10	3.09	3.07	3.16
65+	2.30	2.08	1.98	1.95	2.04	1.92
Total	3.02	2.95	2.92	2.89	2.91	2.94

Table 4. Average number of members 0 to 14 by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	0.63	0.61	0.73	0.74	0.72	0.82
35–49	0.93	0.84	0.72	0.81	0.81	0.83
50–64	0.19	0.21	0.28	0.25	0.24	0.27
65+	0.16	0.07	0.05	0.06	0.08	0.05
Total	0.56	0.50	0.49	0.48	0.47	0.48

Table 5. Average number of members 65 and older by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	0.04	0.04	0.05	0.06	0.13	0.15
35–49	0.23	0.29	0.35	0.42	0.49	0.57
50–64	0.31	0.34	0.40	0.49	0.62	0.60
65+	1.55	1.56	1.58	1.60	1.63	1.61
Total	0.35	0.40	0.47	0.59	0.71	0.73

Table 6. Dependency ratio by age of marker, 1990–2030.

Age of Marker	990	1995	2000	2010	2020	2030
15–34	0.42	0.41	0.48	0.48	0.51	0.58
35–49	0.44	0.43	0.42	0.52	0.53	0.57
50–64	0.20	0.22	0.28	0.31	0.39	0.38
65+	2.95	3.65	4.71	5.61	5.20	6.59
Total	0.43	0.44	0.49	0.59	0.68	0.70

Note: Dependency ratio is number under 15 or over 64 divided by number 15 to 64.

SUMMARY TABLES: Indonesia

Table 1. Household projections (in 1000s), 1990–2030.

	1990	1995	2000	2010	2020	2030
Number of households	40,487	46,294	52,705	66,656	79,454	90,168
Household population	181,363	197,752	213,329	241,456	268,958	292,652
Avg household size	4.48	4.27	4.05	3.62	3.39	3.25
Annual change	1161	1282	1395	1280	1071	–

Table 2. Number of households (in 1000s) by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	18,639	20,983	23,453	27,923	28,746	27,598
35–49	13,054	15,251	17,802	22,890	28,967	32,206
50–64	6,775	7,617	8,547	11,802	16,030	21,614
65+	2,019	2,443	2,903	4,041	5,711	8,750
Total	40,487	46,294	52,705	66,656	79,454	90,168

Table 3. Average household size by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	4.77	4.46	4.06	3.38	3.38	3.41
35–49	4.82	4.72	4.63	4.41	3.91	3.81
50–64	3.45	3.34	3.28	3.14	2.93	2.80
65+	3.08	2.81	2.62	2.27	2.00	1.76
Total	4.48	4.27	4.05	3.62	3.39	3.25

Table 4. Average number of members 0 to 14 by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	1.99	1.68	1.42	0.98	0.94	0.92
35–49	1.74	1.67	1.57	1.32	1.08	1.02
50–64	0.69	0.60	0.54	0.44	0.35	0.30
65+	0.64	0.42	0.36	0.22	0.12	0.08
Total	1.62	1.43	1.27	0.96	0.81	0.73

Table 5. Average number of members 65 and older by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	0.07	0.07	0.08	0.08	0.10	0.14
35–49	0.11	0.12	0.12	0.14	0.16	0.19
50–64	0.25	0.26	0.26	0.27	0.29	0.32
65+	1.33	1.33	1.33	1.34	1.35	1.38
Total	0.17	0.18	0.19	0.21	0.25	0.32

Table 6. Dependency ratio by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	0.76	0.65	0.58	0.46	0.44	0.46
35–49	0.62	0.61	0.58	0.50	0.46	0.46
50–64	0.38	0.35	0.32	0.29	0.28	0.28
65+	1.77	1.65	1.84	2.19	2.77	4.82
Total	0.67	0.61	0.56	0.48	0.46	0.48

Note: Dependency ratio is number under 15 or over 64 divided by number 15 to 64.

SUMMARY TABLES: Korea

Table 1. Household projections (in 1000s), 1990–2030.

	1990	1995	2000	2010	2020	2030
Number of households	11,094	12,466	13,697	15,483	16,513	16,837
Household population	41,588	43,557	45,584	49,109	51,541	53,536
Avg household size	3.75	3.49	3.33	3.17	3.12	3.18
Annual change	274	246	179	103	32	–

Table 2. Number of households (in 1000s) by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	4,765	5,034	5,046	4,452	3,950	4,115
35–49	3,770	4,447	5,216	6,161	5,800	4,903
50–64	2,078	2,413	2,695	3,759	5,108	5,294
65+	481	572	740	1,111	1,655	2,525
Total	11,094	12,466	13,697	15,483	16,513	16,837

Table 3. Average household size by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	3.30	3.23	3.22	3.31	3.43	3.58
35–49	4.45	3.99	3.68	3.52	3.65	3.95
50–64	3.74	3.32	3.10	2.74	2.65	2.72
65+	2.72	2.70	2.41	2.13	1.99	1.99
Total	3.75	3.49	3.33	3.17	3.12	3.18

Table 4. Average number of members 0 to 14 by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	1.03	0.99	0.94	0.96	1.01	1.03
35–49	1.31	0.98	0.83	0.78	0.77	0.86
50–64	0.41	0.33	0.29	0.24	0.21	0.20
65+	0.38	0.24	0.21	0.11	0.08	0.08
Total	0.98	0.83	0.73	0.65	0.58	0.58

Table 5. Average number of members 65 and older by
age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	0.07	0.08	0.09	0.10	0.16	0.30
35–49	0.17	0.18	0.20	0.27	0.38	0.58
50–64	0.22	0.22	0.19	0.25	0.29	0.38
65+	1.43	1.42	1.46	1.51	1.51	1.62
Total	0.19	0.20	0.23	0.31	0.41	0.60

Table 6. Dependency ratio by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	0.50	0.49	0.47	0.47	0.51	0.59
35–49	0.50	0.41	0.39	0.42	0.46	0.57
50–64	0.20	0.20	0.18	0.22	0.23	0.27
65+	1.97	1.62	2.22	3.15	4.04	5.69
Total	0.45	0.42	0.40	0.43	0.47	0.59

Note: Dependency ratio is number under 15 or over 64 divided
by number 15 to 64.

SUMMARY TABLES: The Philippines

Table 1. Household projections (in 1000s), 1990–2030.

	1990	1995	2000	2010	2020	2030
Number of households	11,634	13,639	15,876	21,033	26,852	32,649
Household population	61,514	68,955	76,609	91,698	104,928	115,928
Avg household size	5.29	5.06	4.83	4.36	3.91	3.55
Annual change	401.0	447.5	515.7	581.9	579.7	–

Table 2. Number of households (in 1000s) by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	4,530	5,066	5,551	6,729	7,923	8,710
35–49	4,063	5,013	6,071	7,873	9,568	11,403
50–64	2,182	2,557	3,072	4,711	6,687	8,385
65+	859	1,003	1,182	1,720	2,673	4,150
Total	11,634	13,639	15,876	21,033	26,852	32,649

Table 3. Average household size by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	5.08	5.17	5.02	4.31	3.91	3.63
35–49	5.55	5.03	4.78	4.74	4.27	3.87
50–64	5.75	5.35	4.91	4.13	3.79	3.51
65+	4.01	3.86	3.92	3.45	2.91	2.59
Total	5.29	5.06	4.83	4.36	3.91	3.55

Table 4. Average number of members 0 to 14 by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	2.74	2.83	2.53	1.98	1.59	1.33
35–49	2.09	1.68	1.62	1.48	1.21	0.98
50–64	1.19	0.94	0.91	0.67	0.49	0.39
65+	0.69	0.55	0.66	0.52	0.30	0.21
Total	2.07	1.89	1.73	1.38	1.05	0.82

Table 5. Average number of members 65 and older by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	0.04	0.04	0.04	0.04	0.05	0.07
35–49	0.07	0.07	0.07	0.07	0.09	0.12
50–64	0.19	0.18	0.17	0.16	0.18	0.21
65+	1.46	1.46	1.46	1.46	1.48	1.50
Total	0.18	0.18	0.18	0.20	0.24	0.30

Table 6. Dependency ratio by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	1.20	1.25	1.04	0.88	0.72	0.63
35–49	0.64	0.53	0.55	0.49	0.44	0.40
50–64	0.31	0.27	0.28	0.25	0.22	0.20
65+	1.16	1.09	1.17	1.34	1.57	1.93
Total	0.74	0.69	0.66	0.57	0.49	0.46

Note: Dependency ratio is number under 15 or over 64 divided
by number 15 to 64.

SUMMARY TABLES: Thailand

Table 1. Household projections (in 1000s), 1990–2030.

	1990	1995	2000	2010	2020	2030
Number of households	11,836	13,745	15,757	19,786	23,371	26,318
Household population	54,932	58,878	62,802	71,137	78,342	84,478
Avg household size	4.64	4.28	3.99	3.60	3.35	3.21
Annual change	382	402	403	359	295	–

Table 2. Number of households (in 1000s) by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	4,791	5,386	5,774	5,870	5,598	5,708
35–49	3,869	4,701	5,705	7,615	8,371	8,157
50–64	2,359	2,680	3,093	4,598	6,746	8,187
65+	817	978	1,185	1,703	2,656	4,266
Total	11,836	13,745	15,757	19,786	23,371	26,318

Table 3. Average household size by age of marker, 1990–2030.

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	3.92	3.64	3.47	3.37	3.38	3.46
35–49	5.55	5.09	4.61	4.05	3.92	3.96
50–64	4.73	4.29	3.95	3.40	3.00	2.86
65+	4.29	3.93	3.56	2.88	2.41	2.11
Total	4.64	4.28	3.99	3.60	3.35	3.21

Table 4. **Average number of members 0 to 14 by age of marker, 1990–2030.**

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	1.61	1.36	1.21	1.13	1.07	1.09
35–49	1.90	1.60	1.32	1.09	1.03	0.99
50–64	0.98	0.76	0.64	0.48	0.36	0.31
65+	1.01	0.80	0.63	0.41	0.26	0.18
Total	1.54	1.28	1.09	0.90	0.76	0.67

Table 5. **Average number of members 65 and older by age of marker, 1990–2030.**

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	0.05	0.05	0.06	0.06	0.09	0.15
35–49	0.09	0.09	0.09	0.11	0.14	0.22
50–64	0.16	0.16	0.16	0.16	0.18	0.23
65+	1.32	1.32	1.31	1.33	1.34	1.37
Total	0.17	0.18	0.19	0.21	0.28	0.39

Table 6. **Dependency ratio by age of marker, 1990–2030.**

Age of Marker	1990	1995	2000	2010	2020	2030
15–34	0.73	0.64	0.57	0.54	0.52	0.55
35–49	0.56	0.49	0.44	0.42	0.43	0.44
50–64	0.32	0.27	0.25	0.23	0.22	0.23
65+	1.18	1.17	1.20	1.50	1.96	2.72
Total	0.58	0.52	0.47	0.45	0.45	0.49

Note: Dependency ratio is number under 15 or over 64 divided
      by number 15 to 64.

Country paper

Tabulation Plans for the 1991 Census of Bangladesh

Presented by
Abdus Salam
Director-General
Bangladesh Bureau of Statistics

Thirteenth Population Census Conference
East-West Population Institute
East-West Center, Hawaii, USA

December 10-14, 1990.

Tabulation Plan for Bangladesh Census 1991

Introduction

Bangladesh has a long history of population census taking, the first one being taken in 1872, the second census was in 1881 and there after every year ending with 1 except 1974. In 1971 no census was taken due to the war of liberation. There after, decennial periodicity was restored with the last census being taken 1981. It is proposed to hold the next census in March, 1991.

Apart from fulfilling data needs of planners and policy makers, censuses have kept in view international requirements of comparability and conceptual uniformity. Censuses are also expected to collate a diverse set of information – not all of which are feasible or desiable. Overloading a census questionaire is a temptation which has to be avoided so that it can be completed in a short-time and veracity of response can be ensured. Respondent co-operation is of greatest value in an operation of this nature.

Tabulation planning and data processing is an integral part of overall census planning. Tabulation plan for the 1991 Bangladesh Population Census has been finalised keeping in view timeliness of data availability and tabulation of all data collected.

The 1991 census will be conducted as a full count to be followed by a sample post enumeration check (using a common questionnaire in a fortnight).

The Bangladesh Bureau of Statistics (BBS) is the centralised statistical office of the Government of Bangladesh. Its responsibilities include, among others, decennial census enumeration and the D.G is also the Census Commissioner under the Census Act, 1974. This has enabled us to use the Bangladesh Bureau of Statistics expertise in statistics, censuses & surveys and data processing for population censuses as well. A short list of Bangladesh Bureau of Statistics responsibilities is at annexure : A.

Census Plan

In the 1951, 1961 and 1974 censuses, one questionnaire was used for each person as it was found convenient for hand sorting. With availability of latest technology, in 1981 census an OMR readable household schedule was used. A country wide geo-code was also developed to ensure completeness of coverage & monitoring at all stages. We propose to use an OMR readable schedule for the 1991 census as well. It will be in two parts- one part for the household information and the other part divided into eleven individual modules. If there be more than 11 members, a continuation sheet is to be used.

Business allocated to Statistics Division

1. Promotion, improvement, development and coordination of statistics and elimination of duplication of efforts in statistical field.

2. Assesment of statistical requirement for the country in line with international standards, provide general direction to statistical activities, designating statistics collecting agency and authorising products.

3. Conduct periodic censuses on population, agriculture, livestock establishment and industries; conduct socio-economic and demographic surveys.

4. Organise and establish data bank and electronic data processing system.

5. Provide secretarial services for the National Statistical Council and Standing Committees on National Income Commission.

6. Promote research and training in statistics, organise and administer unified statistical services.

7. Administration and control of subordinate offices and organisations under this Division.

8. Liaison with international organisations and matters relating to treaties and agreements with other countries and world bodies relating to subjects allotted to this Division.

9. All laws on subjects allotted to this Division.

10. Inquiries and statistics on any of the subjects allotted to this Division.

Census questionnaire

The questionnaire has been designed in OMR 3881 format in a way that it can be read well in OMR of Cognitronics or Opscan readers without loss of efficiency. The questionnaire is in modular form.

Household questions will be the following :

(1)   Address, Continuity of Household and floating Status

(2)   Household Serial No.

(3)   Type of Household (3 alternatives)

(4)   Material of Wall-(Main structure only) (5 alternatives)

(5)   Material of Roof - (Main structure only) (4 alternatives)

(6)   Tenancy (3 alternatives)

(7)   Source of Drinking Water (5 alternatives)

(8)   Latrine Facility (3 alternatives)

(9)   Electricity Connection (2 alternatives)

(10)   Ownership of Agricultural land (2 alternatives)

(11)   Main Source of Household Income (19 alternatives)

(12)   Tribal Status (2 alternatives)

Thirteen questions on individual members of the household will be the following :

(13)   Name

(14)   Age in completed years

(15)   Relation with head of Household (4 alternatives)

(16)   Sex (2 alternatives)

(17)   Marital Status (4 alternatives)

(18)   Religion (5 alternatives)

(19)   Educational attainment (17 alternatives)

(20)   Field of education (4 alternatives)

(21)   School attendance (2 alternatives)

(22)   Literacy (2 alternatives)

(23)   Main activity (11 alternatives)

(24)   Working status (5 alternatives)

(25)   Nationality (2 alternatives)

An english translation of the questionnaire can be seen at annexure 'B' Data transfer to computer tape is expected to be completed in about two years.

Govt. of the People's Republic of Bangladesh
Bangladesh Bureau of Statistics

Population and Housing Census, 1991
3/2, Asad Avenue, Dhaka-1207

Household and Personal Questionnaire
Pilot Census

Confidential

1. Address :-

2. House Hold No.

3. Type of Household

12. Is it a Total House hold?

Main Source of House-hold Income (Last one year)

13. Name of House Hold Members
Present on Census Night

Age (Completed year)

15. Relationship with Head of the House-hold

16. Sex

17. Marital Status

18. Religion

19. Highest Grade Passed

20. Field of Education

21. School Standard

22. Own Agricultural Land

23. Nationality

24. Working Status

1/ Education Code
0: Illiterate
1: Class I
2: Class II
3: Class III
4: Class IV
5: Class V
6: Class VI
7: Class VII
8: Class VIII
9: Class IX
10: S.S.C./Dakhil
11: Training
12: H.S.C./Alim
13: Diploma
14: Graduate/Fazil
15: Honours
16: Master/Kamil
17: M.S./Ph.d.
Others

Footing — Part of Previous House Hold?

1. Name:
2. Name:
3. Name:
4. Name:
5. Name:
6. Name:
7. Name:
8. Name:
9. Name:
10. Name:
11. Name:

Data editing

Before data capture in OMR, a thorough manual editing of each schedule and each enumeration area book(s) will be done. Annex C, D, E & F are tabular presentation of the operations involved in manual editing. The aim is to ensure complete coverage and accuracy. We will undertake these operations sequentially according to a predetermined plan - by unions, upazilas and districts.

After data capture in OMR dedicated computer, a more thorough computer edit will be done on BBS main frame IBM 4341 prior to tabulation and preparation of data tapes. Computer editing will be done with programmes developed by BBS in house programmes. These have been used in previous censuses & surveys and have proved efficient.

Tabulation plan & data presentation

A very large quantity of data will be collected, many of them never before collected for the entire population, in the census of 1991. These are of course subject to a wide variety of manipulations even in small area segments or subjectwise segments. BBS will retain the raw data on computer tapes and CD-Rom for future analysis and research, and these would be available to all users in hard copy, diskettes or tape subject to confidentiality requirements inposed under law.

We have decided to tabulate census 1991 in 42 tables for final publication after a thorough input - output analysis taking into consideration tabulation of past censuses and data need. These tables are classified as below:-

a)   Summary tables- S.01-S.03

b)   Household tables- H.01-H.05

c)   Population tables- P.01-P.21

d)   Community tables- C.01-C.13

These have been tested with the Pilot Census data and are found to be consistent.

FLOW OF DOCUMENTS
POPULATION CENSUS, 1991

Annex-C

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┌─────────────┐        ┌─────────────┐
│ ENUMERATED  │───────▶│ RECEIVING   │
│ CENSUS      │        │ COUNTER     │
│ BOOK        │        │             │
└─────────────┘        └─────────────┘
                             │
                             ▼
                       ┌─────────────┐
                       │   STORE     │◀──────────────────────┐
                       └─────────────┘                        │
                             │                                │
                             ▼                                │
                    ╲ SUPERVISING ╱──────▶┌─────────────┐    │
                     ╲  OFFICER  ╱◀───────│     OMR     │    │  CENSUS BOOKS
                      ╲─────────╱         └─────────────┘    │
                        │    ▲                   │ IMAGE     │
                        ▼    │                   ▼           │
                    ╲ SUPERVISOR ╱       ┌─────────────┐    │
                     ╲──────────╱        │   MICRO     │    │
                        │    ▲           │  COMPUTER   │    │
                        ▼    │           │    EDIT     │    │
                    ⬡ EDITOR ⬡           └─────────────┘    │
                                               │            │
                                               ▼            │
                                         ◇ ERROR ◇   NOT    │
                                         ◇TOLERENCE◇ EXCEED─┘
                                               │
                                               │ EXCEED
                                               ▼
                                         ┌─────────────┐
                                         │   ERROR     │
                                         │   LIST      │
                                         └─────────────┘
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OPERATIONAL PLAN FOR MANUAL EDITING
OF
MAIN CENSUS QUESTIONNAIRE

N.B. 1. FLOW OF CENSUS BOOKS ARE SHOWN BY ARROW MARKS.
2. EDITING MECHANISM IS SHOWN NEXT PAGE.

Edit Mechanism

Step-1 : Assistant Statistical Officer receives Census Books from the store for an entire complete Upazila/Thana at a time. He will have an Investigator to check the Geo-code of each Tally Sheet and then to issue them to the supervisors & one complete Union/Ward at a time in consultation with Statistical Officer. Before issuance of the book he must match each enumeration area (EA) with the computer village control list and put a tick against matched cases.

Step-2 : Supervisor first sorts the packets of Census Books sequentially by EA Geo-code. He will then issue one packet to each editor at a time with necessary entry into the Control Register (Specification appended).

Step-3 : Editor does 100% editing of important aspects of Census Books as per Editing Manual and return it to Supervisor with an Error list (Manual and list appended).

Step-4 : Supervisor first checks the quality of Editing done at Step-3 and then Edits the remaining questions on sequential sampling basis as per Editing Manual.

Step-5 : Statistical Officer and Assistant Statistical Officer checks the quality of editing, summarize the Error list and send the edited books for OMR operation.

Step-6 : Officer-in-charge of OMR room will arrange to run the Census Books and preserve them in OMR Store until the computer error list is verified.

EDITING PROCEDURE

PROCESSING MECHANISM OF POPULATION CENSUS, 1991

PHASE — 1

TALLY
SHEET

OMR

HARD DISK

0,486 — 80,486. — 80,486

PRILIMINARY
REPORT

PHASE — 2

STORE
CENSUS
PADS

MANUAL
EDIT

OMR

HARD DISK → 80,486 ← HARD DISK

ERROR LIST ← YES ← ERROR → NO

PHASE — 3

S/4341 ← FIRST
EDITED
TAPE

IMPUTE — YES ← ERROR → NO

A 01

TABLE
IMAGE

TABLES ← S/4341

BACK UP
TAPE

Annexure G shows the column headings. The row headings will be by sub-headings of the first column of each table. The row headings will depend on the subject matter. Localities will be tabulated by village, mauza, union, upazila and district. Age will be tabulated in 5 year age groups. Economic activity in 20 groups, source of family income will be in 20 groups, etc.

We hope to complete all the tabulations and publish all the census reports in about four years.

Annex-G

TABLE : S01 LOCAL LEVEL AREA, HOUSEHOLD AND POPULATION BY ADMINISTRATIVE AREA

Administrative Area	Local level area			Household	1981				1991				% Change	
	Union/ Ward	Mauza/ Mahallah	Village		Population			House-hold	Population			House-hold	House-hold	Popula-tion
					Both Sex	Male	Female		Both Sex	Male	Female			

TABLE : S02 MAIN INDICATORS OF HOUSEHOLD AND POPULATION VARIABLES BY ADMINISTRATIVE AREA

Administrative Area	Total Household			Structure of main house			Population			Sex Ratio		Literacy rate			Density/KM		Floating popula-tion
	Dwell-ing	Institu-tion	Other	Pucca	Semi-pacca	Kutcha	Both sex	Male	Fe-male	Male	Fe-male	Both sex	Male	Fe-male	House-hold	Popula-tion	

TABLE : S03 NUMBER OF VILLAGES BY SIZE OF HOUSEHOLDS

Locality	Total	Upto 25 House-hold	26-50 House-hold	51-100 House-hold	101-200 House-hold	201-300 House-hold	301-400 House-hold	401-500 House-hold	501-750 House-hold	751-1000 House-hold	1001-1500 House-hold	1501-2000 House-hold	2001 and above house-hold

TABLE H01

HOUSEHOLDS AND POPULATION
BY USE OF STRUCTURE AND DWELLING UNITS BY TENURE

LOCALITY	TOTAL	DWELLING UNITS				INSTITUTION	BUSINESS/INDUSTRY	FLOATING/TRANSIENT
		TOTAL	OWNED	RENTED	RENT FREE			

TABLE H02

HOUSEHOLDS IN DWELLING UNITS
BY MATERIAL OF WALL AND ROOF

ROOF MATERIAL	TOTAL	WALL MATERIAL			
		STRAW, BAMBOO	MUD, UNBURNT BRICK	C.I. SHEET WOOD	CEMENT BRICK

TABLE H03

HOUSEHOLDS IN DWELLING UNITS
BY SIZE AND RELIGION OF HEAD OF HOUSEHOLD

LOCALITY & RELIGION	TOTAL HOUSEHOLD	HOUSEHOLDS WITH										AV SIZE OF HOUSE-HOLD
		1— PERSON	2— PERSONS	3— PERSONS	4— PERSONS	5— PERSONS	6— PERSONS	7— PERSONS	8— PERSONS	9— PERSONS	10— PERS OR MORE	

TABLE H04

HOUSEHOLDS IN DWELLING UNITS BY SOURCE OF DRINKING WATER AND HOUSEHOLD BY COTTAGE INDUSTRY ACTIVITIES

LOCALITY	TOTAL HOUSEHOLD	SOURCE OF DRINKING WATER					COTTAGE INDUSTRY ACTIVITIES			
		TAP WATER	TUBEWELL	POND SHALLOW WELL	RIVER, STREAM, CANAL	RICE HUSKING, DHENKI	WEAVING	BAMBOO, CANEWORK	POTTERY	JUTE WOOD WORKING

TABLE H05

HOUSEHOLD IN DWELLING UNITS BY OWNERSHIP OF CULTIVABLE LAND/BOAT/BULLOCK CART— NUMBER AND PERCENT

LOCALITY	TOTAL HOUSEHOLDS	OWNERSHIP OF CULTIVABLE LAND			OWNERSHIP OF BOAT			OWNERSHIP OF BULLOCK CART		
		OWN CULTIVABLE LAND		OWN NO CULTI-VABLE LAND	OWN BOAT		DO NOT OWN BOAT	OWN BULLOCK CART		DO NOT OWN BULLOCK CART
		NUMBER	% OF TOTAL		NUMBER	% OF TOTAL		NUMBER	% OF TOTAL	

TABLE : P01 POPULATION BY SEX AND AGE GROUP

Locality and Age	Both Sex		Male		Female	
	Number	Percent	Number	Percent	Number	Percent

TABLE P02

POPULATION BY SEX AND AGE GROUP

LOCALITY AND AGE	TOTAL	PERCENT	MALE	PERCENT	FEMALE	PERCENT	SEX RATIO

TABLE P03

POPULATION IN INSTITUTIONS AND BUSINESS/INDUSTRIAL HOUSEHOLDS AND TRANSIENT POPULATION BY SEX AND AGE GROUP

LOCALITY AND AGE	INSTITUTIONS			BUSINESS/INDUSTRY			TRANSIENT		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE

TABLE P04

POPULATION 10 YEARS AND OVER
BY MARITAL STATUS, SEX AND AGE GROUP

LOCALITY AND AGE	TOTAL	NEVER MARRIED		MARRIED		WIDOWED		DIVORCED	
		MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE

TABLE P05

POPULATION 5 YEARS AND OVER
BY SEX, LITERACY AND AGE GROUP

LOCALITY AND AGE	BOTH SEXES				MALE				FEMALE			
	TOTAL	LITERATE		ILLITERATE	TOTAL	LITERATE		ILLITERATE	TOTAL	LITERATE		ILLITERATE
		NUMBER	% OF TOTAL			NUMBER	% OF TOTAL			NUMBER	% OF TOTAL	

TABLE P06

TRIBAL POPULATION 5 YEARS AND OVER
BY SEX, LITERACY AND AGE

LOCALITY AND AGE	BOTH SEXES				MALE				FEMALE			
	TOTAL	LITERATE		ILLITERATE	TOTAL	LITERATE		ILLITERATE	TOTAL	LITERATE		ILLITERATE
		NUMBER	% OF TOTAL			NUMBER	% OF TOTAL			NUMBER	% OF TOTAL	

TABLE P07

POPULATION 5 YEARS AND OVER
BY SEX, LITERACY AND BROAD AGE GROUPS
AND BY RELIGION OF HEAD OF HOUSEHOLD

LOCALITY AND AGE	BOTH SEXES				MALE				FEMALE			
	TOTAL	LITERATE		ILLITERATE	TOTAL	LITERATE		ILLITERATE	TOTAL	LITERATE		ILLITERATE
		NUMBER	% OF TOTAL			NUMBER	% OF TOTAL			NUMBER	% OF TOTAL	

TABLE P08

POPULATION 5 TO 24 YEARS
BY SEX, SCHOOL ATTENDANCE AND AGE

LOCALITY AND AGE	BOTH SEXES				MALE				FEMALE			
	TOTAL	ATTENDING SCHOOL		NOT ATTENDING SCHOOL	TOTAL	ATTENDING SCHOOL		NOT ATTENDING SCHOOL	TOTAL	ATTENDING SCHOOL		NOT ATTENDING SCHOOL
		NUMBER	% OF TOTAL			NUMBER	% OF TOTAL			NUMBER	% OF TOTAL	

TABLE P09

POPULATION 5 YEARS AND OVER
BY HIGHEST CLASS PASSED, SEX AND AGE GROUP

LOCALITY AND AGE	TOTAL		NO SCHOOLING		CLASS 1 TO 5		CLASS 6 TO 9		SECONDARY/HSC		DEGREE	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE

CHILDREN 5 TO 14 YEARS

TABLE P10   BY HIGHEST CLASS PASSED, SEX AND RELIGION OF HEAD OF HOUSEHOLD

LOCALITY AND RELIGION	TOTAL	NO SCHOOLING		CLASS 1 TO 5		CLASS 6 TO 9	
		MALE	FEMALE	MALE	FEMALE	MALE	FEMALE

POPULATION 5 TO 29 YEARS ATTENDING SCHOOL
BY HIGHEST CLASS PASSED, SEX AND AGE

TABLE P11

LOCALITY AND AGE	TOTAL POPULATION	TOTAL ATTENDING		CLASS 1 TO 5		CLASS 6 TO 9		SECONDARY/HSC		DEGREE	
		MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE

TABLE : P12 POPULATION BY RELIGION OF HEAD OF HOUSEHOLD, PERCENT DISTRIBUTION, SEX AND AGE GROUP

Locality and age	Total	Muslim		Hindu		Buddhist		Christian		Others	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent

TABLE : P13 POPULATION 5 TO 29 YEARS ATTENDING SCHOOL BY RELIGION OF HEAD OF HOUSEHOLD, SEX AND AGE GROUP

Locality	Total	Muslim		Hindu		Buddhist		Christian		Other	
	Total	Total	Attending	Total	Attending	Total	Attending	Total	Attending	Total	Attending

POPULATION 10 YEARS AND OVER BY MAIN ACTIVITY, SEX AND AGE GROUP

TABLE P14

LOCALITY, SEX AND AGE	TOTAL	MAIN ACTIVITY							
		NOT WORKING		HOUSEHOLD WORK	CULTI-VATION	AGRICULTURE NON-CROP	MANUFAC-TURING	BUSINESS	OTHER
		TOTAL	ATTENDING EDN. INST.						

POPULATION 10 YEARS AND OVER BY MAIN ACTIVITY, SEX AND RELIGION OF HEAD OF HOUSEHOLD

TABLE P15

LOCALITY, SEX AND RELIGION	TOTAL	MAIN ACTIVITY							
		NOT WORKING		HOUSEHOLD WORK	CULTI-VATION	AGRICULTURE NON-CROP-	MANUFAC-TURING	BUSINESS	OTHER
		TOTAL	ATTENDING EDN. INST.						

TABLE P16

POPULATION 10 YEARS AND OVER
BY MAIN ACTIVITY, SEX AND MARITAL STATUS

LOCALITY, SEX AND MARITAL STATUS	TOTAL	MAIN ACTIVITY						
		NOT WORKING		HOUSEHOLD WORK	CULTI-VATION	AGRICULTURE NON-CROP	MANUFAC-TURING	BUSINESS	OTHER
		TOTAL	ATTENDING EDN. INST.						

TABLE P17

POPULATION 10 YEARS AND OVER
BY MAIN ACTIVITY, LITERACY AND BROAD AGE GROUP

LOCALITY, AGE AND LITERACY	TOTAL	MAIN ACTIVITY						
		NOT WORKING		HOUSEHOLD WORK	CULTI-VATION	AGRICULTURE NON-CROP	MANUFAC-TURING	BUSINESS	OTHER
		TOTAL	ATTENDING END. INST						

TABLE P18

POPULATION 10 YEARS AND OVER
BY MAIN ACTIVITY, HIGHEST CLASS PASSED AND SEX

LOCALITY, SEX AND ACTIVITY	TOTAL		NO SCHOOLING		CLASS 1 TO 5		CLASS 6 TO 9		SECONDARY/HSC		DEGREE	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE

POPULATION 15 TO 29 YEARS NOT WORKING BY HIGHEST CLASS PASSED, SEX AND AGE

TABLE P19

LOCALITY AND AGE	TOTAL		NO SCHOOLING		CLASS 1 TO 5		CLASS 6 TO 9		SECONDARY/HSC		DEGREE	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE

TABLE : P20 POPULATION BY MAIN ACTIVITY AND MAIN SOURCE OF INCOME OF THE HOUSEHOLD

Age and source of Income	Total Population	Main Activity							
		Total	Agriculture	Industry	Water/Elect/Gas	Construction	Transport/communication	Business	Others

TABLE : P21 POPULATION, NUMBER OF BIRTHS AND NO. OF EVER MARRIED WOMEN OF AGE 15-45 YEARS BY AREA

Area	Total Population	Ever married Women of age 15-45 years	Total No. of Births	Crude Birth Rate Births x 1000 / Population

POPULATION AND LITERACY
BY VILLAGES,MOUZAS/MOHALLAS, UNIONS/WARDS AND THANA

TABLE C01

GEOGRAPHIC CODE	NAME	AREA IN ACRES	HOUSE-HOLD	POPULATION			LITERATE PERSONS		
SD TH UN MZ VL				TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE

POPULATION BY BROAD AGE GROUPS AND BY SEX
FOR VILLAGES, MOUZAS/MOHALLAS, UNIONS/WARDS AND THANA

TABLE C02

LOCALITY	TOTAL	0 TO 9 YEARS		10 TO 14 YEARS		15 TO 17 YEARS		18 TO 34 YEARS		35 TO 64 YEARS		65 YEARS & OVER	
		MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE

POPULATION 10 YEARS AND OVER BY SEX AND MARITAL STATUS AND
MARRIED WOMEN
BY AGE GROUP FOR VILLAGES, MOUZAS/MOHALLAS, UNIONS/WARDS AND
THANA

TABLE C03

LOCALITY	BOTH SEXES				MALES			FEMALES			MARRIED WOMEN		
	TOTAL	NEVER MARRIED	MARRIED	WIDOWED DIVORCED	NEVER MARRIED	MARRIED	WIDOWED DIVORCED	NEVER MARRIED	MARRIED	WIDOWED DIVORCED	10-14 YEARS	15-44 YEARS	45 YEARS & ABOVE

TABLE C04

POPULATION 5 YEARS AND OVER BY SEX AND LITERACY AND HOUSEHOLD LITERACY RATE
FOR VILLAGES, MOUZAS/MOHALLAS, UNIONS/WARDS AND THANA

LOCALITY	BOTH SEXES				MALES				FEMALES				NO. OF HHLDS WITH AT LEAST ONE LITERATE	
	TOTAL	LITERATE		ILLIT-ERATE	TOTAL	LITERATE		ILLIT-ERATE	TOTAL	LITERATE		ILLIT-ERATE	PERSON	FEMALE
		NUMBER	% OF TOTAL			NUMBER	% OF TOTAL			NUMBER	% OF TOTAL			

TABLE C05

POPULATION 5 TO 24 YEARS BY AGE GROUPS, SCHOOL ATTENDANCE AND SEX
FOR VILLAGES, MOUZAS/MOHALLAS, UNIONS/WARDS AND THANA

LOCALITY	5 TO 9 YEARS					10 TO 14 YEARS				15 TO 24 YEARS			
	TOTAL	ATTENDING		NOT ATTENDING		ATTENDING		NOT ATTENDING		ATTENDING		NOT ATTENDING	
		MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE

TABLE C06

POPULATION 10 YEARS AND OVER BY MAIN ACTIVITY
FOR VILLAGES, MOUZAS/MOHALLAS, UNIONS/WARDS AND THANA

LOCALITY	TOTAL	MAIN ACTIVITY							
		NOT WORKING		HOUSEHOLD WORK	CULTI-VATION	AGRICULTRE NON-CROP	MANUFAC-TURING	BUSINESS	OTHER
		TOTAL	ATTENDING EDU. INST.						

YOUTHS NOT WORKING BY LITERACY AND SEX AND STUDENTS BY SEX FOR VILLAGES, MOUZAS/MOHALLAS, UNIONS/WARDS AND THANA

LOCALITY	YOUTHS 10 TO 29 YEARS NOT WORKING									STUDENTS 5 TO 24 YEARS		
	TOTAL			LITERATE YOUTHS			ILLITERATE YOUTHS					
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE

TABLE : CO8 HOUSEHOLDS IN DWELLING UNITS AND POPULATION BY RELIGION WITH TRIBAL HOUSEHOLDS FOR VILLAGES, MOUZAS/MOHALLAS, UNIONS/WARDS AND THANA

Locality	Total		Muslim		Hindu		Buddhist		Christian		Others		Tribal	
	House-holds	Popu-lation	House-holds	Popu-lation	House-holds	Popu-lation	House-holds	Popu-lation	House-holds	Popu-lation	House-holds	Popu-lation	House-holds	Popu-lation

HOUSEHOLDS AND POPULATION BY USE OF STRUCTURE AND DWELLING UNITS BY TYPE FOR VILLAGES, MOUZAS/MOHALLAS, UNIONS/WARDS AND THANA

LOCALITY	TOTAL		DWELLING UNITS						INSTITUTIONAL		BUSINESS/INDUSTRY	FLOATING/TRANSIENT	
			POOR/KATCHA		MIDDLE/SEMI-PUCCA		GOOD/PUCCA						
	HOUSE-HOLDS	POPULA-TION	HOUSE-HOLDS	POPULA-TION	HOUSE-HOLDS	POPULA-TION	HOUSE-HOLDS	POPULA-TION	HOUSE-HOLDS	POPULA-TION		HOUSE-HOLDS	POPULA-TION

TABLE C10

HOUSEHOLDS IN DWELLING UNITS BY SOURCE OF DRINKING WATER AND COTTAGE INDUSTRY ACTIVITIES
FOR VILLAGES, MOUZAS/MOHALLAS, UNIONS/WARDS AND THANA

LOCALITY	TOTAL HOUSEHOLDS	SOURCE OF DRINKING WATER					COTTAGE INDUSTRY ACTIVITIES				
		TAP WATER	TUBEWELL	POND, SHALLOW WELL	RIVER, STREAM, CANAL	RICE HUSKING, DHENKI	WEAVING	BAMBOO CANEWORK	POTTERY	JUTE WOOD WORKING

TABLE C11

HOUSEHOLDS IN DWELLING UNITS BY TENURE AND OWNERSHIP OF CULTIVABLE LAND, BOAT OR BULLOCK CART
FOR VILLAGES, MOUZAS/MOHALLAS, UNIONS/WARDS AND THANA

LOCALITY	TOTAL HOUSEHOLDS	TENURE OF DWELLING UNIT			OWN AGRICULTURAL LAND		OWN BOAT		OWN BULLOCK CART	
		OWNED	RENTED	RENT FREE	NUMBER	% OF TOTAL	NUMBER	% OF TOTAL	NUMBER	% OF TOTAL

TABLE C12

HOUSEHOLDS IN DWELLING UNITS BY SIZE
FOR VILLAGES, MOUZAS/MOHALLAS, UNIONS/WARDS AND THANA

LOCALITY	TOTAL HHLD	1— PERSON HHLDS	2— PERSONS	3— PERSONS	4— PERSONS	5— PERSONS	6— PERSONS	7— PERSONS	8— PERSONS	9— PERSONS	10— PERSONS	11 OR MORE PERSONS	AV. SIZE OF HHLD

TABLE C13

NUMBER OF VILLAGES, MOUZAS/MOHALLAS BY NUMBER OF HOUSEHOLDS

	TOTAL	UPTO 25 HHLDS	26-50 HHLDS	51-100 HHLDS	101-200 HHLDS	201-300 HOLDS	301-400 HHLDS	401-500 HHLDS	501-750 HHLDS	751-1000 HHLDS	1001-1500 HHLDS	1501-2000 HHLDS	2 001 AND ABOVE HHLDS

THIRTEENTH POPULATION CENSUS CONFERENCE

December 10-14, 1990

East-West Center, Honolulu

Hawaii

THE TABULATION PLANS

AND

DISSEMINATION OF 1991 POPULATION CENSUS OF NEPAL

Krishna Prasad Shrestha

INTRODUCTION

General Background

Nepal is a landlocked sovereign Hindu Kingdom. It is situated in the southern slope of Himalayas in between China in the north and India in the south, east and west. Its total area is 147,181 Sq. Km.. Its population was 15.02 million in 1981 and is expected to be about 19.5 million in 1991. Its per capita income is US $ 170 in 1988/89. As a result of the recent political agitation for reform, the political system of the country was changed according to the aspiration of the people. Now the King is the Constitutional Monarch and all power is handed over to the people. With this reform, it is expected that the country will gear up its development in a faster pace.

Administrative Divisions of Nepal

The lowest unit of administrative unit in Nepal is the village development board, usually consisting of a small cluster of villages. At present there are 4015 Village Development Boards and 33 Urban Centers (Nagar Palika). Each village development board is further divided into 9 wards, while each urban center is divided into 10 to 33 wards depending upon the population and area of the urban centers.

Village Development Boards, Nagar Palikas are grouped into districts and districts into zones. Zones are grouped into development regions. Districts are also ' grouped into geographical regions. In brief, the village development board and nagar palika of Nepal form a total of 75 districts, 14 zones, 5 development regions and 3 geographic regions.

Census History

Though decennial population count was started in 1868, the modern scientific census was conducted at first in 1952/54. Since then, there had been three population censuses in 1961, 1971 and in 1981 (22nd June is the census day). The fifth population census will be conducted in June 1991.

Plan for 1991 Census

There will be two types of schedules in population census namely the Household Schedule and Individual Schedule. This time, some more informations are planned to be collected both in household schedule and in individual schedule. Household schedule is the master register for controlling total population in individual enumeration. In household enumeration, in addition to population characteristics some socio-economic informations of households are also collected. These informations are types of dwelling units and ownership of the dwelling units.

Informations on types of cottage and small scale industries other than agriculture, number of persons of the household working and number of other employed in such industries run by the household are also collected. Number and area of operational agricultural land holding, size of the land holding, number of livestocks are also collected in household schedule. These types of informations will be used for making a sample frame for industrial and agriculture census of the country. ,

In individual questionnaire, this time collects the informations on caste (ethnicity), school attendance (population aged 6 to 25 years of age and below collage education), faculty of study (for those who have completed intermediate and above). Since reporting of live births (during last 12 months) in past censuses were under enumerated, this time last live birth is tried to be recorded so that there is little chance to omit live births by females of reproductive ages. For the first time, information about unemployment, under employment data will also be collected by asking question about average duration of work in months during last one year (prior to census date). Informations on secondary activity will be also collected.

Also some basic informations as well as settlements within a ward will be collected through out the country.

TABULATION PLANS AND DISSEMINATION OF CENSUS RESULTS

Various tables are required for different areas. District tabulations are always consolidated into zonal tabulation, zones into development regions and development regions into the nation as a whole. A set of tabulations for geographic regions will be produced. Similarly a separate volume containing a set of tabulations for urban centers will be produced. The different types of tables with their headings are shown in table 1 through 46 for individual schedule and table 47 to 52 for household schedule.

The population by sex and households by wards of village development board will be produced. Basic ward informations for different districts will be documented.

All the above informations will be disseminated according to the request made by different organizations, research institutes and individuals. Since we are maintaining population and household information by ward level, any further informations required can be disseminated by charging nominal amount of processing cost.

All tables recommended by UN will be published in separate volumes for district, zones and regions. There were 10 such volumes in 1981 and there will be more than 10 volumes for 1991. This is the usual mode of publication and dissemination which would followed in 1991 also. A special publication containing population and other information by settlement areas would also be attempted.

Dissemination through electronic media i.e. a public use sample data in diskettes or tapes would be made available to the interested users by levying nominal charges. For analysis purpose, the possibility of having several cross classifications of the collected data would be ensured.

Population Census - 1991

Household Schedule

District:- ... ...   Village Dev. Board/Municipality ... ...   Ward ... ...   Enumerator's Name ... ...

Household and individuals should be enumerated on the basis of their usual place of residence. If the usual place of residence of a person is not fixed then they should be enumerated at the place where they are living for more than 6 months. The questions in this schedule should be asked to the head of the household serially for each member of the household one after the other and answers should be noted. The answers for questions 2,8,13,14,16,19 & 22 should be written in the precoded numbers

House No.	Used by the household / Type of the House: 1.Temporary 2.Permanent 3.Semi-permanent 4.Others (specify)	House-hold No.	Name and caste of the head of the household	Total member of the household			Ownership of whole or part of the house 1.Own 2.Rented 3.Others (specify)	Deaths during last 12 months		Absent persons from the household who have gone to other countrys		Destinat-ion 1.India 2.Other Countries (specify)	Reason for absence 1.Agricu. 2.Busine. 3.Service 4.Study 5.Others (specify)	Duration of abs. less than 1 year an 1 ye-ar write 00	Agricultural Holding What is the unit and area of the agricultural holding of the household		No.of live-stock raised by the House-hold	Household engaged in activities other than agricultural activities 1.Small/Cottage Industry 2.Business 3.Industry 4.Transport 5.Service	Regular workers in the activity		Does the Household uses Radio or Transistor at present 1.Yes 2.No
				To-tal	Male	Fe-male		Age of dead male in years	Age of dead female in years	Male	Female				Unit	Area			No.of own family member Worker	No.of Hired work-ers	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1																					
..																					
9																					

** Unit of land holdings (for column 16) code:- 1. Bigha 2. Ropani 3. Bijan (Rice) 4. Bijan (Maize)

Form No. 2

Population Census 1991
Individual Schedule

Page No. ....

District ....   Village Dev. Board/Municipality ....   Ward No. ......   House No. ......   Household NO. ....   Total No. of Members in this Household. ....

Households and individuals should be enumerated on the basis of their usual place of residence. For those whose usual place of residence is not fixed, they should be enumerated at the place where they have gone for a period of more than six months at the time of enumeration. Similarly for those whose usual place of residence is not fixed and are living at the place of enumeration for a period of more than 6 months then they should be enumerated at the present place of residence.

Questions 2 to 11 to be asked to all members of the household

The questions in this schedule should be asked to respondent one after the other and all the answers should be noted. Answers should be marked by circling the number corresponding to the appropriate answer. For example - if the enumerated person is 'female' then the preceded answer for question in column 4 is 2 and should be encircled as (2).While marking an answer code the mark should be distinctly clear and should not overlap with other codes. The answers for questions with blank space like .... should be short & precise and be written within the space provided.

Questions 12,13 & 14 are asked to persons 6 years of age and over

Questions 15 to 23 should be asked only to persons 10 years of age and over

Serial No.	Full name of all members of the household	What is (Caste/Ethnic) Group	Age	What is relation of head of the H.H.	What is religion	What is (1.Mother tongue 2.Second language)	What is Citizenship	Where is place of births	Where was place of residence one year before	Where was place of residence year before	Can read and Write	What is level of education completed	Is (currently attending school.(aged <25 & below SLC level)	What is Marital Status	Only for ever married Women aged 15 to 49 years		During the last 12 months (one year reference)					
															How many live born children have you ever had	When did the last birth occur	What work did do	How many months did do work	What work do	Where did work	What was working status	What was reason for not doing any economic Activity
No.																						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			1.Male 2.Female	1.Head 2.Spouse 3.Son/dat. 4.Parents 5.Gr.Son/ Gr.Dat. 6.Others (Specify)	1.Hindu 2.Bouddha 3.Islam 4.Jain 5.Christian 6.Others	1.Mother tongue (specify) .... 2.Second language (specify)	1.Mother ship	1.Nepali 2.Indian 3.Chinese 4.Others (specify)	1.Same district 2.Other district 3. Other country	1.Same district 2.Other district 1. Village 2. Town 3.Other Country (specify)	1.Yes 2.No	1.Level Passed 2.No	1.Level 2.No	1.Single 2.Married 3.Widow/ Widower 4.Divorced 5.Separated	1.Living with mother Son... Dat. ... Son... Dat. ..... Son... Dat. ..... Son... Dat.	1.Date of Birth Year.... Month.... 1. Dead 2. Surviving 4. Total Year... Month...	1.Agriculture 2.Salary/wage 3.Own eco. activities 4.No gainful work done	1. 8 months & over 2. 6-7 months 3. 3-5 months 4. less then 3 months				1.Employer 2.Employee 3.Own Ac. work 4.Unpaid family worker	1.Home Maker 2.Student 3.Pension 4.Aged 5.Physically & Mentally handicapped 6.Jail 7.Other
2												2.is the child 1. Surviving 2. Dead Quest. No.23			4.Divorced 5.Separated							5.Home	
3																						
4																						
5																						
6																						
7																						

THIRTEENTH POPULATION CENSUS CONFERENCE

East-West Population Institute
Honolulu, Hawaii

December 10-14, 1990

AUSTRALIAN INITIATIVES IN DESIGN AND MARKETING
OF POPULATION CENSUS PRODUCTS AND SERVICES

Glenn D. Cocking
Australian Bureau of Statistics

AUSTRALIAN INITIATIVES IN DESIGN AND MARKETING OF POPULATION CENSUS PRODUCTS AND SERVICES

THIRTEENTH POPULATION CENSUS CONFERENCE, EAST-WEST CENTRE, DECEMBER 1990

SYNOPSIS

The Australian Bureau of Statistics' marketing policy in the context of providing a national statistical service is continually evolving. The response of Australia's 1991 Census to ABS's overall mission and its current marketing strategy is discussed. The main products and services to be produced are described, with particular reference to new initiatives. Background information on other aspects of the 1991 Census is available from the author.

G.D. Cocking
Assistant Statistician
Population Census and Surveys Branch
Australian Bureau of Statistics

PRICING, MARKETING AND REVENUE RAISING IN THE CONTEXT OF A NATIONAL STATISTICAL SERVICE

1   The Australian Bureau of Statistics (ABS) formal mission is:

'.......to assist and encourage informed decision-making, research and discussion within governments and the community by providing a high-quality, user-oriented and dynamic, statistical service; we will actively co-ordinate statistical activities across government agencies and promote the use of statistical standards.'

2   ABS' products and services are designed first and foremost to fulfil this mission. Our main attention is given to meeting the information needs of government, although emphasis is also placed on the broad information requirements of business and of the community of individuals. This is only proper, as the net cost of the national statistical· service provided by the ABS is met through Commonwealth Government appropriations, and even in these times of growing user charging the vast majority of costs are not recovered. It is the Commonwealth Government, and through it the community generally, that enables the ABS to sustain and improve its statistical services. The ABS must naturally meet the main statistical information requirements of those who have most influence on its funding.

3   At the same time, ABS wishes to reduce the net cost of providing its services, and has been deliberately raising the proportion of its costs that are recovered through revenue by increasing the charges on appropriate products and services.

4   This has been achieved mainly by charging users the 'market price' (ie the price that maximises the benefit to the ABS) of products and services that have been designed to meet the particular needs of a particular client or group of clients, and by charging the 'marginal cost' (ie the cost of producing a product or service from some entity like an output data base which has been fully paid for by the ABS) for standard products and services.

5   This approach both gives ABS managers the incentive to design and produce the right products and services so that sufficient users will pay for them to justify their production (essentially an assistance to the ABS to allocate its resources), and it disciplines users to order from the ABS only those statistics for which they have sufficient need. Further, it relieves the general taxpayer of those elements of the cost of the statistical service which have a specific and identifiable value to particular users. Although there are some exceptions, approval of these mechanisms is growing both inside and outside the ABS. They are generally well accepted.

6   Another form of user charging is to charge the full cost - or an appropriate part - of a collection which is designed to meet the specialist needs of particular clients. In this way clients can have a more direct influence on the ABS work program - but still only on the margin - than they can by relying solely on convincingly arguing the priority of their need relative to others. The ABS has some capacity, limited by the availability of skilled resources, to undertake some user funded collections which are not assessed as being of high enough overall priority to be a part of the fully ABS funded forward work program.

7   To show how revenue raising is operating at the ABS, some figures from the last financial year (1989-90) are informative.

a   The organisation had a revenue target of $6.5m.

b   Revenue actually raised was $7m, somewhat less than 5% of total ABS costs.

c   70% of this was required to be paid to consolidated revenue, and 30% was available to the ABS to spend on its operations.

8   The ABS expects to increase its target proportion of costs recovered through revenue over the next few years and it is possible that it will reach some 10-15% of total costs before the mid 1990s.

9   The dual aims of properly recognising our mission yet at the same time increasing revenue interact in a way that keeps program managers at the ABS on their toes. While the first priority is given to meeting the ABS's mission, it is still reasonable to charge for standard products and services which are designed to meet that mission. Many clients recognise that to be appropriate, particularly as the general levels of prices recover only a small proportion of the total cost of conducting a collection. Prices cannot be too high, however, as exploitation of our position of advantage in the Australian community in collecting statistics would certainly compromise our mission. On the other hand products and services and collections designed principally to raise revenue can also make important contributions to the ABS mission because in most cases they do significantly assist decision-making by government or others.

10   This combination of mission meeting and revenue raising qualities in most ABS outputs is an important issue in refining ABS's pricing and charging policies. For products and services, we have to ask ourselves when should the ABS charge 'market price', and when should it simply recover the 'marginal costs' of producing them from an entity like an output data base.

11   There is no simple answer. In practice ABS is not
prescriptive in its pricing policy. It takes a variety of
issues into account when setting prices, and judgements have
to be made between conflicting objectives. The issues which
are typically relevant in setting prices for ABS' products and
services are as follows.

a   The contribution made toward achievement of the Bureau's
    mission through providing information that is integral to
    policy making.

b   The degree to which the product or service is designed to
    meet the specific needs of a very specific or narrow user
    group.

c   The capacity to contribute to the ABS revenue target.

d   The price charged in the external marketplace for like
    products and services (when they exist), and other market
    intelligence.

e   The value to the client.

f   The cost of production.

g   The amount of cost which might be offset through user
    funding.

h   The relationship of the product or service to other ABS
    products and services.

12   I shall now turn to the 1991 Census' response to these
issues.

THE 1991 CENSUS RESPONSE

13   The Population Census Program's response to ABS' mission and revenue raising aims starts with the uses to which census information has traditionally been put, or would be put if the appropriate people were fully aware of the opportunities that the census provides.

14   To help us understand the uses, we have both past, experience and the results of market research commissioned in 1987 to study the demand for and marketing of 1986 Census products. The results of this study emphasized the well known point that census statistics are important for spatial planning and performance assessment purposes. They also showed that outside of the Commonwealth Government, very many organisations felt they knew little of what the ABS had to offer either from the census or its other statistical collections. The research suggested that the ABS do much more to assist potential clients to understand the value to them of the data ABS has, and that either ABS do this directly or authorise consultants to act on its behalf.

15   Among the specific uses identified for census data were:

- research for the development of social and economic policy

- policy and program evaluation

- planning service delivery

- location studies for service deliveries, facilities, construction, etc

- urban planning

- labour market planning

- urban transportation planning

- market analysis

- volume impact studies

- fertility and other demographic studies

- education.

16   Our product and service designs as well as educational and communication programs are designed to lift utilisation of census data in these and other areas.

Meeting the Mission

17   The 1991 Census will well meet ABS' mission through the following areas.

   a.   It will allow population estimates to be compiled for determining under the Australian Constitution the number of representatives for each State and Territory in the Commonwealth Parliament. These estimates will be , available in printed publication form at a modest price.

   b.   The same population estimates will be used in the allocation of tax sharing grants made by the Commonwealth Government to State governments.

   c.   Appropriately chosen summary statistics - called 'community profiles' - will be available for small areas to allow all levels of government, businesses and the community generally to make appropriate planning and evaluation decisions which require information about the location and other characteristics of the population. Statistics will also be available for particular population groups for which the census is the primary or only data source. Depending on the total amount of data accessed, the charge may be either modest or quite significant. This is a situation where products will be used to raise revenue as well as to meet the ABS mission.

   This information will also be readily available to the ordinary private individual as well as governments. ABS plans to place in major Australian public libraries all the 1991 Census printed publications as well as microfiche copies of small area summary data. There may also be a technically more sophisticated data base available in libraries, depending on negotiations which we intend to initiate.

   ABS will provide a direct service to individuals who want summary information for an area of their choosing. This will be available at a modest price for small volumes of data. Along with deliberate low pricing of several series of printed publications, these plans ensure that at least the broad information from the 1991 Census will be available to the community generally at an affordable price.

Revenue Raising

18   Given the substantial contribution that the 1991 Census output program will make to ABS's overall mission, it is appropriate to also contribute significantly to the revenue target.

19   A target for the 1991 Census is to at least recover the marginal costs incurred by the census output program beyond preparation of the unit record file and a summary output data base (called the 'profile' database). In other words, the construction of the 'clean' unit record file will be paid for by the census appropriation, as will an output data base of the profile characteristics of individuals, but the cost of work undertaken to communicate information based on these two sources to clients of the ABS will be recovered. (The profile database consists of a range of usually one dimensional tables which give the distribution of responses for each census question by at least a broad classification, and also some two dimensional tables, for any geographic area from collection district upwards.)

20   Under an agreement reached when negotiating the 1991 Census appropriation, the first $3m of revenue from the census will be paid directly into consolidated revenue as a direct recovery of a small part of the cost of the Census, and the remainder will contribute to the ABS corporate revenue target.

21   At the time of writing, the Census Program is in the middle of converting its broad plans for 1991 outputs into specific product designs, researching market prices and marketing strategies, projecting sales and checking whether (in our judgement) the census revenue target will be met.

22   To help us do this, we have the 1987 market research referred to above. Further, ABS contracted in 1989 a major study of the business community's attitudes and perceptions about ABS pricing policy and the ABS's general performance in the market for providing information.

23   A number of positive and negative aspects of the ABS marketing performance have emerged from the studies. Among the strengths identified were:

.   The information provided by the ABS in publications and other products and services is regarded by most users as of a high quality and authoritative.

.   The prices charged generally represent 'value for money'; some respondents described the prices charged as very low.

.   A recognition that increased emphasis is being given to the extraction and provision of statistics to meet the specific needs of individual clients.

.   The market is waiting to be educated on the information available from the ABS and the use to which it can be put - it believes there is a proper role for the ABS in the provision of statistical information services.

24   Major weaknesses identified in these studies include:

.   Low awareness of the range of ABS products and services,
     particularly among small to medium sized businesses.

.   Insufficient market education on the benefits of using
     reliable statistical information.

.   A view that statistics provided by the ABS are often too
     out of date.

.   The ABS is not seen as a dynamic and responsive
     organisation prepared to respond to new user needs.

.   Electronic data services were criticised from the
     viewpoint of user friendliness.

.   ABS staff were seen as requiring upgraded training in
     sales techniques.

25   Another market research exercise contracted by the ABS
was an evaluation of the attitudes of current clients towards
CDATA86 - ABS' joint venture with Spacetime Research Pty Ltd
to place part of the profile database, census district
digitised boundaries, mapping and tabulation software all on a
compact disk. It also sought market intelligence for
designing 1991 products and services. The conclusions of this
research are described below under 'CDATA91'.

26   We intend to undertake further formal market research in
respect of other specific planned products and services from
the 1991 Census.

27   We also have information on past dissemination of
products and services from the 1986 Census. This information
is important, but its value is limited because of the
substantial changes that have taken place in ABS marketing
policy since the conduct of that Census. Prices have
increased substantially, and indeed for censuses earlier than
1986 most publications were issued free of charge. We
therefore do not have any hard information from which to
calculate price elasticity of demand even for traditional
products.

28   Nevertheless it is very clear from the records we have on
1986 distribution that the performance of standard products
was very disappointing, even allowing for the fact that ABS
marketing practices were undeveloped at that time. When
combined with information from market research, we have
reached the strong conclusion that we should be preparing
fewer standard products to be sold 'off the shelf', including
a smaller number of printed publications, and turning our
efforts to providing customised services whereby individual
clients tell us what they want to meet their particular needs,
and we produce it quickly. We are giving particular attention
to providing almost immediate turnaround for requests for
'summary data' for areas defined by the client, and a much
quicker response than we have ever achieved in the past to
requests for new cross-classified tables specified by clients.

29   This change in emphasis towards customised services is
the main change in our approach to the design and marketing of
products and services for this census.

30   To add to our information about dissemination of 1986
Census data and our market research intelligence, we are also
approaching both traditional clients and potential new clients
directly to conduct interactive consultations on product and
service design. This of course started with our consultations
on the actual content of the census and now continues through
a program of one to one discussions, conferences and seminars
where ABS puts its broad plans on the table and asks our
clients to help us work out the details, or indeed change the
broad directions if necessary.

31   These discussions often feature particular individuals
criticising the need for ABS to charge at all, and ABS
accounting for the logic of its policy. As mentioned in the
first section of this paper, our position now has a reasonably
high level of acceptance. When these consultations are
attended by people who are not already census clients, we take
the opportunity to emphasise with them the value that the
census information can be in their work.

32   Setting prices for each product and service is a complex
business. We have to give each particular product and service
a price which properly reflects the balance of ABS mission
meeting and revenue raising opportunities that are inherent in
it, but we also have to project the sales that might occur
within the total market for census information at the
initially chosen price levels and see whether the overall
revenue is likely to meet the target of recovering marginal
costs beyond the unit record file and summary data base
construction. If not, further changes to plans are needed.
This will require further market research, some good
judgements and perhaps some inspired judgements if we are
ultimately to come out right on target. This is of course a
typical product design and marketing problem faced in many
different day to day commercial situations.

33   The pricing policy is a flexible one which allows us to
balance a number of partly conflicting and partly overlapping
objectives. We shall not be following prescriptive formulae
that force prices to be defined by cost on any other
particular factor. Decisions on price will be made on a case-
by-case basis for each separate product and service.

SUMMARY DESCRIPTION OF PRODUCTS AND SERVICES

34   Having set the context of ABS' marketing position and the broad aims for 1991 Census products and services, I shall now give a summary description of each of the products and services we currently plan to produce from the 1991 Census.

Printed Statistical Publications

35   Printed publications will again be used to disseminate both the broad results and many of the detailed statistics from the 1991 Census. The overall number of titles will, however, be smaller than in 1986, as some of the 1986 series did not turn out to be in good demand. Some 60 different 1986 titles sold something over 20,000 copies with a revenue return of a little more than $300,000, with another 9000 copies being distributed free of charge. The cost of producing and distributing them was far in excess of the revenue. One series of separate publications for each State and Territory sold substantially less than a thousand copies for a revenue return of only about $12,000.

36   Others of course were more successful. 'Australia in Profile' - a report which provided a portrait of contemporary Australia society as painted by the census - became available more than 2 years after the census and quickly sold over 2,000 copies for a return of over $30,000. This was exceeded only by several 'social atlases' which mapped census data at collection district level for particular metropolitan areas. These atlases were prepared in the State Offices to suit local markets.

37   The Bureau is still finalising its program of 'thematic' publications from the 1986 Census. Apart from 'Australia in Profile', the results have been generally disappointing as we have had difficulty in preparing them in a timely manner following the census and the demand for them was considerably less than was expected.

38   Our response to this situation has been to reduce the number of titles to around half of the number produced by the 1986 Census.

39   The change is actually greater than that, because the reduced number of titles also includes some new series which were not available for 1986. The optical mark reading technology being used to capture data from the 1991 census provides the opportunity for the publication at a relatively low cost of some brief summaries of data based on preliminary processing of the forms rather than the final edited unit record files. Preliminary data was not released for the 1986 census in order to contain costs. Preliminary publications at the both state and national level are expected to be available around 6 months after census date. These will be priced at around $20.00 so that they can be widely available to the community generally as the ABS' first release of results from the census.

40   A more detailed series of publications giving final counts for key census variables for all the statistical local areas on a state by state basis will also be available at a relatively modest price later in the output program, and I would expect that a modest price will also be set for a 1991 version of 'Australia in Profile' - although that has not been formally determined yet.

41   Most other publications will place more emphasis on revenue raising. These are likely to include detailed cross-classified characteristics of the population of each state, and social atlases for most of the major metropolitan areas.

'Community Profiles'

42   This group of products has grown out of various sets of tables available on computer printout from previous censuses which were informally known as 'the 7 page tables', 'the 21 page tables', etc. Although the statistics continue to be sets of 1 and 2 dimensional tables showing key census variables compiled from the profile database, they will be marketed as a number of different products under the general heading of 'community profiles'. They will be available for all standard census geographic areas from collection district upwards.

43   As well as 'standard' community profiles, clients will be able to specify their own combinations of census geography or different tables from the profile database and obtain a community profile customised to their own specification.

44   The profiles will be available on most output media, according to the preferences of the client, and in the case of standard community profiles it is planned that they should be printed on demand at all ABS central Information Services locations.

45   We currently plan to charge $25 for each standard community profile - thereby making them widely available in the community - and give more emphasis to revenue raising with customised profiles being priced at around $250.

Cdata91

46   A most successful product from the 1986 Census was CDATA86 - a small area profile database on compact disk which is accessible via a CD-ROM reader by personal micro computers. For the first time the ABS was able to put a comprehensive summary database directly in the hands of users in a form that could be accessed using relatively simple and widely understood technology. Previously the only electronic form in which the profile database was available was on magnetic tape, which could only be accessed with the help of ADP experts. The CD-ROM product allowed the ABS to put the data directly in the hands of the analyst.

47   A cooperative arrangement was made with an Australian high technology company, Spacetime Research Pty Ltd, whereby ABS provided the data and Spacetime Research formatted and stored it on compact disk along with digitised boundaries of the census areas from collection district upwards, software to manipulate the data, and the 'Supermap' software which allowed the data to be presented in the form of statistical maps.

48   Nearly 800 copies have been sold at prices between $4000 and $5500 (price increased with upgrades in the software provided with the data), yielding the ABS a revenue of over $1m.   (This excludes royalties paid to Spacetime Research.) This was the first such joint venture that the ABS has entered into with a private company.

49   The fact that a wide range of profile data for small areas was made available on users' own microcomputers was the cause of widespread satisfaction with the product.   There were however criticisms of difficulties encountered in buying and learning to use CD-ROM readers which were new technology to most of our clients; in transferring data or mapping information between CDATA86 and other programs in using the software documentation; and of the lack of user friendliness of the interface.

50   We will be building on this success and those lessons to produce an improved CDATA91.   It is likely to contain data from the 1981, 1986 and 1991 Censuses with an improved interface, software, and documentation.   We will also be taking advantage of the research commissioned into attitudes of the current users towards CDATA86, and some plans for other new features include the following.

.   The provision of training at different levels to meet the wide range of expertise which exists amongst existing and potential CDATA users.

.   A more aggressive educational program to encourage client organisations to make a number of people in their staff familiar with using the product.   (The research showed that in too many instances organisations ceased using CDATA86 when the particular person who had purchased it left without passing his or her knowledge on.)

.   Add some geographic features to the digitised boundary files so that users are more readily able to identify the location of census areas which are currently shown on CDATA only as the outline of their boundaries.

51   A major problem that the research revealed for us was that many existing users of CDATA86 look at CDATA91 as simply a data update of their existing product.   They expect to be purchasing a new set of data to add to their existing hardware, software and data.   Many of them expect this to be available for under $2000.   However census geography does change over the five year cycle, and it is necessary to market a restructured product which cannot make any use of the material already in clients' hands.   The situation is

exacerbated by the fact that the cost of including digitised boundaries is expected to have risen substantially since 1986, and the ABS is inclined to believe that it underpriced CDATA86 in the first place by not recognising the true value of the data. Given the volume of data available on the CD-ROM summary database and the wide range of uses it has, we believe a price of more like $12,000 for CDATA91 is justified. Whether this is actually viable in the market place given the attitude described above is a subject that we will have to research very carefully. Consideration will be given to providing discounts to CDATA86 clients.

52   We do believe that CDATA91 is a product where we should take maximum advantage to raise revenue, as profile data is widely available to the general community through the community profile products.

53   We are considering preparing separate CDATA products for individual geographic areas such as the states, but· have to be careful that in attending to this market we do not simply take customers from the Australia wide market and fill their needs at a lower price.

54   A profile database will also be available on magnetic tape but without any accompanying software.

'Matrixes'

55   Our matrix products have evolved out of the previous Census' very large set of 'standard' detailed cross classified tables. The previous experience showed that our approach of producing and cataloguing a large number of tables for general sales was neither efficient nor effective. The standard tables were underutilised, and our capacity to respond to clients' further requests for particular extra tables was very constrained. Long production delays occurred too often.

56   For this Census, we will produce a relatively small set of standard detailed cross classified tables and market them as 'standard matrixes'. The word 'matrix' has been chosen to reflect the extensively detailed cross-classifications these tables typically contain. We will give much greater attention to producing customised matrixes. Preparations are in hand to start to promote this customised service in mid 1991, pointing out to clients that if they specify the tables they want even before the census starts, we can prepare the necessary programs on our tabulation software and be in a position to produce the matrixes quickly after the final unit record file becomes available.

57   This 'early bird' promotion is one of our major initiatives for the 1991 Census and one from which we expect to gain a substantial proportion of census revenue.

58   Prices for matrixes will be related to the volume of data contained in the matrixes, as this is one of the determinants of the value of the matrix to the client and it is measurable.

59 We are considering charging a premium for filling orders more quickly than is routinely the case.

'Censas'

60 The reaction to our 'early bird' promotion of customised matrixes amongst existing users of census tables has been very good. There are, however, people who would prefer more flexibility and more control over the turnaround time between deciding they want a new census table and actually receiving it. To assist them we are developing a service that will be marketed as 'CENSAS'.

61 We expect to make a test database of deconfidentialised unit records, along with documentation of its structure, available to clients who have skills in writing SAS code. Clients would write their code and test it on their test database, then send it to the ABS for running on either the full unit record file or a sample of it. The CENSAS approach should minimise time delays within the ABS and give clients maximum control over their own destiny in accessing census tables.

62 There are however substantial problems in ensuring both that no confidential information is released from the ABS under this scheme and that this is well understood outside the ABS. Software can be written to limit the use of SAS to tabulation only; and we can readily employ the same deconfidentialisation procedures to tables produced under CENSAS as we do for tables which are produced entirely by the ABS itself. The problem lies in controlling for a user repeatedly specifying the same table in order to deduce the signal inherent in small cells which have been randomly perturbed (as is routinely the case in Australian census data), or to ask for variations of tables which allow confidential information to be produced by linking information contained from separate CENSAS requests. The latter problem of course exists with ordinary tabular outputs from the Census, but would be exacerbated if greater volumes of tables are produced via CENSAS with less hands-on work by ABS officers. These issues are currently being considered corporately, and we are not yet certain whether CENSAS can proceed.

63 Our pricing policy for CENSAS has not yet been settled, but will be closely related to pricing for customised matrixes as the two services have a high degree of substitution.

'Geographic Comparisons'

64   To provide for clients who want very detailed information
in terms of the finer classifications of census data items for
areas which are not so small that revelation of confidential
information becomes a problem, we will prepare 'geographical
comparisons' at state, capital city or regional level. At the
state level, these will consist of counts for every class of
every data item for each of the different states. For smaller
areas such as regions, some collapsing of classifications may
be necessary to protect confidential information. These will
be available in hard copy, microfiche or floppy disk at some
$1000 a set.

Metadata from the Census Program

65   A number of printed publications will be available at
modest prices to enable clients to understand how the census
was conducted, what all the terms used in collecting;
processing and disseminating its information mean, and various
lists of geographic codes. These will be very similar to the
form they took for the 1986 Census.

Outline Maps from the Census Program

66   As mentioned above, digitised boundaries of standard
census geography will be available on CDATA91. They will also
be available separately on magnetic tape if required by the
client. Actually getting the boundaries digitised requires
ABS to contract work externally. The degree of accuracy of
the digitised boundaries which provides the best balance of
costs of production and of value in the marketplace is an
issue that requires careful consideration. We believe that
the majority of ABS clients do not need a boundary file which
is cartographically precise.

67   We also hope to have digitised post code boundaries to
allow users to create statistical maps of the postcode data
that the census produces. Australia Post has recently called
for tenders to provide digitisation of their postcode boundary
maps. ABS would like to enter into an arrangement whereby we
can make these boundaries available on CDATA91, or separately.

68   Collection district field maps will continue to be
available in hard copy and microfiche form, but another
planned product from the 1991 Census is a compact disk
containing indexed video images of census field maps for all
collection districts in the country. We hope that users of
CDATA91 will be able to access the field map compact disk to
see the geographic and other physical characteristics of
census areas. The digitised boundary files on CDATA91 will
show only the outlines of census areas, and will not indicate
the on-the-ground features to which they relate.

69   For the 1996 Census, we are looking ahead to having field maps digitised so that our field mapping and our output mapping become an integrated exercise rather than two separate exercises.   Field maps and statistical maps showing physical features could then be prepared from the same source.

Sample Files

70   The household sample files from the 1986 Census were not popular products (less than a dozen were distributed).   We believe this was mainly because the deconfidentialisation procedures - such as collapsing classifications and removing geographic identifiers - made the products unattractive for the purposes to which the users wished to put them.   Being just as obliged as ever to ensure that no unit record that leaves the Bureau of Statistics is likely to lead to the identification of an individual, we have not come up with creative ideas for producing marketable household or person sample files from the 1991 Census.

71.   We will concentrate instead on performing, under our various pricing policies, customised services that meet the needs of clients who might otherwise have purchased sample files.   These services included sophisticated statistical analyses available from the ABS' statistical consultancy service.

Schools' Kits

72   As part of the 1991 Census public relations program, a census awareness package has been prepared for schools.   In recognition of the future role the children will play as users of census data, a data package will also be prepared.   Further market research is scheduled to determine the contents in consultation with state education authorities.

Family Data

73   Our capacity to produce information about families, rather than individuals or households, in many of the 1991 Census products and services has been substantially upgraded. The family classifications are extensive, providing much flexibility in tabulation.   Basic family types and interfamily relationships are complemented by a good range of derived variables such as parental and family income, visiting dependant children, temporary absentees, married/defacto status, stepchildren and family movement indicators.

PROMOTION IN THE MARKETPLACE

74   Clearly we are still developing our product and service
designs. But we are also turning our minds to how to promote
the results of this work so that the full potential of the
census data is realised.

75   Promotion of course commenced with the user consultation
exercise on the content of the Census. Many of our clients
already feel they have a stake in the Census. We will have a
program of information updates, including a regular newsletter
that will keep clients informed of developments in product and
service design and their expected availability.

76   We also intend to arrange seminars where prominent users
of census information in a wide variety of client applications
present their views on the value the census information has to
them, and how they see others might gain from the Census.

77   Our program of consultation on product design through
seminars, conferences and one to one discussions will be
mirrored later with a similar program on communicating to
people just what is available. ABS is represented at relevant
national and some sub-national professional conferences and
seminars, either through delivering papers or presenting a
census display..

RELATIONSHIP WITH PRIVATE SECTOR INFORMATION CONSULTANTS

78   Information consultancy and other businesses have in the
past been keen to obtain copies of the published census
profile databases and use them to provide their own
information consultancy services. We would expect the demand
for 1991 Census information from businesses who wish to resell
it in one form or another to have increased, even though ABS
will through CDATA91 put a profile database directly into the
hands of many of the potential clients of these businesses,
and even though the ABS will be better able through this same
CDATA91 product to provide an information consultancy service
directly to clients using census and other statistical
information from its central Information Services areas in
each State capital city.

79   The determination of the conditions under which we would
provide the census profile databases to organisations which
will on-sell the information is bound up in legal issues
concerning copyright and mutually agreed working arrangements
which are not legally enforceable. Our keenness to enter into
an agreement or to attempt to enforce copyright will depend on
two main factors.

80   The first one is the extent to which the services
provided by the organisation compete directly with services
that ABS wishes to provide itself. The greater the effect on
ABS revenue is likely to be, then the more incentive there is
for us to be concerned about the external activity.

81   The other factor is the degree to which the service adds
value to the data through analyses and judgements leading to
recommendations from the business to a client, as compared to
simply presenting the data in much the same as its original
form.   In the latter case the argument of breach of copyright
has more weight and we have more opportunity to persuade the
business to reach an agreement with us.

82   In cases where it is decided that a cooperative working
agreement should be reached, the two basic options are licence
fees and royalties.   For past Censuses, working agreements
have essentially been licensing arrangements whereby these
businesses were charged a premium on purchase of a summary
database in order to obtain our agreement to on-sell the data.
ABS' view of the outcome of these arrangements is that in some
cases the private business did very well and the return to the
ABS through the licence fee was insufficient.   Given that ABS
did not share the entrepreneurial risks that the businesses
took, this is not an unreasonable outcome.   But it does
suggest that in future ABS should be more prepared to enter
into royalty arrangements.

83   The ABS is currently corporately considering its position
on its relationship with businesses who wish to on-sell our
data and the Census Program has not yet decided its position
for 1991.   It is, nevertheless, likely that royalty
arrangements will be required where the volume of money
involved is not small, and that each potential arrangement
with a business will be evaluated on its individual merits.

SUMMARY

84   The major initiatives that characterise the design and
marketing of statistical information from the Australian 1991
Census may be summarised as follows.

a   There will be a substantially greater capacity to rapidly
     serve the individual needs of clients which are not
     provided for by our range of standard products.

b   There will be fewer standard products, including a
     smaller number of printed publications.

c   The full cost of product and service design and delivery,
     beyond the creation of a unit record file and a profile
     output database, will be recovered.

d   The pricing policy will be flexible and non-prescriptive,
     allowing each product and service to be considered
     separately in terms of its potential contribution to the
     ABS mission and to revenue raising.

e   Specific design improvements will be made to CDATA91 so
     that it will be even more successful than was CDATA86.

f   An integral part of designing census products and
     services is an interactive communication with clients.

g   New services such as CENSAS and video images of census
     field maps on CD-ROM will be introduced.

h   There will be a generally faster response to orders from
     clients.

i   Better arrangements will be made with businesses which
     intend to on-sell census data.

ACKNOWLEDGEMENTS

MARKETING STRATEGIES FOR PHILIPPINE POPULATION CENSUS DATA

by

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MARKETING STRATEGIES FOR PHILIPPINE POPULATION CENSUS DATA

I. INTRODUCTION

It is a common notion among many that the success of a population census rests on how well the census is conducted and its results processed. Satisfaction on the conduct of the census, particularly among those tasked to undertke it, peaks at the knowledge that the coverage of the census and the quality of the information collected, have met their expectations.

The real test of the success of a census actually lies on the extent to which the vast amount of information obtained from it are accessed and utilized in meaningful ways. After all, the justification of the huge financial outlay that a government sets aside for a population census is on the utility of the data not only for its purpose but also those for the general public.

Unfortunately, one of the often neglected aspects of census planning is in data dissemination. What types of products are to be produced and how these should be disseminated are matters that get attention usually after the census has been undertaken. In most cases, only tabulation plans for the printed output are considered prior to census taking. What is often relegated to after-census thoughts are the various other forms or media with which the census results might be disseminated.

The census provides valuable information that serves the needs of various kinds of users. Apart from the group of government users, there are the business entrepreneurs, the academic and research institutions, educators, politicians,

journalists, and many others who find census information vital to their operations. Many of them are willing to pay some amount if only to get access to these census information. For this reason, the statistical offices producing census data might do well to take advantage of this fact and market their products as if these were economic goods. These offices should think about putting a price on census information not only to raise revenues but to emphasize the economic utility of such information. This can be done even as they maintain their goal of maximum dissemination of census data.

The types of data that users need vary in sophistication and degree of detail. To produce the census outputs purely in their traditional forms, i. e., publications that show tabulations of social and demographic characteristics of the population with some geographical breakdown, may not be the best from a marketing point of view. Such publications generally contain more information than what most users require. And yet, there are some who may find the standard publications too little in the details that they require.

Considering the cost of generating census products in these forms, there is a need to devise a scheme for a comprehensive yet economical data dissemination. To economize on the cost and at the same time maximize the utility of the data for any given type of user, a dissemination strategy must consider the target clientele and the amount or form of data that each requires.

The recent developments in information and communication technology have made the options for other forms of data

dissemination possible at reasonable cost even in developing

countries. These include computer usable media such as magnetic

tapes, floppy diskettes and CD-ROM's; audio-visual formats such

as video tapes; stand-alone charts and thematic maps; etc. Use

of these technology can certainly enhance the utility of census

data even as they attract the fancy of potential users.

II. DATA DISSEMINATION OF THE 1980 CENSUS DATA

In previous censuses in the Philippines, the data have

found limited use. The major form at which the data were

disseminated were printed provincial and summary reports

containing about 10 statistical tables on the composition and

distribution of the population and about 5 tables on housing.

Copies of the provincial volumes were distributed free of

charge mostly to national government agencies, a couple of

international organizations, and to a few libraries in and

outside the country. Each local office of the National

Statistics Office likewise maintained a copy of these volumes.

Outside of these above mentioned entities, the distribution was

made on request basis and upon payment of some fixed charges.

Very little, if any, was done to advertize the availability of

census results.

In addition to the provincial and national summary reports,

there were a number of other census publications dealing on

special topics, such as urban-rural classification of areas,

population density of geographic areas, and others, which were

published out of the 1980 census. Their distribution was similar

to the main reports.

Statistical tables contained in the published volumes were supplemented by about a dozen other tables which were generated but not published. The tabulations, which remained in the form of computer outputs, could be found only at the NSO headquarters thus limiting the access to the information to users in the capital region. A list of the unpublished tables was printed on the back page of the published tables as a means of informing readers that additional tables were available. Very limited requests for these tables, however, were received.

There were requests for special tabulations but again these were very limited due to the additional costs the users were required to pay for such special tabulations.

While sample micro-level data (at 1% and 5%) were produced in magnetic tapes for use in analytical and in-depth studies, most of their users were actually researchers in the NSO itself. No more than 5 other requests of data in this form wre received by NSO in the span of 10 years. Understandably, this was so because the magnetic tapes wherein the sample data files resided required main-frame processing to which most researchers, at least in the country, did not have access. The stringent policy of the office towards access of microdata further discouraged potential users from requesting data in this form.

In brief, the 1980 census data was underutilized primarily because of the absence of a comprehensive data dissemination plan and lack of serious efforts to make public the availability of the data. The passive distribution scheme of even the published

volumes led to a situation, wherein, 10 years after the census has been conducted, the NSO finds itself stocked with voluminous publications that some of them had to be given away free.

III. MARKETING STRATEGIES FOR THE 1990 CENSUS DATA

Unlike in previous censuses, dissemination of the 1990 census data shall be pursued in pro-active mannter. The National Statistics Office, the agency mainly responsible for the conduct of the census, shall identify and seek out potential users and "lure" them into using the data through better packaged products and through awareness-raising campaign on the reality of the demographic and social conditions in and around the country.

Products will be designed and developed on the basis of the fact that users of census data vary in their interest and in the extent or manner by which the data will be utilized. The products will therefore vary considerably in form and in the amount of details. A matrix of users and their data requirements drawn early enough will therefore be a good strategy for marketing census products, Along with this will be a schema for promoting or advertizing the products appropriately to their respective target clients.

As a matter of policy, users of census products, except those in government, shall be asked to pay for the products that they get. However, this policy will not get in the way of wider dissemination of census results, which still remain the major goal of the entire undertaking.

Promotion of the products will no longer be a function of NSO central office alone. The regional and provincial branches of NSO will have a major role in the dissemination of the data for only through the participation of field offices may the numerous local users gain access to the wealth of information that is obtained by the census.

Timeliness remains to be a major consideration in marketing the 1990 census products. The information from the census are mostly required to address current social and demographic issues. Hence, there will be a concerted effort to make the census data available as early as possible through the efficient utilization of manpower and technology.

However, since not all products can be made available at the same time, a prioritization of the different products will be established as regards the timing with which they will be made available. The criteria for prioritization will include the type of user, the importance of the information to national policies and the ease of generating the product. Certainly, the data requirements of the national and local governments shall be the primordial concern in census data dissemination. Meeting the needs of the government above all others not only fulfills the main objective of the entire census operations but also indirectly distributes the benefits of census data to the general public through improved delivery of public services, formulation of relevant policies, etc.

In order to determine the kind and quantity of products to be generated, one must have a good idea of the types of clients

that he will serve and an understanding of the needs of each one.
For the 1990 census data, the target clients have been
identified. They are classified as follows:

A. Nationale and local agencies of the government

As mentioned earlier, this group represents the most
important user of census data. For policy formulation, planning
and program monitoring and evaluation, their data needs encompass
almost the entire list of topics covered by the census such as:

- composition of the population in terms of the basic demog-
  graphic characteristics;
- cultural background or ethnicity;
- population distribution across geographical areas;
- labor force characteristics and employment status;
- disability;
- education and literacy;
- migration patterns;
- commuting patterns for transportation planning;
- fertility behaviour;

The level of disaggregation with which they require data
will vary depending upon the level of concern of the specific
government unit. City and municipal government units, for
example, will most likely demand for data at the barangay or
village level while provincial, regional and national government
units will require the same data probably at higher levels of
disaggregation.

Generating and publishing small area statistics to suit the needs of the lowest level of government unit does not only create a drain in resources but is impractical. At the same time, ignoring the needs of local executives does not speak well of the census for, after all, it is only through censuses that small area statistics are possible.

Alternative ways to get through with this dilemma would be through the use of floppy diskettes as distribution media.

B. Elective officials

The main interest of elective officials on population censuses is usually on the size of the voting population, the number of people they represent or serve, and the number of seats each congressional district requires. The nature of data that they seek will most likely be summary counts of population in electoral precincts and congressional districts with breakdown by age to identify those qualified to vote.

C. Research institutions and individual researchers including graduate students

This group would need micro level data, in addition to tabulated summary data, for doing various types of analytical in-depth studies of the population. There may be a few that would require the entire data set. It is anticipated, however, that most researchers would require at most a sub-sample of the national data or entire data from small geographical areas.

D. Educators

School children need to be taught about the basics of
population -- how many there are in a given geographic area, how
they grow, what the implications are of changing demographic
processes, etc. Educators, whose task it is, to impart these
information, therefore becomes a target user of census data. The
amount of information they need may be few but it certainly
requires better packaging than most of the other census products.

E. Businessmen

This is the group of potential users whose requirements have
never been given serious thoughts in the past. Incidentally,
this is the group that would be willing and capable of paying the
price of census data. Businessmen require information to be used
in making such important decisions as where to put an additional
factory, by how much should production of a certain product be
increased, and other business-related issues.

F. Journalists

For disseminating general information to their readers,
media men make use of census data. Here the amount of details in
the data they present may vary quite considerably although, by
and large, they may be simply subsets of standard publication
tables. In short, meeting their requirements does not
necessarily require additional planning. This group of users,
however, do not constitute paying clients but they are as
important for they serve to publicize the availability of census

products to the general public.

With respect to the kind of products that the NSO envisaged to produce out of the 1990 census are the following:

A. Publication tables

Standard publication tables will remain to be the major product to be generated out of the 1990 census. This will include the following reports:

1. Preliminary Report - gives the preliminary population count of the population by province and cities; released two and a half months after census taking;

2. Final Population count - gives the final count of population by province, city, municipality and barangay; requires Presidential proclamation; to be released before the end of the census year;

3. Provincial Reports on detailed demographic characteristics with a National Summary -gives tabulations on the number of population according to selected demographic characteristics as well as tabulations on housing situation in the area;

4. Other special reports - statistical tables on the homeless population; on Filipinos who are members of diplomatic missions abroad; on urban-rural classification of barangays; population density by municipality;

Except government agencies and officials, selected libraries, and the media, who will receive free distribution

copies of these reports, these products will generally be for sale.

B.   Floppy diskettes

As more and more users have access to microcomputers, more products will be disseminated in floppy diskettes. This will include copies of the standard tables for publication and sub-sample of the microdata. For the additional processing cost, users of floppy diskettes, including those in government, shall be charged the cost of production of these products.

C.   Magnetic tapes

Public use files containing either 1%, 5% or the entire data set will be placed in magnetic tapes for users who prefer main-frame processing of the micro-level data.

D.   Video tapes

Video tape presentations highlighting some of the more important findings of the census will be produced.

E.   Thematic Maps

F.   Fact Sheets

In summary, the marketing strategy adopted by the Philippines in connection with the 1990 census results is characterized as follows:

1. A dissemination plan that would reach the largest number of users possible.

2. Identification and understanding the data requirements of users.

3. A pricing scheme established not so much for the purpose of recovering part of the cost of the census as to place a premium on census products.

4. Design of products that will accomodate the whole range of their potential users

5. Decentralized dissemination activities through the field offices of the NSO.

VIETNAM POPULATION CENSUS - 1989

With the population of 64.4 million people (according to data of the population census conducted on April 1st, 1989), Vietnam has become the 13rd populous country in the world. Although great efforts have been made, the birth rate in 1988 remained high (31.3 per thousand). Population has been an urgent question in Vietnam.

Thus, in August 1987, the Council of Ministers agreed to conduct a National Population Census at 0 a.m., 1st October 1989. This decision was made with the aim of collecting detailed population information to serve the formulation of the socio-economic strategy and population policies for the next decade (1991-2000).

The choice of 1989 as the year of the second nationwide census was appropriate as it marked a decade since the first census after reunification, conducted in 1979. During that time, a lot of complex changes in population and social life took place which would be reflected in the results of this census.

The Council of Ministers also decided to establish Census Steering Committees at Central, city and/or provincial, district and commune levels.

The Central Census Steering Committee is headed by a Chairman of the Council of Ministers. Its Deputy Chairman is the Director General of the GSO (General Statistical Office). Other members of the Committee are Vice Minister of Labour - Disabled Soldiers and Social Affairs, Vice Minister of the Interior and the Deputy Director of the Office of the Council of Ministers etc. With similar composition, the Steering Committees at various levels cooperated with representatives of such mass organizations as Youth Union, Peasant's Association, Women's Union..., with schools and especially mass media organizations (television, radio, press...) in conducting publicity work on the scope and objectives of the census.

In our country, the preparation for a census to be conducted is considered an extremely important step involving a lot of work that should be executed at central level (three years) and provincial level (one year).

The GSO undertook all the preparation work and played a key role in the census. The main objectives of the preparation process are to identify the information demand through the conduct of a wide referendum among ministries, industries, localities and information users; to design census schedules and questionnaires; to identify the scope and coverage of the census; to conduct pretests so as to draw experience in census expertise and organization; to make mapping and listing, to carry out recruitment and training of enumerators; to print and distribute census schedules to enumerators; to establish computer centres for data processing...

To meet the ever-growing needs for statistical data, the scope of the 1989 census was considerably wider than in 1979.

The census attempted to collect a broad range of information, but at the same time care was taken to ensure that the burden on the population was not too heavy, and that the cost of the census could be reduced. For the first time, the strategy used by us to meet these various goals was to incorporate sampling into the full enumeration.

Such topics, listed below, used in the full enumeration are quite suitable to recommendations of the United Nations, covering:

1. Name
2. Relationship to head of household
3. Sex
4. Date of birth
5. Ethnic group
6. Internal migration
7. Literacy
8. Education
9. Qualifications
10. Marital status
11. Usual activity
12. Occupation *last year - usual basis*
13. Industry

In addition, additional questions on children ever born, whether still alive, and births in the part 12 months, were asked to approximately five percent of women of child-bearing age.

The above information were gathered to serve population projection and choice of family planing methods.

Question also included in the sample survey was number of deaths in the household reckoned from the first day of the New Lunar Year of 1988 to 31 March 1989 in order to study the mortality situation. Simultaneously, the census also provided opportunity to give some useful information on housing, based on questions asked to a sample of households to investigate and evaluate the housing status of people of different strata.

The census of 1989 counted all persons who were overseas at the time of the census but considered under the census rules to be usual residents of Vietnam.

Foreign persons living and working in Vietnam were also counted by the census as Vietnamese.

The 1989 census was conducted in early April 1989 which was the most favorable time in our country be cause this was not raining and stormy or harvesting season and people also less travelled during that time.

In addition, it was planned that the processing of sample data would be completed. Within one year so as to provide information in connection with the working out of the Socio-economic strategy for the next decade in a timely manner.

Over 200 thousand. interviewers who were carefully trained in census techniques went to each household to undertake enumeration. Generally speaking, the enumeration was completed as scheduled.

A post enumeration survey was conducted after the census among 1 per thousand of the population. The main objective of the PES was to obtain measures of the completeness of census coverage. According to preliminary data, the rate of missing and duplication is 0.5 per cent.

With UNFPA assistance, we established 3 computer centres in Hochiminh city, Danang and Hanoi for the purpose of regional data processing.

This was the first time the entire census was processed by micro and mini computers.

The processing system incorporated standard census software for data entry, editing and generation of computer tables. Data entry was completed within three months using a total of seventy computers. We therefore, only one year after the census have issued two publications on sample results of the population and housing census in big volume - the first products of the 1989 census, as scheduled. According to our plan, the official results of the census will completely processed in this December and published by the end of 1991. (5%) → by the beginning
beginning (100%) → by the end

With a view to exploiting the census results, UNFPA through project VIE/88/P18 has assisted us in implementing the analysis of census data.

The circumstances under which the 1989 census was conducted were not always easy, given the prevailing Socio-economic situation and the difficult work conditions, but the census has been successful.

As stated above, the conduct of population census in Vietnam is not only a professional task of the GSO. It also enjoyed direct guidance and high priority given by Government administration at all levels and warm support of various industries mass organization and people.

We greatly appreciate the role and assistance of UNFPA and other international organizations. Considerable support was provided by UNFPA in the form of finance,

materials and technical assistance. To ensure that the census met the highest international standards, advisers experienced in various areas of expertise were drawn from

ESCAP, UNDTCD and UNSO. The Australian Bureau of Statistics (ABC) provided training courses and facilities in Australia for staff of GSO and released its own experts to visit Vietnam and provide technical assistance in several important areas. The coodinated programme of financial and technical support and the high professional standards of advisers involved in the census provided valuable training to the Vietnamese counterparts who not only ensure the quality of the census but also are still useful for the coming years.

THIRTEENTH POPULATION CENSUS CONFERENCE

East-West Population Institute
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SMALL AREA DATA FOR SOCIAL PLANNING
IN HONG KONG

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SMALL AREA DATA FOR SOCIAL PLANNING IN HONG KONG

A paper on utilization of small area
data from population censuses
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Population Institute

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1.   <u>Some geographical facts on Hong Kong</u>

1.1   Hong Kong has a total land area of 1,074 km² (414 sq. miles). About 70% of this is hilly terrain. It consists of the Hong Kong Island, the mainland adjoining China, the Lantau Island and a number of small islands. On an international map, Hong Kong normally appears only as a small dot along the southern shore of China. A local map of Hong Kong is given in Appendix 1.

1.2   The population of Hong Kong, which has a size of about 5.8 million, is concentrated along the northern shore of the Hong Kong Island, the whole of Kowloon and New Kowloon (i.e. southern part of the mainland) and a few new towns in the New Territories (which comprises the northern part of the mainland and the islands). Hong Kong is highly urbanized. Some rural remains can be found in the New Territories.

1.3   Hong Kong is densely populated. The overall population density is 5,400 persons per km² (13,800 persons per sq. mile). Taking Hong Kong Island alone, it is 16,000 persons per km². For Kowloon and New Kowloon, it is 49,700 persons per km².

1.4   Due to the high population density, a special feature about Hong Kong's small area statistics is that a geographically "small" area may still involve a fairly substantial number of households and persons.

2. Small areas in the Hong Kong context

2.1 In Hong Kong, the basic geographical small-area system established for common administrative and planning purposes is the system of "District Board (DB)" districts. In this system, Hong Kong is demarcated into 19 districts. Their geographical demarcations are also shown in the map in Appendix 1. Each DB-district has a District Board which advises the Hong Kong Government on highly localized affairs and members are elected to the Board by residents of the respective districts. The size of the districts varies somewhat, ranging from below 10 km² to less than 100 km² for most of the districts. Only a few of the less urbanized districts are over 100 km² but all are below 200 km². A table showing the population and area of the DB-districts is given in Appendix 2.

2.2 For many planning purposes, most districts are small enough in terms of geographical considerations not to require further division. Indeed, for economies of scale of operation, many social provisions and community facilities cannot be efficiently run on a very dispersed manner. For the larger districts, nevertheless, planning certainly requires data with a greater geographical disaggregation.

2.3   In any case, for both statistical and other purposes, geographical divisions at sub-DB-district levels exist. The immediate level below is the Tertiary Planning Unit (TPU). By "tertiary" it is implied that there are "primary" and "secondary" planning units but these are becoming less referred to gradually due to the popularized use of the DB-district demarcation. Yet the next level is the Street Block (SB) [or in the case of rural areas, the village cluster (VC)]. There are 271 TPU's, which are further subdivided into 4,100 SB's/VC's. A SB can be further divided into plots but this is not very commonly used.

3.   The history of population censuses in Hong Kong and the 1991 Population Census

3.1   The 1991 Population Census, to be held in March 1991, will be the fourth decennial census. The previous ones were held in 1961, 1971 and 1981. By-censuses were held in 1966, 1976 and 1986. The by-censuses were, strictly speaking, large scale sample surveys which enquired on the common population census topics. They served to provide up-to-date information on the population mid-way between two censal years.

3.2   The 1961 and 1971 censuses were full enumerations of the population on various census topics. In the 1981 Census, and so will it be in the 1991 Census as well, a

majority of the population was subject to simple enumeration (i.e. on the most basic characteristics) and the rest to detailed enumeration. The percentage of the population for detailed enumeration was 20% in 1981 and it will be 14.3% (i.e. 1 in 7) in 1991.

3.3 Accordingly, in the 1991 Census, some 4.9 million persons (in 1.5 million living quarters) will be enumerated with the "short form" and 0.9 million persons (in 0.27 million living quarters) will be enumerated with the "long form".

3.4 The topics for enquiry are listed below:

Demographic characteristics

    *1.   Year and month of birth

    *2.   Sex

    *3.   Relationship to head of household

    *4.   Whether a usual member of a household[a/]

    *5.   Whereabout on census reference night[b/]

    6.   Marital status

Educational characteristics

    7.   School attendance

    8.   Educational attainment

    9.   Field of education

Other social characteristics

    10.   Usual language

    11.   Ability to speak other languages/dialects

12. Place of birth

13. Nationality

14. Duration of residence in Hong Kong

15. Duration of residence in present district

16. Previous district of residence

17. District of residence five years ago

Economic characteristics

18. Activity status

19. Industry

20. Occupation

21. Earnings from main employment

22. Whether having secondary employment

23. Earnings from other employment

24. Other cash income

Household and housing characteristics

*25. Type of household (domestic or collective)

*26. Type of living quarters

27. Type of accommodation

28. Tenure

29. Rent

Derived characteristics:

* Age of person

* Geographical location of person at time of Census

* Household size (at Census reference night)

* Usual household size

  Household composition

  Household income

* Occupancy of living quarter

* Number of households in living quarters

* Number of occupants in living quarters

Notes:

* For simple enumeration, only the asterisked topics
  are covered.

a/ This information is required for counting the number
   of usual residents in the household.

b/ This information is required for counting the number
   of persons in the household on the census reference
   night.

4.   Statistical features of the 1991 Population Census
      facilitating the compilation of small area statistics

4.1   There are a number of features which distinguish a
      population census from an ordinary sample survey of the
      population, even when the latter covers more or less
      the same topics and when the former adopts the kind of
      design as the 1991 Census where detailed enumeration is
      only applied to a sample of the population. First, the
      short-form enumeration and the long-form enumeration in
      the Census together constitute a full head-count of the
      population. Hence, as far as the most basic
      characteristics are concerned (for example, the age-sex

distribution by detailed geographical breakdown), no sampling error will be incurred. Second, the size of the sample for the long-form enumeration is much larger than that for any ordinary sample survey hence the detailed characteristics can be tabulated at greater breakdown levels without worrying about excessive sampling errors. Third, the above point is further helped by the fact that since age-sex distribution is accurately known in regard to geographically sub-divisions, the method of post-stratification (post-stratifying by age and sex within sub-divisions) can be applied thereby further reducing sampling errors. Fourth, as a very large scale project generally commanding respect, trust and support from the entire community, the Census is usually better placed than sample surveys in obtaining good quality data.

4.2 The design of the sample for the long-form enumeration in the 1991 Census has incorporated serious consideration of the eventual application of the statistics and in this respect small area statistics certainly feature prominently. A one-stage proportionate stratified, replicated, systematic sampling method will be adopted.

4.3 The sampling frame from which the sample will be

selected consists of two parts:

(i)   for urban areas and the new towns, a list of
       living quarters (LQs) which are permanent in
       nature. This comprises the majority of LQs.

(ii)   for rural areas and temporary structure areas, a
       list of segments each containing a cluster of
       some 10-15 huts or simple stone structures.
       Addresses of individual LQs within each segment
       are also listed.

To maintain a complete and up-to-date sampling frame,
systematic rounds of field visits are conducted by
field staff to update existing geography records.
Returns from the Building Ordinance Office and the
Housing Department also contribute in updating the
frame.

4.4   The unit of enumeration is the household (taking with
       it every member therein). For urban areas and the new
       towns, the sampling unit is the LQ and once a LQ is
       selected all households therein will be taken. For
       rural areas and temporary structure areas, the sampling
       unit is a segment and once a segment is selected, all
       LQs there (and subsequently all households therein)
       will be included in the sample. LQs in the frame are
       stratified by the DB-district where they are located.
       No other explicit pre-stratification is applied, but
       the ordering of LQs in the sampling frame·by TPU/SB and

the application of systematic sampling introduce implicit stratification by smaller geographical area within each DB and by LQ type (i.e. permanent vs. rural and temporary housing). The use of replication (i.e. using a number of random starts to secure a number of systematic samples within each stratum) is to simplify the computation of sampling errors of the estimates.

4.5 The generally adopted sampling fraction is 1 in 7, but for two less populated districts, viz. Sai Kung and the Islands district, the sampling fraction is 2 in 5. As regards the marine population, which is less than 1% of the total population, a full enumeration is proposed in respect of the long-form enumeration after detailed consideration of administrative problems as well as resource implications.

4.6 The 100% simple enumeration (the short-form enumeration) provides precise information on the distribution of the population by DB-district (or indeed for any sub-division desired). To estimate the various other population parameters in respect of each DB-district on the basis of information obtained from the sample, a ratio estimation method will be adopted. Based on the results of the complete enumeration, the population is disaggregated into a number of age-sex categories to obtain a set of known totals which are

used as control figures for adjusting the sample statistics. The members in the sample are "post-stratified" into similar categories. The achieved size of each age-sex-specific sample is then compared with the corresponding control total to obtain the weight for grossing-up all persons in the sample of that category. More precisely, the formula for the estimation of parameters within each DB-district is as follows:

Let N_k be the population total for the kth age-sex category and n_k be the corresponding sample total.

Let Y_k be the complete count and y_k the sample count in respect of a certain characteristic (e.g. Y_k is the number of persons working in the manufacturing industry). Y_k is to be estimated.

N_k is observed from the complete enumeration and n_k, y_k from the sample enumeration.

Then the district total in respect of the characteristic in question is

$Y = \sum_k Y_k$, which is estimated by:

$$\hat{Y} = \sum_k y_k \cdot \frac{N_k}{n_k}$$

4.7 This method of grossing-up is preferred to the straight grossing-up procedure of multiplying the sample estimate by the reciprocal of the selection probability (i.e. 7 in our case), for two reasons:

(a) first, it avoids inconsistency between the estimates based on the sample and those on the

complete head-count for basic characteristics such as age and sex; such inconsistency would normally arise if the latter are not used as control totals in the estimation process. Many data users would find it particularly a bother with figures which do not tally exactly.

(b) second, more precise estimates are produced. The magnitude of the reduction in sampling error depends on which variables are being estimated. Quite considerable gains may be achieved by post-stratification for those variables which are highly affected by age-sex differentials.

4.8 The same kind of method is applicable to statistics at the sub-DB-district level. For small area statistics at the TPU level, the formula is adjusted by taking TPU-age-sex categories within a district instead of simply age-sex categories within the district. Given that the TPU is a relatively commonly used level of geographical breakdown, it is intended that a set of census tabulations covering the more frequently used topics will also be published at this level.

4.9 At the next level of breakdown, viz. SB/VC level, the age-sex distribution will of course be produced. It is contemplated that the above estimation method will be applied to produce some tabulations for specific users.

4.10 The hierarchy of DB-district/TPU/SB(VC) disaggregation
enables easy restructuring of data in terms of other
small areas of interest. One can combine a number of
the "building blocks" at any of these levels to form a
small area of one's own choice. Of course,
proliferation of small-area systems is not encouraged,
as this works against our desire for statistical
integration. Alternative small-area systems adopted by
different users should be mounted only where good
reasons exist. As census-takers, we nevertheless have
to provide a convenient facility to enable statistics
with different geographical breakdown to be compiled
from the same census source. In practical terms, the
census data records always carry the
DB-district/TPU/SB(VC) designation and computer
softwares will be made available for making it easy to
provide estimates and tabulations at any geographical
divisions which are made up of an integral number of
the some 4,100 SB(VC)'s.

5.   Anticipated uses of small area statistics from the 1991
      Population Census in social planning

5.1   In Hong Kong, there are many application of small area
      statistics from the Census in social planning. The
      diverse subject matter fields include strategic and
      territorial development planning, education, housing,

transport, social welfare, health and hospital services, services related to environmental hygiene, recreation and culture, land-use studies and public security. Data may be used in several ways:

(a)   direct application of data: the statistics are used directly for planning purposes or for analytical studies.

(b)   the census data is used as a basis for projections, which will contribute to future planning in various fields.

(c)   the census data provide control totals (since they are derived from a full count or are estimated with high levels of precision) which will support other surveys or data collection activities, by way of enabling the use of ratio estimation methods similar to that described in para.4.6 above.

5.2   Sometimes, statistics from the Census may be used alone and needs are already met. More often, however, statistics derived outside the Census source have to be used in conjunction with those from the Census. In so far as small area statistics are concerned, the flexibility to restructure data according to different small area designations enables statistics from the alternative source to be applied in greater harmony.

5.3　Statistics at highly aggregated levels sometimes fail to highlight problems faced by particular sections of the community which deserve social action. The availability of sufficiently disaggregated data with adequate reliability would have significant contribution to policy formulation for social development. Disaggregation of statistics on different sections of the community may take different forms, but areal disaggregation is often most relevant and appropriate. Ensuing social action is also more easily oriented since areas can always be easily identified.

(a)　Strategic and territorial development planning

5.4　In Hong Kong, strategic and territorial development planning plays an important part in Government administration. Small area statistics at the DB-district level on population, households, housing type, employment and so on are heavily dependent on in the formulation of development strategies involving infrastructural developments, land-use quantities and patterns and transport networks. Whilst population projections on a territory-wide basis depend on the overall age-sex pattern obtained from the Census as well as other demographic inputs, population projections on a sub-territorial basis is very important for social planning. The Census provides benchmark data at the small area level. These, when

combined with inputs from other sources like information on anticipated housing developments, internal migration trends and industrial developments, while being constrained by the territorial population projections, will produce small area population projections for use by planners in many different fields.

(b)   Education planning

5.5   Small area statistics down to the TPU level are particularly useful for planning schools especially at the kindergarten or primary school level. For young school children, it is particularly desirable that they will not have to travel far to attend school. For the new towns in the New Territories, catchment areas are used for the basis of planning, each of which being formed from several sub-divisions of TPU's. At the secondary school level, the planning requirement is a little more relaxed and is carried out on a DB-district basis.

5.6   Schools must be planned ahead of time and projections of number of children in different age groups for schooling in different small areas are essential. Combined with accepted provision standards, these data will indicate the number of schools, classrooms and teachers which will be required. Such projected

requirements will also point to potential problems – such as whether there will be adequate supply of teachers who live in or near the district in question – so that early solutions could be sought.

5.7 For adult education, there are two types: for further learning or for making up for lack of education at an early stage of one's life. For the latter type, information on educational attainment of adults in certain age band is useful. By identifying the geographical spread of the potential adult students, the adult education centre can be better located to provide maximum convenience.

(c) Transport planning

5.8 Owing to the lack of space, transportation is always an area of great concern in Hong Kong and careful planning and management is keenly called for. Transport modelling is performed based on a system of traffic zones with related population, employment and other data so that an optimal network can be determined. Statistics on a "traffic zone" basis can be constructed from the Census data easily. Besides, the small area data from the Census will also be expected to support transport studies carried out from time to time both by way of providing control totals and forming a basis for comparisons.

(d)   Social welfare planning

5.9   In   Hong   Kong,   the   Social   Welfare   Department   is
       responsible   for   various   types   of   services   for   the
       underprivileged   class.   Sheltered   housing   for   the
       elderly   provides   accommodation   for old people who are
       in   healthy   condition   and   can   take care of their own
       day-to-day   need   without   assistance.   Since these old
       people   generally   prefer   to stay in the district which
       they   are   most   familiar with, the small area data from
       the   Census,   on   the   size   and   age   structure   of   the
       elderly   population   in   individual   DB-districts,   their
       household   composition and household income, will form a
       good   basis   for   determining   the   number of units that
       should   be   made   available   in a certain district.   The
       information   also   helps to evaluate whether the planned
       provision   is   appropriate   so   that   adjustments can be
       made where necessary.

5.10   Multi-service   centres provide a full range of community
       support   services   for   the   elderly   people,   including
       laundry,   bathing,   canteen,   counselling,   social   and
       recreational   activities   and   community   education.
       Planning   is   on a DB-district basis so that the centres
       can   be   within easy reach of the target clientele.   The
       number   of elderly people residing in each district will
       serve   as   a   valuable   reference   for   determining   the
       number   of   centres   to   be set up there.   Moreover, the

age structure of the aged population in a district will be of great assistance in the planning of the types of services that should be made available there.

5.11   Home help service provides domestic help, such as delivery of meals/cooking service, personal care, escort to medical consultation, laundry and home management services to infirmed elderlies and to whom assistance from family members or friends is not available.   The home help service is also organized on a DB-district basis.   Hence, the distribution of the elderly population in the districts, in particular the number of old people who are living alone, and other socio-economic conditions of the aged population will be taken into consideration in assessing the demand for such service.

5.12   The outreaching social work teams aim to work with young people with emotional, social or behaviorally problems and who are vulnerable to undesirable influences.   Through the establishment of direct contact with them, outreaching social work provides an alternative approach in administering counselling, guidance and other forms of social work to young people at risk.   Particular targets of the service include members of street gangs with delinquent tendencies, school drop-outs, unattached and runaway youths.   In

deciding on the priority for the establishment of the outreaching social work teams, the following types of small area data from the Census and elsewhere will be taken into account:

(a)   the estimated number of young people residing in a district,

(b)   the concentration of youth in a particular smaller area,

(c)   the population density of that area,

(d)   the youth offender rate of a district, and

(e)   the availability of alternative social and recreational facilities.

5.13   Children and youth centres serve as focal points for a wide variety of indoor and outdoor activities for the development of character and social skills of all young people aged 6 to 24. The provision of these centres is based on the size of the designated age group in each DB-district. Also, child care centres provide care and training for children aged below 6. Low income families who have a social need for their children to be placed in full-day care are eligible to apply for admission. Single-parent families form a major group of those in need of such service. The small area Census data will help to indicate for each DB-district the number of families in need which are defined as households with single parent and/or with income

falling below a prescribed level, and can therefore facilitate the planning of child care centres for each district.

(e) Health and hospital services

5.14 The planning and administration of health and hospital services are the joint responsibility of the Department of Health and the Hospital Services Department. Small area data from the Census as well as the related population projections by DB-district are expected to be widely used in the planning of medical and health services, e.g.

(a) calculating the incidence rate of notifiable diseases for control and monitoring,

(b) Estimating the number of births and number of maternity beds in each area by making reference to the number of women in fertile age groups in the area,

(c) estimating the demand for health services from the elderly population for a particular area,

(d) calculating the requirement of geriatric day hospital places,

(e) calculating the requirement of manpower for general outpatient clinics.

Given the relatively small size of Hong Kong, hospitals are generally planned on a regional basis. Small area statistics from the DB-district level downwards,

nevertheless, still represent very useful reference material in this area of work.

(f) Planning and administration of environmental hygiene, recreational and cultural services

5.15 Services related to environmental hygiene are obviously very localized and small area data are extremely essential for planning such services. The social and economic data by TPU from the Census will be re-aggregated by a special district classification. To estimate the demand for refuse collection vehicles in each of these districts, for example, the population projections from the Census basis will be referred to. Based on the amount of refuse generation per person, the total amount of refuse generated is subsequently estimated and finally the requirements for vehicles can be assessed. Similar planning activities of a widely-varied nature are undertaken regularly and the 1991 Population Census will provide the much-awaited updating information.

5.16 Population size and its projections by district and by age are regularly required as reference for planning leisure and recreation programmes and facilities. For example, in planning recreation and sports programmes in a district, several factors have to be considered, including the availability of facilities, population

size, demographics and other characteristics of the population in the district. On applying these data in accordance with the Hong Kong Planning Standard and Guidelines, the provision of recreational facilities within districts will be determined. Small area data are also used for computation of attendance rates to monitor whether recreational facilities of various types are over- or under-provided.

(g)   Other applications

5.17   Other applications worthy of mentioning include the use of small area statistics in determining land-use in town planning; in planning the deployment of manpower and other resources in various police districts, which may need reclassification from the basic geographical division of the Census; and in assisting the Housing Authority in deciding on the provision of retail outlets and other services in public housing estates. Naturally the list can never be exhaustive. The cost of the Population Census is high but the many indirect benefits, though very difficult to evaluate in a concrete way, must be also immense.

6.   Dissemination of small area statistics

6.1   The value of small area statistics from a Population Census is greatly enhanced if data are available

quickly, in a format and medium geared to users' needs and responsive to special requirements that may emerge from time to time. These considerations of timeliness, convenience and flexibility are important in designing an approach for data dissemination, which is an integral part of a Census project.
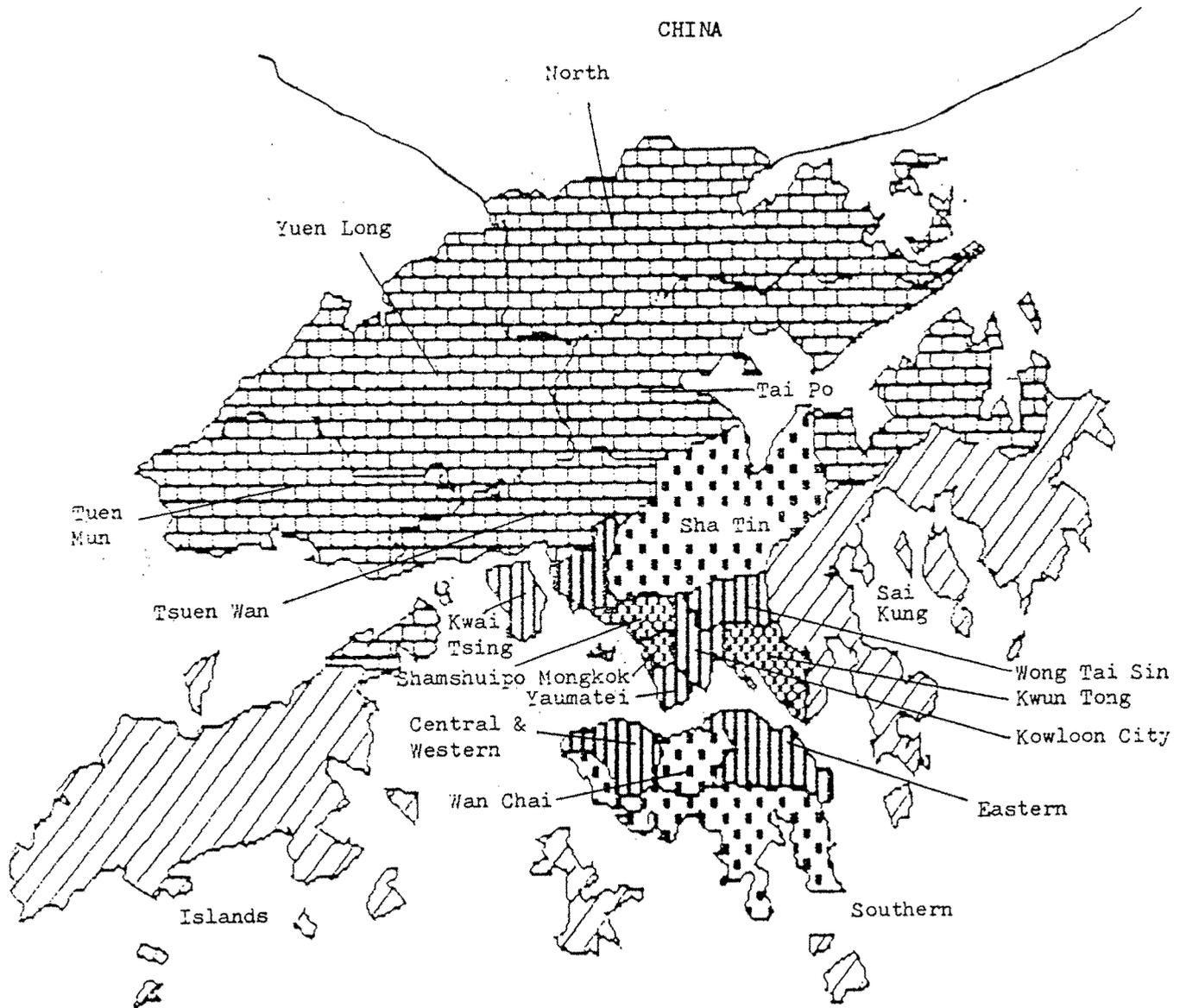
6.2　To meet the wide range of needs of different users, it is intended that data from the 1991 Population Census will be made available in different formats and released in different media. For the general public, summary information of a wide range of interest will be disseminated through press releases and public electronic mail service. Where the data are needed on a comprehensive scale for detailed local area planning and for research, they will be disseminated in computer media such as tapes, diskettes, or compact disc read-only memory (CD ROM). The actual medium to be used will depend on the volume of information and the equipment available to users for handling the data. Users can also refer to data in computer printouts. Census publications are important and will continue to be produced to facilitate a wide circulation and to present information with commentary and graphic aids.

6.3　As users may have new data requirements different from the standard tabulations, especially in regard to

geographical breakdowns, it is intended to provide a flexible post-census service whereby tailor-made products will be made available to meet the users' specific needs. We term this the "just-in-time" approach.
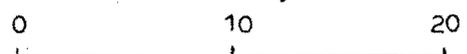
MAP OF HONG KONG

Population density by DB-districts

CHINA

North

Yuen Long

Tai Po

Tuen Mun

Sha Tin

Tsuen Wan

Sai Kung

Kwai Tsing

Shamshuipo Mongkok
Yaumatei

Wong Tai Sin
Kwun Tong

Kowloon City

Central &
Western

Eastern

Wan Chai

Islands

Southern

(No. of persons per square kilometre)

Under	1000
1000 to	4999
5000 to	19999
20000 to	49999
50000 or	Over

Scale

0   10   20

Kilometres

Population and Area of DB - Districts in Hong Kong

DB - district	Estimated Population (As at 31.3.90)	Area in sq. km.	in sq.ml.
Hong Kong Island	1 278 000	79.8	30.8
1 Central and Western	270 100	12.4	4.8
2 Wan Chai	194 200	9.9	3.8
3 Eastern	552 500	18.6	7.2
4 Southern	261 200	38.9	15.0
Kowloon and New Kowloon	2 117 700	42.6	16.4
5 Kowloon City	402 600	9.4	3.6
6 Kwun Tong	618 200	11.3	4.4
7 Mong Kok	179 300	1.5	0.6
8 Sham Shui Po	395 600	7.8	3.0
9 Wong Tai Sin	383 000	9.4	3.6
10 Yaumatei	139 000	3.3	1.3
New Territories	2 324 100	951.8	367.2
11 Islands	52 000	163.3	63.0
12 North	167 500	136.8	52.8
13 Sai Kung	109 400	134.0	51.7
14 Sha Tin	491 900	69.0	26.6
15 Tai Po	177 100	147.1	56.8
16 Tsuen Wan	285 000	59.8	23.1
17 Kwai Tsing	429 400	20.9	8.1
18 Tuen Mun	384 300	82.9	32.0
19 Yuen Long	227 500	138.1	53.3
Total	5 719 800	1074.3	414.4

Note : In addition to the population total of 5 719 800 above, there are an estimated 30 500 persons who form the "marine" population.

THIRTEENTH POPULATION CENSUS CONFERENCE
(Honolulu, Hawaii, 10-14 December 1990)

PLANS FOR UTILIZATION OF SMALL-AREA DATA FROM

THE 1990 CENSUS OF PAPUA NEW GUINEA

(A COUNTRY PAPER)

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PAPUA NEW GUINEA

PLANS FOR UTILIZATION OF SMALL-AREA DATA FROM THE 1990 CENSUS OF PAPUA NEW GUINEA

1. Background

The over-riding problem of conducting a complete National Census in Papua New Guinea is one of logistics. The land area is only 462,840 square kilometers but it varies from large coastal swamps to a high central mountainous region. There are also over six hundred islands scattered around the coast. Road communication has improved considerably in the last few years but many populated areas can still only be reached by long walking, boat patrols or by air transport.

Papua New Guinea is also noted for its linguistics diversity. Over 700 different dialects area spoken. However, Melanesian pidgin and Hiri Motu are now generally understood and widely spoken. English is the language of education and administration.

According to the population of 1980, Papua New Guinea had a population of a little over 3 million. The population density is around 8 persons per square kilometers. Over a third of the population lives in the densely populated highland valleys of the mainland. For administrative purposes the country is divided into 19 provinces, each with its own government, with the capital district, centrally administered.

2. Administration divisions

Papua New Guinea has 20 provinces including the National Capital District, 104 districts, 669 Census Divisions and more than 15,000 Census Units/Villages. Up in the highlands the CUs are scattered where people live in isolated hamlets throughout the highlands provinces. Many of them live in the most remote parts of the country. Due to lack of infrastructure such as roads end communication links, censuses and even sample surveys are very difficult to undertake.

3. History of Census taking

1966 Population Census

The 1966 Population Census in PNG was the first known census undertaken by the Australian Government. It was the first attempt to provide estimates of the total indigenous and non-indigenous population at one point in time. A complete enumeration was conducted in all urban areas and rural non-villages, and a ten percent sample was taken of the traditional villages.

1971 Population Census

The 1971 population was virtually a repeat of the 1966 operation. But the social and political climate had changed considerably and the time was not suitable for conducting a census. Only a short preparation time was allowed and direct assistance from Australia was considerably less. Preliminary results showed an undercount. By using limited past enumeration survey data and demographic rates calculated from the 1966 and 1971 census data, a set of adjustment factors were produced and only the adjusted results were published.

1980 Population Census

The 1980 was the first ever complete Census of Papua New Guinea. It was also the first census to be processed internally. Being the first complete Census of the country, it was regarded by many as the best ever census in the country.

1990 Population Census

It became obvious from the beginning that the 1990 Census would have little support unless it was a complete enumeration. Planners at the National and provincial governments require small area data. Determination of electoral boundaries was another major requirements needing small area data. These are some of the main reasons for undertaking a complete enumeration.

4. Uses of small - area data

4.1 Users Advisory Committee

The initial push to obtain small-area data from the 1990 census came from the users advisory committee. Their argument being that because the National Census takes place once in ten years and also it is the only source of statistical information this may be the only opportunity to collect as much informtion as possible. We were unable to meet all of their demands due to fund limitations. However, what we will provide them I hope will satisfy thier demand.

4.2 Provincial Data System

In 1985, five years after the first complete enumeration of population in 1980, the National Statistical Office, and the Department of the 19 provinces established a Provincial Data System. The system was aimed at collecting demographic characteristics, socio-economic statistics, health statistics and other vital statistics on an annual basis. It was a one hundred percent coverage similar to a National census. If it was continued annually since 1985, there would have no need for a complete population Census in 1990 as many of the questions on the Provincial Data System were repeated in the 1990 Population Census Questionnaire. The system was useful as it provided information right down to census units/villages. However the system was left entirely up to the Provincial Governments many of whom did not continue the system due to funding problems. The NSO did not assist due to financial difficulties as well. Due to lack of basic statistics for planning purposes as a result of the breakdown of the Provincial Data System a need for a national census in 1990 was highly recommended.

4.3 Electoral purposes

Obviously, an important use of small-area data in many countries is political representation. Because of the National Government election in August 1992 and the Provincial Governments elections thereafter the support given to a complete census in 1990 was enormous. The Electoral Commission requires census figures for its planned Electoral Boundaries determination before the National elections in 1992. Not forgetting Local Government Councils, Town Councils, Community Governments require small-area data for local government representation as well as for their local planning needs. Because these requirements were not met in 1980 round we hope to meet some of their requirements in 1990 census by way of disseminating the information collected in the census.

4.4 National Government Planning

The justification for collecting socio-economic data arises from the concept of a rational planning process. This concept underlies much of development planning, and expresses the possibly that government can develop planned policies which will result in the attainment of explicit political and economic goals and objectives. Through the National Goals and Directive Principles embodied in the Consitution, and through the Eight National Aims, Papua New Guinea is pursuing this rational planning ideal. The National Development Strategy and the National Public Expenditure Plan process are the planning means for pursuing these longer term aims.

A rational planning process relies, both for the initial definition of problems and issues, and for the attempt to measure the impact of policies and the nature and direction of social change, upon the availability of comprehensive data on the socio-economic conditions of the population. This process provides the justification for the large data collection exercises we engage in, such as the Provincial Data Sytem or the National Population Census.

The requirements for data at the national planning level are thus determined within the context of a development planning system which is intended to attain long term goals through the implementation of a National Development Strategy. This strategy covers a wide range of policies and issues, but lays particular emphasis on the development of rural areas and on the improvement of less developed areas of the country, for example, with respect to the equalisation of services among different areas.

Two main types of planning activity can be identified at the national level. The first type involves the strategic planning of expenditure in line with the National Development Strategy. This type of planning is concerned with the overall direction and nature of socio-economic change within the country. Ideally, for this function, a wide range of date would be available, for example, on the level of cash incomes throughout the country; on the incidence of malnutrition, disease and infant mortality, on educational attainment, etc. Only when such information is available at a detailed level suitable policies be developed.

The second type of planning activity taking place at national level is concerned with the delivery of services such as Education and Health, and is the responsibility of the individual service departments. Equally these departments have an interest in the availability of consistent nationwide data to assess the extent of problems relating to their service activities and the size of target population. Thus these departments too have an interest in the information available from surveys such as PDS or the National Population Census.

4.5 Provincial Government Planning

The main concern here is one of decentralisation process. Since Independence in 1975, many of the National Government functions were decentralised to the provinces. The provinces in turn further extend the decentralisation process down the line to Local Government Councils, Urban town councils, Community Governments, Council wards etc. Hence the decentralisation process can only be realised through a major statistical undertaking such as a complete census of population which is the only source of small-area data.

4.6 Sample Frame

NSO plans to conduct a demographic & health survey in 1991 and subsequently an Agriculture survey in 1992 in conjuntion with the National Household Survey capability Programme (NHSCP). Because the 1980 Census frame is now obsolete a need to conduct a complete Census in 1990 was strongly recommended to obtain a new sample frame for the two surveys. Other Departments are also planning their own surveys, but lack up-to-date sample frames.

5   Resource Limitations

In developing countries where resources are limited the Censuses are the main
sources of small-area statistics. Sample surveys can hardly provide any
useful information for small areas in a country like PNG where even census
taking is the most difficult and costliest task among the countries of the
world. This is another reason to maintain a 10 year interval for census
undertaking in Papua New Guinea. The last complete census was taken in
1980.

6. Prospective users

The main users of small-area data are National and Provincial Government
planners involve in providing services to the local populace and
researchers. However, there are increasing use of these data in recent times
by companies and enterprises for business expansions to the rural areas and
for involvement of local participation in businesses.

7. Availability of 1990 census data

The 1990 census will provide the following data down to census divisions:

        i)   Population by sex and 5 year age groups
        ii)   Literates by sex and broad age groups
        iii) School attendance by sex and broad age groups.
        iv)   Household economic activities
        v)   Population by economic activity

Population by sex will also be available for each census unit.

8. Dissemination Media

        (a)   Census publications.
              These are to be distributed to National Government, Provincial
              Governments, local Government councils, town councils,
              universities, research organisations, business houses, church
              organisations and overseas subscribers.

        (b)   Census pamphlets.
              These are for school children. This is intended for school
              libraries and school curriculum.

        (c)   Computer printouts.
              These will be distributed to the Government Departments and
              researchers as well as individuals.

9. Conclusion

In a developing country like Papua New Guinea where the coverage of vital
statistics collection is only 2%, there is a need for a full census as the
only source of statistical information for planning purposes.

The terrain, lack of infrastructure and linguistic diversity are all factors
contributing to difficulties in conducting sample surveys and population
censuses. The NSO was unable to meet growing demands for statistics
especially information from the last census. With the inclusion of many of
the users requirements in the 1990 census round we hope to meet many of the
users demands by disseminating them appropriately.

NS9011.04

THE 1990 POPULATION CENSUS OF INDONESIA
AS THE MAIN SOURCE OF SMALL AREA STATISTICS

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CONTENTS

I. INTRODUCTION

The Central Bureau of Statistics (CBS) has regularly conducted surveys on population such as the Intercensal Population Surveys (Survei penduduk Antar Sensus/SUPAS), every ten years in a year ending with 5, the National Socio and Economic Surveys (Survei Sosial Ekonomi Nasional/ SUSENAS), every year since 1978 and the Labor Force National Survey (Survei Angkatan Kerja Nasional/SAKERNAS), every three months since 1986. These surveys have been serving as a major data source in Indonesia since they represent detailed tables on population for the national as well as the provincial level.

However, the smaller sub-national level could not be estimated since the sample size was relatively small, between appoximately 60,000 and 125,000 out of 36,000,000 households in Indonesia. The need for small areas statistics to be made available has been increasing lately, primarily so that they might be used in regional planning and population analysis on a community level basis.

In order to fulfill that need, the CBS has conducted data collection activity at the village level which is popularly called PODES or Potensi Desa or Village Facility Survey since 1976, as part of the census activity. The PODES documents were sent to the village headman and were to be filled in shortly after a census activity took place.

Information on population, environment, health, education, geographical areas, socio-economic activity, agricultural and animal husbandry were gathered and had to be filled in by the village headman according to the latest figures *). Thus, the village level information included in the PODES documents is much more complete than in any other surveys. The PODES activity is regularly conducted in every three years so that any detailed changes in the village characteristics can be detected. It should be noted that the urban-rural classification used in the 1990 Census was based on the 1986 PODES data.

In the following section of this paper, an explanation concerning the 1990 Indonesia Population Census will be discussed, including all aspects of the census activity such as, the methodology, questionnaire, data processing and data presentation. Note that this very recent census was conducted from September 15th to October 31st 1990 in the entire geographical area of the Republic of Indonesia. The latest census now offers a complete set of data on population breakdown at the village level.

II. THE 1990 POPULATION CENSUS

The 1990 Population Census is the fourth census carried out since Indonesia proclaimed its independence in 1945. The first three censuses were taken in 1961, 1971 and 1980. These censuses covered all residents of the Republic of Indonesia, regardless of their type of residence. The enumeration of the population living on boats of the homeless persons was conducted simultaneously on the census date (31st October 1990).

Over the years, census taking in indonesia has under gone a lot of change and enhancement. This includes improvements in sample design, field organization, the use of more refined concepts and definitions, more efficient data processing techniques, publications and data dissemination. Despite the application of varying procedures in census taking, comparability of results is maintained (as much as possible).

1. Overall Plan

Census activities are planned to be carried out over 5 fiscal years. The annual plan in broad detail is as follows:

1987/1988 fiscal year: Planning and preparation for the census, including several pilot tests in statistical area mapping.

1988/1989 fiscal year:

a. Preparation for the mapping of all regencies/municipalities (kabupaten/kotamadya), sub district (kecamatan), and villages (desa) as well as all enumeration areas in the capitals of provinces and municipalities.

b. General rehearsal of mapping, and pilot tests for the enumeration (complete and sample census).

c. Study of border line cases among villages to determine the urban/rural classification.

d. Construction of the master sampling frame.

e. Implementation of mapping.

1989/1990 fiscal year:

a. Planning and preparation for mapping in 20 percent of areas outside the capitals of provinces and municipalities.

b. Construction of the master sampling frame

c. Planning and preparation for the complete and sample census.

1990/1991 fiscal year:

a. Checking of village and enumeration area sketches.

b. Implementation of the complete and the sample enumeration. At the same time, information on village facilities is collected.

1991/1992 fiscal year: Data processing and evaluation of census taking in general, and data quality in particular.

1992/1993 fiscal year: Publication and analysis

2. Mapping and Formation of Enumeration Areas

The formation of enumeration areas and the mapping of these areas are necessary tools to achieve a successful count of all persons in the census. The primary objective of statistical area mapping is to indentify these areas, particularly their boundaries. This is aimed at facilitating field work in an attempt to minimize ommission and double counting. Another use of the maps is in connection with the master sampling frame, which is used as a basis for drawing samples for future household surveys.

Prior to the 1980 Population Census, two types of statistical units were formed. The area of each of the villages in the country was classified into enumeration areas (EA), and each EA was broken down further into census blocks. An EA was delineated by permanent/natural or clear

boundaries, and consisted of 200 to 300 households. To meet
the requirements of a census block, an area had to have a
clear boundary and comprised of a maximum of 100
households. On average, a census block consisted of 70
households.

Although, theoretically, vacant areas should have been
included in a census block, in many cases they were left
out, and were not part of any census block. When areas such
as these were developed, they presented a problem because
they did not belong to any of the existing census blocks.
Since 1980 there had been a lot of changes due to
migration (in and out) by the people, development of
buildings or housing complexes, construction of public
utilities, and changes in administrative status which
generally involved the shifting of boundaries. Some census
blocks gained, others lost their population. Also, since
one census block covers a very small area, clear and
permanent boundaries were not always present, and it was
not always possible to maintain these census blocks during
the intercensal period.

Basically, the statistical maps are based on adminis-
trative/geopolitical areas. As such, the actual boundaries
are often unclear, and may not coincide with easily
recognized landmarks such as roads or rivers. Considering
these problems, the Central Bureau of Statistics has

decided to modify the mapping procedure for the 1990 Population Census, adopting the following rules:

a. Administrative boundaries are used for regencies/ municipalities and sub districts.

b. For villages and EAs both administrative and natural/ permanent boundaries are drawn on the map.

EA maps drawn for the census are expected to be used in the following activities:

a. As a guide for the complete census enumerators in identifying the EAs assigned to them. This is an important aspect of census taking, as the maps should enable enumerators to avoid miscoverage of households in their EA.

b. As a basis for drawing samples for the sample census, where EAs are the first stage sampling unit and the households or cluster of households are the second stage sampling unit.

Good maps are needed to identify households and persons so as to minimize omission and double counting. It is for this primary reason that CBS formed (and mapped) the EAs. The first step in this direction is to update the list of all administrative units (i.e. provinces, districts, sub-districts and villages). Names and areas of sub-

districts and villages frequently change based on the decrees issued by the Minister of Home Affairs, governors and heads of these administrative units.

The next step is the formation of EAs within villages so that the whole area of the village is completely assigned to EAs which should be delineated by permanent and clear boundaries. EAS are formed on the basis of the number of households and/or number of buildings. Although ideally an EA should contain 200 to 300 households, or 200 to 300 buildings, or a combination of both, only 36 percent of the EAs comprised 200 to 300 households. About 35 percent have less than 300 households, and the remaining EAs have more than 300 households. ~~In total the number of EAs is between 150,000 and 200,000 households.~~

3. Urban/rural clasification

Basically, the 1990 Census adopts the same classification as that used in the 1980 Census, which was based on a score constructed on the basis of population density, the percentage of households engaged in agriculture, and the number of "urban" facilities such as as schools, roads, hospitals and electricity available in the village. As in the previous census, the whole area of a village is classified as urban or rural. According to this criterion, villages which scored 16 or less were classified

as rural, and those which scored 23 or above were grouped as urban areas. Villages which score between 17 and 22 could be classified as urban or rural, *depending on eventual spot check.*

The 1990 Census activity involved a review of villages which may have changed their status (urban to rural, and vice versa) and those whose score fell in the 17 to 22 category.

4. The sample Design

The sample census was carried out .after the complete census was completed, to collect more detailed information. The sampling proportion was about 5 percent of the households/population. Compared with the 1980 Population Census, there are some modifications, such as:

(i)   the sampling rate varies 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 reasons of accuracy.

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

Sample selection is done in 2 (two) stages. The first stage is the selections of EAs systematically from the list of geographically ordered districts, villages and EAs. Each regency and municipality in considered as one domain of study. The second stage is the selection of households from the 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 systematically through the 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 of the members. The same sampling fraction is applied to both ordinary and special households in the selected EAs. The minimum 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 a small EA the sampling rate is one.

5. The Questionnaire

As in the 1971 and 1980 Censuses, the 1990 Population Census was also implemented in two stages, the complete and the sampled census. At the first stage, all households/ buildings were registered and all persons were interviewed using the short form that contains only 4 questions, namely: age, sex, relation to the head of the household and marital status.

The second stage or the sample census used the long form containing information on each member of the household such as age, sex, marital status, education, religion, migration, economic activity at first marriage, number of children born and number still living, and the last live birth. In addition, the data on the living quarter are also collected in the 1990 Population Census. A copy of the questionnaire is presented in Appendix 1. It is interesting to note here that a question on contraception is not included in the 1990 Census, since a separate survey on family planning and health, known as Demographic and Health Survey of Indonesia , will be carried out around May-June in 1991.

6. Data Processing

Basically, the 1990 Census data processing is different from earlier censuses. In the past, the data processing was centralized at the central office in Jakarta. Lack of space to store the census documents was the main problem at that time. To solve the problem, another office space outside of the Central Bureau of Statistics complex was rented. This space was also used as an office for the editing and coding activity done by 220 casual workers. Note, however, that the Data Processing Division was located at the central office, so that, for data entry purposes, the movement of the documents made special arrangements necessary.

It is clear that the data processing presented various complicated problems in the past. Hence, the 1990 Census data processing scheme eliminates the completely centralized system adopted earlier. As a consequence, several aspects should be taken into account primarily the urgent need to improve data processing facilities. The Provincial Statistical Offices should be fully equipped with sufficient personal computer (PC) and trained personnel.

The preparation for the data processing of the 1990 Population Census was started in 1987, consisting of several measures such as computer purchasing, office space extention, training for programmer and computer operator,

etc. The instalation of hard-ware facilities was completed in early 1990 and data processing at the regional level was started in November 1990. In the long run, development of the data processing facility will be extended, so that in future a wholly decentralized system can be in operation. Any surveys or other statistical data collection activity conducted by the regional office will be processed at the provincial level and the clean data set will be sent to the central office using a data communication system.

As was mentioned earlier, the enumeration of the 1990 Population Census consisted of two stages, that is, the complete count using the short forms (see Appendix 1) and the sample count using the long forms (Appendix 2). The short form processing will be completed at the provincial offices by December 1990. The output tables at the first stage consist of table on population classified by province, regency/municipality, district, village and urban/rural areas. The compilation of more detailed tables such as population by age and sex, relation to head of the household and marital status by age distribution will be the responsibility of the provincial offices.

The processing of the long forms of 6 large provinces (DKI Jakarta, West Java, Central Java, East Java, South Sumatra and North Sumatra) will be carried out by the provincial offices. Subsequently, the clean statistical data

lisettes

set (on tape) will be sent directly to the central office
in Jakarta. Detailed tables by province will be produced at
the central office. The rest of the long forms of provinces
other than the provinces mentioned above will be processed
at the central office.

As mentioned earlier, the sample design enable us to
estimate small areas statistics at district level *provided*
~~applying~~ *that the* complicated cross-tabulation (marginal tables),
such as total population by type of education, religion,
should not be attempted,
citizenship, type of work, language and other. More
detailed tables will be presented at the provincial level
only and the results will be published in two stages. The
first stage is the publication of preliminary tables, the
results of the processing of 10 percent of the documents
and this will be completed by the end of 1991. The second
stage, to process the final publication of results from
each province which comprise 70 tables will be completed by
the end of 1992. By that time the estimation of vital rates
can be made and followed by a population projection by age,
sex and province.

III. Village Facility Survey (PODES)

As was stated earlier, the CBS effort to obtain data for the smallest administrative areas (village level) has been in operation since 1976 with the implementation of the Village Facility Survey (_Potensi Desa/PODES_) shortly after the SUPAS 1976 completed. Since that time, the PODES survey has been conducted regularly after each census, that is, after the population census in years ending with 0, the agricultural census in years ending with 3, and the economic census in years ending with 6. Therefore, the individual data collection in the census can later be merged with the PODES data which shows the characteristics of the community. The merged tape will undoubtedly be very usefull for intensive analysis of the demographic problems.

The first PODES in 1976 gathered information on various village facilities including the availability of schools, hospitals, clinics, public organization, electricity, doctors, nurses, markets, animal husbandry, etc. The information collected has been considered incomplete for specific analysis at micro level since it did not ask in addition the number of those facilities that are available in the village. Therefore modifications and improvements have been made since then. The questionnaire's structure and design were also improved.

The 1990 PODES was implemented in November 1990. Eight modules comprise the data set collected in the PODES, that is,

- Village general information
- Land area and its use
- Population and environment
- Agriculture
- Socio-culture
- Health
- Tranportation and Communication
- Economic.

Each data set has been further broken down into smaller categories (See Appendix 3)

Like the processing of the short and long forms of the 1990 Population Census, the processing of the PODES 1990 forms will be carried out partly at the central office in Jakarta, and partly at the province offices using PCs. The clean tape will be sent to the central office for further processing into tables for publication. Most of the tables, especially those showing the detailed characteristics of small areas will not be published, but the computer printouts of those tables are available for those who want to use them. The Central Bureau of Statistics will also release the tape of the PODES for the users. However, since the tapes contain information on individuals, according to

Statistical Law (Law No. 7, 1960) the tapes cannot be
released without a [due permission;] letter of Agreement that has to be
signed by the user. will have to be mutually consented.

Past experiences indicate that the collection of small
areas statistics through PODES is not an easy task, since
many of the ~~questions~~ items listed in the questionnaire cannot be
~~filled up~~ answered directly by the head of the village. Some
questions like the number of births and deaths, school age
population, land area and utilization and number of cattle
are not easy to answer and take time to collect and to
process. Through improvement of the methodology and
intensive training of the field workers including the heads
of the village those problems can gradually be solved.

As a closing remark, it should be noted here that
improvement of the administrative system, including the
vital registration system, ~~are~~ is very important since most of
statistics recorded in the PODES are derived from
administrative records. The Office of Ministry of
Population and Environment, in collaboration with the
Central Bureau of Statistics and the Ministry of Interior,
has carried out training sessions (through the months of November
and December 1990) for the field workers of the civil
registration in 12 provinces. Next year this training will
be extended to other provinces.

As long as the vital registration system does not work well, the Population Census including the PODES, will be the most important source of statistics of small areas.

APPENDIX

SP90-LI

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REPUBLIC OF INDONESIA
CENTRAL BUREAU OF STATISTICS

1990 CENSUS OF POPULATION

COMPLETE ENUMERATION

BUILDING AND HOUSEHOLD LISTING

Confidential

I. LOCATION IDENTIFICATION	
1.	P r o v i n c e	
2.	Regency/Municipality *)	
3.	Sub-Regency/Sub-District	
4.	V i l l a g e	
5.	A r e a	Urban - 1 Rural - 2
6.	Enumeration Area No.	
7.	Number of Division of Enumeration Areas	
8.	Are Coverage	Excluding area of other villages - 1
		Including area of other villages - 2

II. SUMMARY (Copy from Block IV)	
1.	Physical Building No.	
2.	Census Building No.	
3.	Number of Households	
	a. Private	
	b. Institutional	
4.	Number of Household Members	
	a. Private	
	b. Institutional	

III. ENUMERATION PARTICULARS		
DESCRIPTION	ENUMERATOR	SUPERVISOR
(1)	(2)	(3)
1. Name		
2. ID No.		
3. Date of enumeration or supervision	to	to
4. Signature		

*)   Cross out category not used

IV. BUILDING AND HOUSEHOLD LISTING

Serial No. of Segmen	Serial No. of Physical Building	Serial No. of Census Building	Usage of Census Building			If column (5) or (6) is valid (/), write the use of the census building	Serial No. of household	Household		Name of the Head of Household	Number of the Member of Household	
			Residence	Non Residence	Mix			Private	Institutional		Private	Institutional
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Total of this page												
Total up to previous page												
Total up to this page												

REPUBLIC OF INDONESIA
CENTRAL BUREAU OF STATISTICS

1990 CENSUS OF POPULATION

COMPLETE ENUMERATION

MEMBER OF HOUSEHOLD LISTING

Confidential

I. LOCATION IDENTIFICATION

1.	Province		1	
2.	Regency/Municipality *)		3	
3.	Sub-Regency/Sub-District		5	
4.	Village		8	
5.	Area	Urban – 1 Rural – 2	11	
6.	Enumeration Area No.		12	
7.	Number of Division of Enumeration Areas		16	
8.	Physical Building No.		17	
9.	Census Building No.		20	
10.	Serial Number of Household		23	
11.	Type of Household	Private – 1 Institutional – 2	25	
12.	Number of the Member of Household		27	

II. ENUMERATION PARTICULARS

	DESCRIPTION	ENUMERATOR	SUPERVISOR
	(1)	(2)	(3)
1.	Name		
2.	ID No.		
3.	Date of enumeration or supervision	to	to
4.	Signature		

*)   Cross out category not used

SP90-1.II

III. LIST OF HOUSEHOLD MEMBERS

No.	NAME (Write name of persons who live and eat in this household; adult, children as well as babies)	Relationship to Head of Household	Age (Year)	Sex		Marital Status			
				Male	Female	Single	Married	Widowed	Divorced
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1.		Head of Household							
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
TOTAL									

CONSISTENCY: - Serial Number of the last Column (1) = Total Column (5)+(6) = Total Column (7)+(8)+(9)+(10)

EXCEPT NAMES THAT HAVE BEEN LISTED:

1. Are there any other persons such as children or infants that have not been listed?

   YES ☐   NO ☐   Write the name(s)

   Name:.................

2. Are there any other persons who may not be members of your family, like servants, friends, lodgers, but who usually live there?

   YES ☐   NO ☐   Write the name(s)

   Name:.................

3. Are there any other guests or visitors who have been temporarily staying with you for at least six months?

   YES ☐   NO ☐   Write the name(s)

   Name :.................

4. Are there any persons who usually live here who have been away for less than six months?

   YES ☐   NO ☐   Write the name(s)

   Name:.................

5. Are there any persons we have listed who have been away for more than six months?

   YES ☐   NO ☐   Delete names from table

   Name:.................

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Appendix 2

SP90-S

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REPUBLIC OF INDONESIA
CENTRAL BUREAU OF STATISTICS

1990 CENSUS OF POPULATION

SAMPLE CENSUS

Confidential

	I. LOCATION IDENTIFICATION		CODE
1.	Province		1 ☐☐
2.	Regency/Municipality *)		3 ☐☐
3.	Sub-Regency/Sub-District		
4.	Village		
5.	Area	Urban - 1 Rural - 2	5 ☐
6.	Enumeration Area No.		
7.	Sample Code No.		6 ☐☐☐
8.	Sample.Serial No.		9 ☐☐☐
9.	Physical Building No.		
10.	Census Building No.		
11.	Selected Household No. :		
12.	Type of Household	Private - 1 Institutional - 2	12 ☐
13.	Number of Household Members **)		13 ☐☐
14.	Number of Household Members in Institutional household		15 ☐☐☐
15.	Number of Households in Enumeration Areas	Private	19 ☐☐☐
		Institutional	22 ☐☐
	II. ENUMERATION PARTICULARS		24 C | S

	DESCRIPTION	ENUMERATOR	SUPERVISOR
	(1)	(2)	(3)
1.	Name		
2.	ID No.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐
3.	Date of enumeration or supervision	to	to
4.	Signature		

*) Cross out category not used
**) For institutional household, fill in number of selected household's member

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III. LIST OF HOUSEHOLD MEMBERS

No.	NAME (Write name of persons who usually live and eat in this household; adult, children as well as babies)	RELATIONSHIP TO HEAD OF HOUSEHOLD	EXCEPT NAMES THAT HAVE BEEN LISTED
(1)	(2)	(3)	
01.		Household Head	1. Are there any other persons such as children or infants that have not been listed?
02.			
03.			YES ☐ Write the name(s) NO ☐
04.			Name : ....
05.			2. Are there any other persons who may not be members of your family, like servants, friends, lodgers, but who usually live here?
06.			
07.			YES ☐ Write the name(s) NO ☐
08.			Name : ....
09.			3. Are there any other guests or visitors who have been temporarily staying with you for at least six months?
10.			
11.			YES ☐ Write the name(s) NO ☐
12.			Name : ....
13.			4. Are there any persons who usually live here who have been away for less than six months?
14.			
15.			YES ☐ Write the name(s) NO ☐

Name : ....

5. Are there any persons we have listed who have been away for more than six months?

YES ☐   Delete names from table   NO ☐

Name : ....

PROVIDE CODES FOR QUESTIONS 3, 10, AND 14 IN SECTIONS VIA AND VIB

Daerah Istimewa Aceh ······· - 11	Jawa Barat ················· - 32	Kalimantan Tengah ··········· - 62
Sumatra Utara ·············· - 12	Jawa Tengah ················ - 33	Kalimantan Selatan ··········· - 63
Sumatra Barat ·············· - 13	Daerah Istimewa Yogyakarta ·· - 34	Kalimantan Timur ············· - 64
Riau ······················· - 14	Jawa Timur ················· - 35	Sulawesi Utara ·············· - 71
Jambi ······················ - 15	Bali ······················· - 51	Sulawesi Tengah ············· - 72
Sumatra Selatan ············ - 16	Nusa Tenggara Barat ········· - 52	Sulawesi Selatan ············· - 73
Bengkulu ··················· - 17	Nusa Tenggara Timur ········· - 53	Sulawesi Tenggara ············ - 74
Lampung ···················· - 18	Timor Timur ················· - 54	Maluku ····················· - 81
DCI Jakarta ················ - 31	Kalimantan Barat ············ - 61	Irian Jaya ·················· - 82
		Abroad ····················· - 98

IV. LIVING QUARTER	27	1

1. TYPE OF PHYSICAL BUILDING
Independent building with single dwelling unit .... – 1
Independent building with two dwelling units .... – 2
Independent building with more than two dwelling units ..... – 3

	28	

Multistory .... – 1
Single story .... – 2

	29	

2. NUMBER OF CENSUS BUILDING IN THIS PHYSICAL BUILDING
.... Census buildings

	30		

3. NUMBER OF HOUSEHOLDS IN THIS CENSUS BUILDING
.... Household(s)

	32		

4. OWNERSHIP STATUS OF DWELLING UNIT
Self-owned – 1   Rent (monthly basis) – 4
Installment – 2   Official .... – 5
Contract – 3   Other (...........) – 6

	34	

5. PRIMARY CONSTRUCTION MATERIAL OF ROOF
Concrete – 1   Corrugated zinc – 5
Wood – 2   Sugar palm fiber – 6
Tile – 3   Leaves .... – 7
Asbestos – 4   Other (...........) – 8

	35	

6. PRIMARY CONSTRUCTION MATERIAL OUTER WALL
Brick – 1   Bamboo .... – 3
Wood – 2   Other (...............) – 4

	36	

7. PRIMARY CONSTRUCTION MATERIAL OF FLOOR
Ceramic/marble/granite – 1 Bamboo ... – 5
Tile .... – 2 Earth ..... – 6
Cement/brick .... – 3 Other
Wood .... – 4 (...........)

	37	

8. FLOOR AREA
.... M²

	38			

9. TYPE OF LIGHTING
Electric ..... – 1   Kerosene lamp – 4
Gas .... – 2   Other – 5
Pumped lamp .. – 3   (...............)

	41	

10. TYPE OF COOKING FUEL
Electric ..... – 1   Wood .... – 4
Gas .... – 2   Charcoal ... – 5
Kerosene ..... – 3   Other .... – 6
       (...............)

	42	

11. SOURCE OF DRINKING WATER
Piped water – 1   River .... – 5
Pump ...... – 2   Rainwater ..... – 6
Well ...... – 3   Other .... – 7
Spring ..... – 4   (...............)

	43	

12. SOURCE OF WATER FOR BATHING/WASHING
Piped water – 1   River .... – 5
Pump ...... – 2   Rainwater ..... – 6
Well ...... – 3   Other .... – 7
Spring ..... – 4   (...............)

	44	

13. BATHING FACILITY
Private ...... – 1   Other .... – 4
Shared ...... – 2
Public ...... – 3   (...............)

	45	

14. TOILET FACILITY
Private, with septic tank .... – 1
Private, without septic tank .... – 2
Shared .... – 3
Public .... – 4
Other (...........................) – 5

	46	

15. DOES THIS HOUSEHOLD OWN/HAS ACCESS TO

a. Sideboard/buffet ...... Yes – 1	No – 2	47	
b. Stove .... Yes – 1	No – 2	48	
c. Bicycle/boat .... Yes – 1	No – 2	49	
d. Radio/cassette recorder Yes – 1	No – 2	50	
e. Television set .... Yes – 1	No – 2	51	
f. Motorcycle/speed boat · Yes – 1	No – 2	52	
g. Car/ship .... Yes – 1	No – 2	53	

V. AGRICULTURAL LAND TENURE		

16. SELF OWNED
.... Ha

	54			,		

17. OBTAINED FROM OTHERS
.... Ha

	58			,		

18. OPERATED BY OTHERS
.... Ha

	62			,		

19. OPERATED (Q.16+Q.17-Q.18)
.... Ha

	66			,		

VI. CHARACTERISTICS OF INDIVIDUAL HOUSEHOLD MEMBERS

VIA. ALL AGES   27 [2]

NAME : .... No. ....   28 [ ][ ]

1. RELATIONSHIP TO HEAD OF HOUSEHOLD

Head of household- 1   Parent/-in-law- 6
Spouse ········· - 2   Other relative- 7
Children ········ - 3   Servant ······· 8
Children-in-law - 4   Other ······· 9
Grandchild ······ - 5   (............)

30 [ ]

2. SEX

Male ········ - 1   Female ······· - 2

31 [ ]

3. DATE OF BIRTH

Date : ....   32 [ ][ ]

Month : ....   34 [ ][ ]

Year : ....   36 [ ][ ]

4. AGE

.... Years   38 [ ][ ]

5. MARITAL STATUS

Single ········ - 1   Divorced ····· - 3
Married ········ - 2   Widowed ······ - 4

40 [ ]

6. RELIGION

Moslem ········ - 1
Catholic ······· - 2   Other ·········· - 6
Protestant/Other
   Christian ······ -3   ....
Hindu ········ - 4   ....
Buddhist ········ - 5

41 [ ]

7. CITIZENSHIP

Indonesian ····························· - 1
Chinese (PRC, Taiwan or Stateless) - 2
Other foreigner ····················· - 3

42 [ ]

8. PLACE OF BIRTH

Province:.....................

43 [ ][ ]

9. EVER LIVED IN OTHER PROVINCE?

Yes ······ - 1   No (To Q.12) ···· - 2

45 [ ]

10. PLACE OF PREVIOUS RESIDENCE

Province:.....................

46 [ ][ ]

11. DURATION OF RESIDENCE IN PRESENT PROVINCE

.... Years

48 [ ][ ]

12. DOES OWN MOTHER LIVE IN THIS HOUSEHOLD

Yes (To Q.13)- 1   No (To Q.14) ··· - 2

50 [ ]

---

13. NAME OF OWN MOTHER:.....................

SERIAL NUMBER:.....................

51 [ ][ ]

VIB. PERSON 5 YEARS AND OVER

14. PLACE OF RESIDENCE 5 YEARS AGO

Province:.....................

53 [ ][ ]

15. SCHOOL ATTENDANCE

Has not/does not attend school
   (To Q.20) ························· - 1
Attending school ··················· - 2
Do not attend school any more ······· - 3

55 [ ]

16. HIGHEST LEVEL OF EDUCATION ATTENDED

Primary school ·· - 1   Diploma I/II - 6
General JHS ····· - 2   Academy/
General SHS ····· - 3   Diploma III - 7
Vocational JHS ·· - 4   University/
Vocational SHS ·· - 5   Diploma IV ·· - 8

56 [ ]

17. HIGHEST GRADE ATTENDED/ATTENDING

1   2   3   4   5   6   7   8 (Completed)

57 [ ]

18. HIGHEST LEVEL OF EDUCATION COMPLETED

Did not
  Complete PS - 1   Vocational JHS - 5
Primary school- 2   Vocational SHS - 6
General JHS ··· - 3   Diploma I/II ··· - 7
General JHS ··· - 4   Academy/
               Diploma III ··· - 8
              University/
               Diploma IV ··· - 9

58 [ ]

19. FIELD OF STUDY (Specify)

....
....

FILL IN CBS
59 [ ][ ]

20. MOTHER TONGUE

Indonesian ···················· - 1
Local language (Specify) ······· - 2
(................)
Foreign language ············· - 3

FILL IN CBS
61 [ ][ ]

21. LANGUAGE USED AT HOME

Indonesian (To Q.23) ··········· - 1
Local language ················ - 2
(................)
Foreign language ············· - 3

FILL IN CBS
64 [ ][ ][ ]

22. ABLE TO SPEAK INDONESIAN?

Yes ············ - 1   No ········ - 2

67 [ ]

23. ABILITY TO READ AND WRITE

Latin alphabet - 1   Illiterate - 3
Other alphabet - 2

68 [ ]

VII. ECONOMIC ACTIVITY OF PERSONS 10 YEARS AND OVER

24. PRIMARY ACTIVITY IN THE PREVIOUS WEEK

Employed - 1 — Attending school ······ - 2
Housekeeping ········· - 3
Other (............)- 4

69 ☐

25. IN ADDITION TO 2, 3, AND 4, ALSO WORKED FOR AT LEAST ONE HOUR DURING THE PREVIOUS WEEK

Yes (To Q.28) - 1 ——— No ···· - 2

70 ☐

26. HOLD A JOB BUT TEMPORARILY ABSENT

Yes (To Q.30) - 1   No ···· - 2

71 ☐

27. HAVE YOU EVER WORKED?

Yes ··· - 1 ——→ (To Q.35)
No ···· - 2 ——→

72 ☐

28. NUMBER OF HOURS WORKED EVERY DAY IN THE PREVIOUS WEEK

73 ☐

Day							
1	2	3	4	5	6	7	TOTAL
....	...	...	...	...	...	...	..... Hours

74 ☐

29. NUMBER OF HOURS WORKED IN PRIMARY ACTIVITY IN THE PREVIOUS WEEK

................Hours

76 ☐

30. OCCUPATION IN THE PRIMARY ACTIVITY IN THE PREVIOUS WEEK (Specify)

FILL IN CBS

....
....

78 ☐
81 ☐

31. TYPE OF INDUSTRY IN PRIMARY ACTIVITY DURING THE PREVIOUS WEEK (Specify)

FILL IN CBS

....
....

83 ☐
85 ☐

32. EMPLOYMENT STATUS IN PRIMARY ACTIVITY DURING THE PREVIOUS WEEK

Self-employed ························· - 1
Self-employed assisted by family member/temporary help ···· - 2
Employer ··························· - 3
Employee ··························· - 4
Family worker ····················· - 5

87 ☐

33. DID YOU HAVE AN ADDITIONAL JOB IN THE PREVIOUS WEEK

Yes ········· - 1   No (To Q.35)··· - 2

88 ☐

34. TYPE OF INDUSTRY OF ADDITIONAL JOB DURING PREVIOUS WEEK

Agriculture ···· - 1   Trade ··········· - 6
Mining and   Transportation &
Quarrying ····· - 2   communication - 7
Manufacturing - 3   Finance ········· - 8
Electricity,   Services ······· - 9
gas and water - 4   Other ··········· - 0
Construction ··· - 5   (.............)

89 ☐

---

35. DID YOU LOOK FOR WORK DURING THE PREVIOUS WEEK?

Yes (To Q.37) - 1   No - 2 ———

90 ☐

36. PRIMARY REASON FOR NOT SEEKING FOR WORK DURING THE PREVIOUS WEEK

Did not need work ····················· - 1
Gave up trying ······················· - 2
Attending school ···················· - 3
Housekeeping ························· - 4
Unable to work ······················ - 5
Other (... ....) - 6

91 ☐

37. DID YOU WORK DURING THE PREVIOUS YEAR?

Yes ···· - 1   No (To Section VIII) - 2

92 ☐

38. TYPE OF INDUSTRY DURING THE PREVIOUS YEAR (Specify)

FILL IN CBS

....
....

93 ☐
95 ☐

VIII. MARRIED, DIVORCED AND WIDOWED WOMEN

39. MONTH AND YEAR OF FIRST MARRIAGE

Month:.............................

97 ☐

Year :.............................

99 ☐

40. AGE AT FIRST MARRIAGE

.... Years

101 ☐

41. NUMBER OF MARRIAGES

.... Times

103 ☐

42. NUMBER OF CHILDREN EVER BORN		Male	Female
....	104	☐	☐

43. NUMBER OF LIVING CHILDREN		Male	Female
a. Total :..........	108	☐	☐
b. Living at home:..........	112	☐	☐
c. Living away :..........	116	☐	☐

44. NUMBER OF DEAD CHILDREN		Male	Female
....	120	☐	☐

45. MONTH AND YEAR OF BIRTH OF LAST CHILD

Month:.............................

124 ☐

Year : 19...........................

126 ☐

46. LAST CHILD STILL LIVING?

Yes ······· - 1   No ·········· - 2

128 ☐

I N S T R U C T I O N

A. Recording answer

   1. Circle appropriate code

      Example: *Wrong* $\cancel{3}$

               Right   ③

   2. Write response

      Handwriting must be clear and legible

      Example: *Wrong*   ∧M|∨∧

             Right   AMIN

   3. Write number

      These must also be clear and legible

      Example: *Wrong*   ५

             Right   9

B. Method for completing the questionnaire

   1. *Before the interview, the enumerator must fill in the information on the cover of this questionnaire.*

      This information must be the same as that in form SP90-2SRT.

   2. *The interview must begin from page 1, and continue to subsequent pages.*

   3. *For all other questions, follow the sequence, arrow or "SKIP TO" instructions.*

   4. *Check for inconsistency between responses. Any inconsistency must be checked with the respondent and corrected.*

N O T E

_____

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_____

SE86—PODES

REPUBLIC OF INDONESIA.
CENTRAL BUREAU OF STATISTICS

1986 ECONOMIC CENSUS

VILLAGE FACILITY

Confidential

I. LOCATION IDENTIFICATION		CODE
1. Province		1 ☐☐
2. Regency/Municipality *⟩		3 ☐☐
3. Administrative Town		
4. Sub-District		5 ☐☐
5. Village Classification*⟩		7 ☐☐☐
6. Area	*Urban· · · - 1* *Rural· · · - 2*	10 ☐

II. ENUMERATION PARTICULARS	
1. Enumerator's Name	
2. Date	
3. Signature	
4. Supervisor's Name	
5. Signature	

*) Cross out category not used

. . . . , ...1990

Village Headman

_____
Signature and Stamp of
Village

III. GENERAL INFORMATION ON VILLAGE	11	1

1. Village Status Village··· – 1 Kelurahan··· – 2	12	☐
2. Village Classification Self Effort– 1 Self Initiative– 2 Self Sufficient– 3	13	☐
3. Rural/urban village includes area which is Coastal··· – 1 Non-Coastal – 2	14	☐
4. Altitude of this village from sea level: Less than 500m – 1 500m – 700m– 2. More than 700m– 3	15	☐
5. Total area of this village:................ km² or:................. Ha	*) 16	☐☐☐☐
6. Distance of this village office to Sub-dictrict office:...................... km	20	☐☐
7. a. Village office: Available – 1 Unavailable – 2	22	☐
b. Village hall : Available – 1 Unavailable – 2	23	☐
8. Does this village have the following personnel a. Secretary : Available – 1 Unavailable – 2	24	☐
b. Chief of Government Affairs Section: Available – 1 Unavailable – 2	25	☐
c. Chief of Development Affairs Section: Available – 1 Unavailable – 2	26	☐
d. Chief of Social Welfare Section: Available – 1 Unavailable – 2	27	☐
e. Chief of Finantial Affairs Section: Available – 1 Unavailable – 2	28	☐
f. Chief of Public Affairs Section: Available – 1 Unavailable – 2	29	☐
9. Is the village Public Force Institution available here? Yes – 1 No – 2	30	☐

*) Filled in square kilometer

IV. LAND AREA AND ITS UTILIZATION

1. Rice field land area (0,0 Ha)

a. Agriculture cultivation:.............Ha 31 ☐☐☐☐☐☐ , ☐

  (1) Irrigated and rice can be harvested twice a year: ....Ha 38 ☐☐☐☐ , ☐

  (2) Irrigated and rice can be harvested once a year : ....Ha 44 ☐☐☐☐ , ☐

  (3) Tides/folder/pond/swamp which can be planted with rice and harvested twice a year : ....Ha 50 ☐☐☐☐ , ☐

  (4) Tides/folder/pond/swamp which can be planted with rice and harvested once a year : ....Ha 56 ☐☐☐☐ , ☐

  (5) Rain irrigated rice field : ....Ha 62 ☐☐☐☐ , ☐

b. Not Cultivated: ....Ha 68 ☐☐☐☐ , ☐

c. Total (a + b) : ....Ha 75 ☐☐☐☐ , ☐

2. Dry land area (0,0 ha)

                                                    11 ☐2☐

a. Cultivated for agricultural ....Ha 12 ☐☐☐☐☐☐ , ☐

  (1) Garden/dry arable land:.............Ha 19 ☐☐☐☐ , ☐

  (2) Pond/dyke : ....Ha 25 ☐☐☐☐ , ☐

  (3) Livestock/grassland : ....Ha 31 ☐☐☐☐ , ☐

  (4) Other (including forest which is cultivated) : ....Ha 37 ☐☐☐☐ , ☐

b. Not for agriculture cultivation : ....Ha 43 ☐☐☐☐ , ☐

c. Land for buildings and surroundings : ....Ha 50 ☐☐☐☐ , ☐

d. Others : ....Ha 56 ☐☐☐☐ , ☐

e. Total (2a to 2d) : ....Ha 62 ☐☐☐☐☐ , ☐

3. Total Village area (1e + 2d) :.........Ha 69 ☐☐☐.☐☐ , ☐

4. From total land area
a. Land area for Bengkok*) (0.0 Ha) ....Ha 76 ☐☐☐☐ , ☐

b. Land area for village fund (0.0 Ha) ....Ha 81 ☐☐☐☐ , ☐

*) Land area belongs to the village headman

V. POPULATION AND ENVIRONMENT 11 [3]

A. POPULATION

1. Is there any regular population registration in this village? *Yes - 1 No - 2*	12 [ ]
2. a. Number of births during the previous year ....*persons*	13 [ ][ ][ ][ ]
b. Number of deaths during the previous year ....*persons*	17 [ ][ ][ ][ ]
3. Total population: ....*persons*	21 [ ][ ][ ][ ][ ]
4. Total population aged 7-12 years old : ....*persons*	27 [ ][ ][ ][ ]
5. Total population aged 7-12 years old who are currently still at school ....*persons*	32 [ ][ ][ ][ ]
6. Number of households ....*households*	37 [ ][ ][ ][ ][ ]
7. Number of households whose head is working in the agricultural sector ....*households*	43 [ ][ ][ ][ ][ ]

B. ENVIRONMENT

1. Type of cooking fuel used by most people in this village *Electricity or gas········· - 1* *Firewood·· - 3* *Kerosene····· - 2* *Charcoal·· - 4* *Others···· - 5*	49 [ ]
2. Garbage disposal practised by most people in this village *Throw it in a pool···· - 1* *In the garbage bin and then conected········ - 3* *Throw it in the river - 2* *Others········· - 4*	50 [ ]
3. Toilet facility used by most people in this village *Private····· - 1* *Other·········· - 4* *Share······· - 2* *Not using toilet- 5* *Public······ - 3*	51 [ ]
4. a. Is there any "Inpres" public toilet? *Yes -1 No··· - 2*	52 [ ]
b. Is there any other public toilet? *Yes -1 No··· - 2*	53 [ ]
5. a. Is there any critical land in this village? *Yes -1 No - 2*	54 [ ]
b. If yes, how many hectares is this area (0.0 Ha)? .... *Ha*	55 [ ][ ][ ][ ] , [ ]
6. Is there any stone, sand, soil or limestone quarrying in this village? *Yes -1 No··· - 2*	60 [ ]
7. a. Is there any reforestation in the last three years? *Yes -1 No··· - 2*	61 [ ]
b. If yes, how many hectare is this area (0.0 Ha)? .... *Ha*	62 [ ][ ][ ] , [ ]
8. Is there any factory/market/other activity whose waste matter (solid, liquid, gas) is polluting this village? *Yes -1 No··· - 2*	67 [ ]

VI. AGRICULTURE

A. FARMER'S ORGANIZATION

1. Farmer's Association:
   Yes - 1   No - 2   68 ☐

2. "Insus" (Special intensification) Farmer Group:
   Yes - 1   No - 2   69 ☐

3. Women's Farmer's Association: Yes - 1   No - 2   70 ☐

4. Forum of farmer's discussion: Yes - 1   No - 2   71 ☐

B. CORPORATE ESTABLISHMENT

1. a. Food crops: Yes - 1   No - 2   72 ☐

   b. If yes, number of establishments:..............   73 ☐☐

2. a. Estate crops: Yes - 1   No - 2·   75 ☐

   b. If yes, number of establishments:..............   76 ☐☐

3. a. Animal husbandry: Yes - 1   No - 2   78 ☐

   b. If yes, number of establishments:..............   79 ☐☐

4. a. Fishery: Yes - 1   No - 2   81 ☐

   b. If yes, number of establishments:..............   82 ☐☐

C. MARKETING AND DRYING FACILITIES

Type of facilities available and number of:

1. Livestock markets: ....   84 ☐

2. Fish markets/fish auction: ....   85 ☐

3. Kiosk facilities which sells agricultural produce:

   a. Owned by village cooperative unit:............   86 ☐

   b. Owned by non-village cooperative unit:.........   87 ☐☐

4. Drying floor: ....   89 ☐☐

D. ANIMAL HUSBANDRY

Numbers:

1. Milk cow: ....   91 ☐☐☐☐☐

2. Cow   : ....   96 ☐☐☐☐☐

3. Buffalo : ....   101 ☐☐☐

4. Horses : ....   104 ☐☐☐

VII. EDUCATION

1. Number of school buildings and schools by:

Level of Education	School Building		School	
	Public	Private	Public	Private
(1)	(2)	(3)	(4)	(5)
a. Kindergarden [4]	12 ☐☐	14 ☐☐	16 ☐☐	18 ☐☐
b. Elementary school and equivalent	20 ☐☐	22 ☐☐	24 ☐☐	26 ☐☐
c. Junior High School and equivalent (1) General	28 ☐☐	30 ☐☐	32 ☐☐	34 ☐☐
(2) Vocational	36 ☐☐	38 ☐☐	40 ☐☐	42 ☐☐
d. Senior High School and equivalent (1) General	44 ☐☐	46 ☐☐	48 ☐☐	50 ☐☐
(2) Vocational	52 ☐☐	54 ☐☐	56 ☐☐	58 ☐☐

2. Are there any academy/university located in this village?   *Yes - 1*   *No - 2*   61 ☐

3. Is there any other educational facilities:
   a. Islamic school   *Yes - 1*   *No - 2*   62 ☐

   b. School for handicapped children   *Yes - 1*   *No - 2*   63 ☐

   c. Seminary/convent/theology   *Yes - 1*   *No - 2*   64 ☐

   d. Library   *Yes - 1*   *No - 2*   65 ☐

VIII. SOCIO-CULTURAL   [5]

A. NUMBER OF PLACES OF WORSHIP

1. Mosque .... 12 ☐☐	4. Temple .... 17 ☐
2. Village mosque .... 14 ☐☐	5. Monastery .... 18 ☐
3. Church .... 16 ☐	

VIII. SOCIO-CULTURAL (Continued)

B. SPORT

Are there any sports activities, facilities, or clubs in this village?

Type of sport	Facilities	Club
1. Football	Yes- 1 No- 2 19 ☐	Yes- 1 No - 2 20 ☐
2. Volley ball	Yes- 1 No- 2 21 ☐	Yes- 1 No - 2 22 ☐
3. Badminton	Yes- 1 No- 2 23 ☐	Yes- 1 No - 2 24 ☐
4. Table tennis	Yes- 1 No- 2 25 ☐	Yes- 1 No - 2 26 ☐
5. Basket ball	Yes- 1 No- 2 27 ☐	Yes- 1 No - 2 28 ☐
6. Tennis	Yes- 1 No- 2 29 ☐	Yes- 1 No - 2 30 ☐
7. Swimming	Yes- 1 No- 2 31 ☐	Yes- 1 No - 2 32 ☐
8. Other	Yes- 1 No- 2 33 ☐	Yes- 1 No - 2 34 ☐

C. SOCIAL ORGANIZATION

1. Scout Federation	Yes - 1 No - 2	35 ☐
2. Orphanage	Yes - 1 No - 2	36 ☐
a. Abandoned children		
b. Orphan	Yes - 1 No - 2	37 ☐
3. Nursing home	Yes - 1 No - 2	38 ☐
4. Home for disabled	Yes - 1 No - 2	39 ☐
5. Social welfare activities	Yes - 1 No - 2	40 ☐

D. RECREATION AND ART ACTIVITIES

Type of cultural activities	Cultural group	Place of performance
1. Play	Yes - 1 No - 2 41 ☐	Yes- 1 No - 2 42 ☐
2. Traditional Javanese play	Yes - 1 No - 2 43 ☐	Yes- 1 No - 2 44 ☐
3. Dances	Yes - 1 No - 2 45 ☐	Yes- 1 No - 2 46 ☐
4. Music and vocal group (including traditional music group)	Yes - 1 No - 2 47 ☐	Yes- 1 No - 2 48 ☐

VIII. SOCIO-CULTURAL (Continued)

D. RECREATION AND ART ACTIVITIES

5. Cinema	Yes - 1	No - 2	49 ☐
6. Recreation park	Yes - 1	No - 2	50 ☐
7. Other (specify)	Yes - 1	No - 2	51 ☐

IX. HEALTH

1. Number of

   a. Hospitals   ....   52 ☐

   b. Maternity Hospital/Mother and Child Care Centers   ....   53 ☐

   c. Clinics   ....   54 ☐

   d. Public Health Centers   ....   55 ☐

   e. Supporting Public Health Centers   ....   56 ☐

   f. General Practioners   ....   57 ☐☐

   g. Family Planning Posts   ....   59 ☐☐

2. a. Number of physicians residing in this village   ....persons   61 ☐☐

   b. Number of health supervisors/nurses/ midwives and other health personel residing in this village   ....persons   63 ☐☐

   c. Number of traditional midwives residing in this village   ....persons   65 ☐☐

3. a. Source of drinking/cooking water generally used in this village

Pipe water ········· - 1	Spring water ······ - 5	
Electric pump ······ - 2	River/lake ········ - 6	67 ☐
Pump ··············· - 3	Rain water ········ - 7	
Well ··············· - 4	Other (specify) - 8 (················)	

   b. Source of bathing/washing water generally used in this village

Pipe water ········· - 1	Spring water ······ - 5	
Electric pump ······ - 2	River/lake ········ - 6	68 ☐
Pump ··············· - 3	Rain water ········ - 7	
Well ··············· - 4	Other (specify) - 8 (················)	

X. INFRA STRUCTURE, TRANSPORTATION, FACILITIES AND COMMUNICATION

A. TRANSPORTATION

1. a. Most of travel/transport in this village is by: *Land - 1* *Water - 2* ——>(Skip to Q.2)	69 ☐

b. If land, most of main roads in this village are
 	
   Asphalt road · *- 1*
   Road which is firm (gravel,stone, etc)· - 2
   Unpaved road· · *- 3*
	70 ☐

c. Can the main road be used by a four wheel vehicle all year? *.Yes - 1 No - 2*	71 ☐

2. Is there any public transport passing through this village that can be utilized by village residents?			
a. (1). Bicycle	*Yes - 1*	*No - 2*	72 ☐
(2). Tricycle	*Yes - 1*	*No - 2*	73 ☐
(3). Cart/wagon	*Yes - 1*	*No - 2*	74 ☐
(4). Wheeled horse drawn carriage	*Yes - 1*	*No - 2*	75 ☐
(5). Motor cycle	*Yes - 1*	*No - 2*	76 ☐
(6). Motor tricycle	*Yes - 1*	*No - 2*	77 ☐
(7). Four wheeled motor vehicle	*Yes - 1*	*No - 2*	78 ☐
(8). Boat	*Yes - 1*	*No - 2*	79 ☐
(9). Speed boat	*Yes - 1*	*No - 2*	80 ☐
(10). Motor boat	*Yes - 1*	*No - 2*	81 ☐
b. From the available transportation facilities, specify the main public transportation:			82 ☐☐

B. COMMUNICATION

1. Is there any public television in this village?			
a. Public television	*Yes - 1*	*No - 2*	84 ☐
b. Telephone	*Yes - 1*	*No - 2*	85 ☐
2. Is there any post office/supporting post office in this village? *Yes - 1 No - 2*			86 ☐

XI. ECONOMIC INFRA STRUCTURE

A. MARKETING FACILITIES

Number of:

1. Markets with permanent/semi permanent construction .... 87 ☐

2. Markets without permanent construction .... 88 ☐

3. Shopping centers .... 89 ☐

4. Kiosks selling consumer goods

    a. Owned by cooperative village unit .... 90 ☐☐

    b. Owned by other cooperative .... 92 ☐☐

    c. Owned by private cooperative .... 94 ☐☐☐

B. CREDIT FACILITIES

1. Number of

    a. Banks .... 97 ☐☐

    b. Village cooperative units .... 99 ☐

    c. Other cooperatives .... 100 ☐

    d. Other financial institutions .... 101 ☐☐

2. Credit facility which is loaned to people in this village:

    a. Mass guidance credit   *Yes - 1*   *No - 2*   103 ☐

    b. Small scale credit   *Yes - 1*   *No - 2*   104 ☐

    c. Permanent working capital credit   *Yes - 1*   *No - 2*   105 ☐

    d. Small retailer credit   *Yes - 1*   *No - 2*   106 ☐

    e. Other credit   *Yes - 1*   *No - 2*   107 ☐

C. OTHER

Number of

1. Factories .... 108 ☐☐

2. Restaurants .... 110 ☐☐

3. Is there any electricity in this village:

    a. Government electricity   *Yes - 1*   *No - 2*   112 ☐

    b. Private electricity   *Yes - 1*   *No - 2*   113 ☐

4. Party equipment rental (such as dishes, spoons, forks, glasses, cups, and saucers)   *Yes - 1*   *No - 2*   114 ☐

XII. VILLAGE DEVELOPMENT

1. In 1985, is there any finished/unfinished infra structure development project and is it financed by Presidential Instruction (Inpres), Province/Regency Development Funds, Village Development Funds, or Self-Financed by the community:

    | 6 |

    Yes - 1   No - 2

                                                            12 [ ]

2. If yes,

    a. Completed project

No.	Type of development project	Managed by village - 1 Not managed by village- 2	Source of prime funds **)	Duration of con- truction period (month)
(1)	(2)	(3)	(4)	(5)

CODED BY   Filled col.
CBS   (3) (4)   (5)
 ‖   ‖   ‖   ‖
 V   V   V   V
13   15   16   17
[ ]   [ ] [ ]   [ ]
19   21   22   23
[ ]   [ ] [ ]   [ ]
25   27   28   29
[ ]   [ ] [ ]   [ ]
31   33   34   35
[ ]   [ ] [ ]   [ ]
37   39   40   41
[ ]   [ ] [ ]   [ ]

**) Code for source of prime fund:

National project - 1   Village development
Inpres·········· - 2   funds············ - 5
Province develop-   Self-Financed by
ment funds·······- 3   community·········- 6
Regency develop-   Other (specify)····- 7
ment funds·······- 4   ....

XII. VILLAGE DEVELOPMENT (Continued)

b. Uncomplete project

No.	Type of develop- ment project	*) Manage- ment -1/-2	Source of prime fund **)	Duration of con- truction period (month)	Percen- tage of comple- tion (%)
(1)	(2)	(3)	(4)	(5)	(6)

CODED BY CBS   (3)   Filled col.
                     (4) (5)   (6)
43   45 46 47   49
51   53 54 55   57
59   61 62 63   65
67   69 70 71   73
75   77 78 79   81

*) Village management- 1   Non village
                            management ······ - 2

**) Code for source of prime fund:

National project - 1   Village development
Inpres ··········· - 2   funds ············· - 5
Province develop-   Self-Financed by
ment funds ······· - 3   community ········· - 6
Regency develop-   Other (specify) ···· - 7
ment funds ······· - 4   ····················

XIII. VILLAGE HEADMAN PARTICULARS

1. Age ················ years   85 ☐☐

2. Sex
        Male ············· - 1   Female ··········· - 2   87 ☐

3. School attainment

   No schooling ········ - 1   Secondary school - 4
   Did not complete   High school ······ - 5   86 ☐
   Primary school ······· - 2   Academy/
   Primary school ······· - 3   university ······· - 6

FERTILITY AND CHILD MORTALITY ESTIMATION FROM THE CENSUS DATA IN INDIA : EXPERIENCE OF 1981 CENSUS AND PLANS FOR 1991 CENSUS

K.S. NATARAJAN
DEPUTY REGISTRAR GENERAL, INDIA

In the recent Indian censuses, questions relating to fertility have been canvassed. In the 1971 census questions on age at first marriage and births during last one year were canvassed for all currently married women. In the 1981 census, 4 questions relating to fertility were canvassed. These were age at marriage, number of children ever born sexwise, number of surviving children sexwise and whether any child was born during last one year. The first three questions were canvassed for all ever married women. For reasons of operational convenience, the question on births during last one year was canvassed for currently married women only. In the 1991 census also it is proposed to canvass the same questions as was done during 1981.

2. Apart from these questions, in the 1981 census instructions were laid down that for all children below age ten, the mother of the child who is living in the household at the time of census must be identified by circling the serial number of the mother in the household schedule. This was intended to provide estimates of fertility by "own-child" method. In the 1991 census this has not been adopted. This is not because of the unacceptability of the own child method, but because a decision has been taken that the household schedule would be processed entirely manually, while the individual slip would be processed on computer.

3.   The tables relating to fertility have been published as the F series tables of the Census of India 1981. In all, about 28 tables were prepared based on the above questions. In the 1991 census it is proposed to prepare about 18 tables for general population. In addition, 4 tables would be prepared for scheduled castes and scheduled tribes.

Child mortality estimates:

4.   Number of children ever born and number of children surviving sex wise, have been tabulated at district level by age of mother. At state level, similar tables have been prepared by religion of the mother, educational level of the mother and the occupation of the mother (if she is a main worker). Tables are available separately for each of the six main religions, namely Hindus, Muslims, Christians, Sikhs, Buddhists, Jains and 'Others'. The educational level of the mother has been classified as illiterate, literate but below middle, middle but below matric, matric but below graduate and graduate and above.

5.   Based on the data on children ever born and children surviving tabulated by the age of mother, estimates of child mortality, $q(1)$, $q(2)$, $q(3)$ and $q(5)$ have been prepared in the 1981 census for 402 districts of India. The estimates have been worked out by using Brass technique. The actual equations for estimation were based on Trussel's equations using South Model life tables. Child mortality estimates have been prepared sex wise separately for rural and urban areas. In the absence of reliable civil registration system, these estimates provide usable data at district level. These have been published in the volume "Child Mortality estimates of India, occasional paper No. 5 of 1988: Census of India 1981".

6.   The estimates of Child mortality derived by indirect estimation techniques compare well with those derived from the Sample Registration System. $q(1)$ which is closer to the infant mortality rate works out to be 115 for India as against the Sample

Registration System estimate of 114 for the year 1980. The census based estimates of IMR are 123 for rural areas and 67 for urban areas; the corresponding Sample Registration System estimates being 124 and 65. There is hardly any difference between the Sample Registration Scheme and census estimates of infant mortality for the year 1980. However, the estimates of q(5) derived from census are much lower than those obtained from Sample Registration System. The estimates of q(5) for the period 1976-80 based on Sample Registration System are 181 and 206 respectively for males and females. The corresponding figures based on Brass' techniques are 147 and 157 only. Probably, the estimates of q(5) based on the data on number of children born and surviving reported by women aged 30-34, are under-estimates. In Table 1, Sample Registration System and census estimates of q(1) and q(5) for the major states of India have been presented. The estimates of q(1) from census and Sample Registration System are quite close to each other in case of Andhra Pradesh, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Rajasthan and Tamil Nadu.

7.   To check the internal consistency of the estimates worked out by the indirect estimation technique, a comparison has been made between q(2) and q(5) estimates for various districts. q(2) has been divided into 7 ranges viz., less than 71, 71-100, 101-120, 121-145, 146-170, 171-200 and more than 200. Corresponding to these ranges of q(2), the ranges q(5) as per the South Asian Model life tables are less than 81, 81-120, 121-145, 146-185, 186-210, 211-250 & more than 250.

8.   The statement below shows the consistency between q(2) and q(5) estimates in various districts.

CONSISTENCY BETWEEN q(2) AND q(5) ESTIMATES IN VARIOUS DISTRICTS

(5)	Less than 81	81-120	121-145	146-185	186-210	211-250	More than 250
(2)							
ess than 71	20	13	–	–	–	–	–
1-100	–	68	21	–	–	–	–
01-120	–	1	68	21	1	–	–
21-145	–	–	6	66	7	–	–
46-170	–	–	–	18	43	6	–
71-200	–	–	–	–	5	23	2
lore than 200	–	–	–	–	–	6	7

9.   Out of 402 districts for which estimates have been worked out here, estimates for 295 fell into the proper ranges. In 71 out of the remaining districts, q(5) is higher compared to the range of q(2). Among those 71 districts, q(5) is very close to the upper limit of the corresponding range in 56 districts. Probably in the remaining 15 districts mortality has declined during the intervening period of or it may be due to bad data. Out of these 15 districts 9 are in the comparatively smaller states of Meghalaya, Sikkim and Arunachal Pradesh, where the data could be faulty because of non-sampling errors. In 36 districts, estimated q(5) is low compared to q(2) but in fact it is only in 5 districts that q(5) seems relatively low compared to .q(2) as in the remaining 31 districts q(5) is very close to the lower limit of the corresponding range. Thus, only in 20 districts throughout the country q(5) estimates are not consistent with the q(2) estimates. The inconsistencies are so small, that it can be said that q(2) and q(5) estimates are generally very consistent between themselves in most of the districts.

10.　　　Based on the child mortality estimates, two maps have been prepared. The first map shows the child mortality from birth to age 2, i.e. q(2), per 1000 live births and its differentials in different regions. This map brings out the spatial distribution of child mortality. The second map shows the male female differentials in child mortality. For this purpose the ratio of q(5) estimated for males to that of females multiplied by 100 has been used as an index. This map clearly brings out the areas where female child mortality is more than male child mortality.

11.　　　A further analysis of the q(2) and q(5) estimates for males and females indicates that in 136 districts of the country child mortality q(2) and q(5) are higher for females than males. Further, out of 260 districts where in q(2) for females was less than q(2) for males, in 88 districts female child mortality, q(5), becomes higher than that of male child mortality, q(5).

Estimates of fertility:

12.　　　The data on number of children ever born were combined with that on births during last year to estimate fertility by P/F ratio method. The values of P/F ratios for various age groups 15-19, 20-24 and 45-49 were examined for any systematic trend. The age specific fertility rates derived from the data on births during last year were then adjusted by P_3 /F_3 or P_2 /F_2 . In most of the cases P_3 /F_3 was used to adjust.

13.　　　Unlike the estimates of child mortality, the estimates of fertility derived by using P/F ratio method are known to suffer from certain bias. Fertility estimates obtained by applying the method when either marital fertility or age at marriage has been changing rapidly in the recent years may be subject to bias, since it would no longer be valid to assume that the pattern of fertility reflected by average parity is equal to that indicated by current fertility.

In the Indian situation, there has been very little fertility decline in younger ages. Wherever family planning has been adopted, it is mostly the terminal method of sterilisation adopted by older wo- men. Though age at marriage is also increasing, the pace of increase has not been very rapid. In fact, most of the increase in age at marriage is taking place in the age group 15-19. In view of this, it is felt that use of P_3 / F_3 as an adjustment factor seems justified in most of the cases. Despite this, if the P/F ratios indicated an increasing trend, the estimates for such districts are considered as over estimates. Out of 402 districts of the country (excluding Assam) in about 70 districts the estimates derived by this method are considered over estimates.

14.   Table 2 shows the crude birth rates derived on the basis of P/F ratio method and those based on Sample Registration system for the year 1980. The Sample Registration System estimates are available only at state level. Hence, the comparison is limited to state level estimates. The table shows the Sample Registration System birth rates adjusted for under reporting. The estimates of under reporting are based on an intensive enquiry conducted in a number of major states of India on a 10 per cent sub sample of Sample Regis- traion System units.

15.   For India as a whole, Sample Registration System estimates the crude birth rate at 33.7 for 1980. The intensive inquiry conducted by the office of the Registrar General India indicated that the birth rate was under estimated by 3.16 per cent. Adjusting for this the crude birth rate for 1980 based on Sample Registration System may be put around 34.8/1000. This is very close to the value of 34.7 obtained by P/F ratio method. However, the agreement is not uniform or so close in all the states. In the states of Andhra Pradesh, Guja- rat, Haryana, Himachal Pradesh, Rajasthan & Uttar Pradesh both the estimates agree closely. In case of Bihar, the estimate derived from census by P/F ratio techniques is slightly lower than that

of Sample Registration Scheme. In other states, the agreement is not very close and the estimates based on P/F ratio are higher.

Proposed analysis for 1991 Census:

16.   In the 1991 census also tabulation similar to 1981 census have been provided for. It would, therefore, be possible to estimate the levels of child mortality and trends over time by comparing the estimates with those obtained in 1981.

17.   As regards fertility, it is felt that the P/F ratio method using 1991 Census data alone may not give usable estimates, since, during the decade fertility seems to have further declined. The fertility estimates for the intercensal period as a whole may be obtained by comparing the period fertility rates derivable from the questions on births during the last one year, with the average parities for a hypothetical birth cohort. In this method, described in U.N. Manual 10, the average parities for a hypothetical inter census cohort would be derived first using 1981 and 1991 census data on children ever born. The age specific fertility rates derived from 1981 census and 1991 census would be used to provide estimates of fertility pattern during the inter-census period and the estimation of average parity equivalents for hypothetical inter survey cohort. The P/F ratio method would then be applied and an adjustment factor selected after examining the various ratios.

18.   At the state level, since ASFR's based on Sample Registration Scheme would be available annually, this data would be used to estimate the completeness of birth registration. Estimates so derived at state level would be compared with similar estimates obtained by the method described in previous para to get an idea of the consistency of the results.

19.   One major limitation of the above method to estimate ferti-
lity parameters at district level would be the effect of migration.
If migrants have a different pattern of fertility than the non-mi-
grants, then the parity increments may not be really representative.
One way to study this would be to tabulate similar data for inter-
district migrants. If this is not possible for all the districts this
may be attempted at least for some districts which are known to
receive a number of in-migrants. This, however, would require a
special tabulation and can be attempted only after the main census
tabulations are over.

TABLE 1: STATEMENT SHOWING A COMPARISON BETWEEN SRS AND CENSUS ESTIMATES q(1) AND q(5)

State	q(1)						q(5)					
	Census			SRS(IMR 1980)			CENSUS			SRS (1976-80)		
	M	F	P	M	F	P	M	F	P	M	F	P
1	2	3	4	5	6	7	8	9	10	11	12	13
Andhra Pradesh	100	82	91	102	82	92	143	135	139	173	170	172
Bihar	95	94	94	-	-	-	131	153	141	-	-	-
Gujarat	81	84	84	112	114	113	119	129	124	193	212	202
Haryana	87	119	94	95	113	103	125	153	138	150	202	175
Himachal Pradesh	101	89	92	-	-	87	142	136	139	132	163	146
Jammu & Kashmir	78	78	78	-	-	72	114	117	115	123	135	128
Karnataka	87	74	81	71	71	71	143	140	142	136	147	142
Kerala	55	48	52	44	36	40	85	76	80	71	69	70
Madhya Pradesh	158	140	150	144	139	142	193	201	197	223	241	231
Maharashtra	96	89	92	73	78	75	146	144	145	137	150	143
Orissa	119	111	115	143	143	143	181	176	179	193	207	200
Punjab	74	79	77	89	94	89	104	118	111	132	167	149
Rajasthan	114	114	114	105	105	105	166	186	176	206	200	203
Tamil Nadu	89	82	86	94	91	93	134	131	132	167	171	169
Uttar Pradesh	131	128	130	132	168	159	174	200	190	242	317	279
West Bengal	103	87	95	-	-	-	123	125	124	-	-	-
INDIA	122	108	115	113	115	114	147	157	152	181	206	193

Note : M stands for Male and F for Female.

TABLE 2 : BIRTH RATES FROM DIFFERENT SOURCES FOR INDIA & MAJOR STATES

India/State	1978		1980		Using P/F Technique 1980
	Observed	+ Adjusted	As per S.R.S.	Adjusted as per 1980-81 survey@	
1	2	3	4	5	6
INDIA	33.3*	34.1*	33.7	34.70	34.9
Andhra Pradesh	33.6	34.4	31.0	33.10	33.2
Assam	30.8	32.4	31.9	35.00	–
Bihar	31.2	N.A.	37.8	N.A.	36.9
Gujarat	35.8	36.0	35.8	35.48	36.6
Haryana	33.5	36.9	37.2	37.31	37.5
Himachal Pradesh	27.3	28.2	32.1	32.64	36.3
Jammu & Kashmir	31.8	35.5	31.1	N.A.	38.6
Karnataka	29.2	34.3	27.6	31.43	35.4
Kerala	25.2	26.3	26.8	26.92	28.7
Madhya Pradesh	37.2	38.7	37.1	37.23	38.0
Maharashtra	26.9	27.5	29.3	29.57	31.8
Orissa	32.9	36.1	31.6	N.A.	35.2
Punjab	29.4	31.5	29.9	30.69	35.8
Rajasthan	35.5	39.6	38.7	39.38	41.0
Tamil Nadu	28.8	31.9	27.9	28.40	32.0
Uttar Pradesh	40.4	42.5	39.4	40.42	39.1
West Bengal	28.4	N.A.	31.7	N.A.	34.7

*Excludes Bihar and West Bengal

Source: +1978 Adjusted: Estimates of fertility and child mortality by indirect methods-Census of India 1981, Occasional paper No. 1 of 1983.

@1980 Report on the intensive enquiry conducted in a sub-sample of SRS units, Census of India 1981-Occasional paper No.2 of 1983.

INDIA

NUMBER OF DEATHS BY AGE 2
PER 1000 LIVE BIRTHS

CENSUS 1981

BOUNDARY, INTERNATIONAL _____ BOUNDARY, STATE/UNION TERRITORY __.__.__
" DISTRICT _____

AFGHANISTAN

JAMMU AND KASHMIR

HIMACHAL PRADESH

PAKISTAN

ARABIAN
SEA

NEPAL

BHUTAN

ASSAM

BANGLADESH

BURMA

WEST BENGAL

BAY OF BENGAL

ANDHRA PRADESH

LAKSHADWEEP SEA

LAKSHADWEEP
(INDIA)

TAMIL NADU

PONDICHERRY

SRI
LANKA

NUMBER OF DEATHS BY AGE 2
PER 1000 LIVE BIRTHS

< 71	146 – 170
71 – 100	171 – 200
101 – 120	> 200
121 – 145	

ANDAMAN
AND
NICOBAR
ISLANDS
(INDIA)

ANDAMAN SEA

INDIRA POINT

C-1981 CENSUS NOT UNDERTAKEN IN ASSAM.

EAST OF GREENWICH

INDIAN OCEAN

INDIA

EXCESS OF FEMALE MORTALITY
OVER MALE MORTALITY
BY AGE 5, q (5)

BOUNDARY, INTERNATIONAL .... BOUNDARY, STATE/UNION TERRITORY ....
" DISTRICT ....

PERCENTAGE EXCESS

20 PERCENT OR MORE
10-20 PERCENT
5-10 PERCENT
LESS THAN 5 PERCENT
ZERO PERCENT OR BELOW
[i.e, Where q (5) for females
is less than for males]

q(5) Denotes the number of deaths
by age 5 per 1000 live births.

C-1981 CENSUS NOT UNDERTAKEN IN ASSAM.

TO EDIT OR NOT TO EDIT: THAT IS THE QUESTION

Some Thoughts on the Current State of Computer Editing

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DRAFT

> We find the arguments in favor of editing unconvincing. First, "not stated" values and anomalies in census tabulations are valuable indicators of data quality. They facilitate rather than impair use of the data. The argument that editing serves user convenience is fallacious. We are sometimes inconvenienced by not stated values and anomalies, to be sure. The fallacy lies in supposing that the inconvenience is eliminated by editing. The laws of a nation may inconvenience its citizens, but they are not revoked on this account. It is recognized that, despite inconveniences, they serve a necessary function. The same applies to not stated values and anomalies in census tabulations.
>
> Second, editing destroys information. When a not stated value is imputed, the information that no response was obtained for this person is destroyed. When an anomaly is suppressed by changing a value, the original value is destroyed. The argument that editing and imputation improve data quality is fallacious. The effects of editing are cosmetic rather than corrective. Editing conceals defects without eliminating them (Banister and Feeney 1979).

Census and survey editing enthralls statisticians and demographers. Many of these statisticians and demographers, as those cited above, condemn the use of any editing in census and survey work. These individuals feel that editing does violence to a data set. The questions here involve whether census editing should be done, and, if so, how much editing is the correct amount.

Both subject matter experts and programmers bring specialized skills to the complex issues revolving around census edits. The arrival of high speed, very "user-friendly" computers has only enhanced and magnified this fascination. If _any_ editing is appropriate, we must then decide how much editing is appropriate. As an ESCAP official noted recently, "Lack of basic editing policy and clear lines of responsibility has sometimes led to confusion and as a consequence the timeliness of reports and quality of data have suffered."

Census and survey editing does not improve the quality of collected data. Edited census data are at most only as accurate as the collected data, and frequently, much the worse for wear after the editing process. If a 70 year old female is recorded as the mother of a 3 year old child, we know something is wrong -- either the mother's age is wrong, or the child's age is wrong (or both). In changing one age or the other, without any other information, about half the time we will have changed correct information to being incorrect. The other half of the time we will have 'improved' the quality of the data. Many times we will not know whether we have attacked the right variable, and

whether we have made the relationship between items better or worse. Demographers and statisticians can debate whether we should change either age. A table of mother's age by child's age would look strange with the 70 year old mother and 3 year old child. Much of census and survey editing, then, is as much an exercise in aesthetics as attempts to improve quality.

Clearly, we want to change the data set as little as possible. Maintaining the integrity of the data is the highest priority. Since edits always introduce error into the data set while trying to eliminate other errors and inconsistencies, the first tenet of editing philosophy must be to try to reduce the introduced error as much as possible.

The largest problem with the neo-mechanization of editing is the loss of timeliness if firm control is lacking. That is, sometimes systems analysts get carried away. The edit becomes so complex that the package is not only not ready when keying the data, but we also lose time just getting the program prepared for edit analysis. Sometimes the logic becomes so convoluted that neither the subject analyst nor the programmer can decipher whether the appropriate and proper paths are followed. That is, there is simply too much editing.

The new editing packages -- like CONCOR and PC-EDIT -- have helped in this revolution in increasing sophistication of computer edits:

> The principal advantage in using such packages is that the need to expend scarce resources on systems design is largely eliminated. The user-friendliness of the packages has enabled subject-matter statisticians to control the entire editing operation. This has resulted in appreciably speedier processing and has encouraged greater flexibility in the design of edit systems. While these developments have been most beneficial on balance, they have brought with them new kinds of problems.
>
> By simplifying the tasks of writing edits and by enhancing the role of the statistician, the introduction of the software packages has sometimes resulted in overly complex and lengthy edit specifications as newly acquired skills are demonstrated. In addition the concentration of the edit system in the hands of a single statistician (though sometimes more) familiar with the software, can have disastrous consequences where control is lacking. (ESCAP n.d.:11)

We must build controls into the editing part of the census process, as in any other segment of the process. The fully automated system may be a modern electronic marvel, but if we cannot process the data quickly and accurately, the machine may be shiny, but may not work properly. Until

recently, most post-enumeration census processing required returning to the original forms to reconcile errors or inconsistencies. Even if returning to the forms resolved many issues, this procedure can not resolve respondent and enumerator errors.

Also, improved software and machine capabilities have been accompanied by greater confidence in the computer's ability to detect error and the use of automatic correction. Of course, in speaking of "automatic correction" we obviously mean "automatic change" because, usually, we can not tell whether we have 'corrected' anything. In fact, as noted before, we have really only made the data set more aesthetic, not 'better.'

Some problems are problems only because of faulty thinking and not because of the automatic correction, but become magnified when subject matter people do not properly check edit paths before the census. ESCAP notes two such problems in their review:

> ...Whenever education was not stated on the census schedule, values were obtained from the "hot-deck" of valid records. But since the failure to respond resulted largely from the enumerators' difficulty in recording 'nil' education for persons who never attended school, the described procedure clearly resulted in a strong upward bias. In yet another country, bias of a different kind was introduced as the imputation procedure amended sex for records that had failed an edit, on the basis of whether or not fertility had been reported. Since in many instances respondents were below reproductive age, systematic errors were introduced, especially in the youngest age groups (ESCAP, n.d.:11).

Of course, both these problems are not the fault of automatic correction but of faulty thinking. The authors note, "The obvious solution is to recognize the potential uses of the technique and ensure that controls are tight, especially by setting tolerances for failure of any edit at very low levels."

So, the main questions become "Do we edit census and survey data?" and "If so, how much?" Here, we assume that an aesthetic product is the major goal of a census. Since the results of a census are completely dependent on the quality of the enumeration, census editing, when done, is done to achieve that aesthetic aim. Modern computer editing requires both subject-matter and programmer expertise. Unfortunately, in many census offices, subject matter specialists and programmers still do not 'speak' a common language. Therefore, here we discuss methods of increasing communication between subject matter specialists and programmers during development of computer edit

specifications. Subject matter specialists and programmers have not traditionally used a common computer package or language to 'talk' to each other. This failure to communicate has resulted in misunderstandings at best, and data problems at worse.

Census editing has many phases. Enumerators manually edit data, as do field operations supervisors, and central office personnel. Then, staff code the data, with further editing resulting, depending on choices coders make on their own, or supervisors force them to make. Then keyers key data, often with edits built into the data entry package. Finally, the data are computer edited, most often now, by a computer software package. Here we look at the automated editing process.

KEYING CONSIDERATIONS

Contemporary data entry packages -- ENTRYPOINT 90 and CENTRY, for example -- build flexibility into the system. The flexibility brings at least two major changes to census keying - (1) skip patterns which were already in previous packages can be much more sophisticated, and (2) data can be edited when keyed.

Beware of skip patterns. The most important part of the keying operation is the keying itself. The most efficient keying is "heads down" keying. That is, the keyer can work best when she or he simply keys the data as received. Whenever the keyer has to stop to check an error or inconsistency, the keying operation inevitably slows down, is less efficient, and more prone to errors. Also, the keyers should never make subject matter decisions.

Sometimes the subject matter persons devising the keying instructions cause these problems themselves. Rather than straight keying of exactly what is on the questionnaire, sometimes specialists program edit decisions and skip patterns into the keying. Consider the following married couple household:

Person	Relationship	Sex	Marital Status	Children
1	Householder	M	Married	10
2	Spouse	M	Married	Blank

If sex takes precedence over Children ever born -- likely, since the keyer would key item 3 (sex) before item 20 (fertility) -- then the skip pattern will delete information for children ever born by the skip pattern. That is, for males, the keying program will skip the fertility information since none should be there. Effectively, we would lose those data, and they would be lost forever.

Later, during computer edit, we would find a same-sex married couple. It is very likely that the second person's sex will change to female (based on similar households in the area). Then the edit will impute her fertility. Therefore, we will not only have deleted fertility information from one person (whose sex should change), we also add inappropriate fertility information to someone else.

The answer to this problem is to let the keyers key, and use the computer editing package properly. The keyer will not slow down by having to stop to figure out what is going on with information that is clearly there but not keyed. Also, we will not lose information that we may need later.

Actually, the U.S. Bureau of the Census International Statistics Programs Center (ISPC) has recently made additions to its CENTRY entry package which allow increased flexibility in keying operations. Computer edits in CONCOR can be written to detect errors in questionnaires as soon as keyers key those questionnaires . These errors are not "corrected". The package notes the problem for the keyer, but more importantly, for a subject matter person. That person can then make changes to the questionnaire early on. Usually, two edit programs would be necessary -- a short one to point out the obvious invalid values and inconsistencies, and a longer one for a more complete edit, the length depending on the complexity specified by the subject matter specialists.

CENTRY has features to aid in this analysis. The keyer can key the data -- all of the data -- as recorded on the questionnaire. Another person, a subject matter person, can then run the CENTRY

program through a short CONCOR program, or, even better, use the 'modify' mode of CENTRY to check entered data with the CONCOR program. Staff can correct obvious errors on the spot.

WHITHER WE GO EDITING?

After keying the data, the problem continues -- how much editing is enough? Since I am suggesting that the first priority for publications is aesthetics, some editing is necessary for some items to eliminate invalid and inconsistent values. <u>When</u> you choose to edit data influences the final product as much as how you edit the data. For example, in the following table we did not edit unknown entries for age and sex:

```
Table XXXX  . Population by Age Group and Sex: Year
-----------------------------------------------------------
Age group       Total      Males     Females    Unknown
-----------------------------------------------------------
      Total..    100         48         50          2
< 5 years..       10          5          5          0
5 to 9 yrs.       10          5          5          0
                             .
                             .
                             .
75 + yrs...       10          5          5          0
Unknown....        2          1          1          0
-----------------------------------------------------------
```

In this example, 48 males and 50 females made up 98 percent of the population. The other two persons had unknown sex, and were not edited.

Most planners and policy makers would look at this table, and would say, "Well, since we have two unknowns, one must be male and one female, making the population 49 percent male and 51 percent female." That guess would be as good as any. But, since the only information available for assigning the unknowns is the sex distribution, the imputation uses only that skimpy information. That is, the subject matter specialists who wanted to preserve the unknowns in the data set rather than assign them can do that, but the planners assigned values anyway without any other information - without looking at whether the person had children ever born, or was someone's mother, or someone's

husband. It is important to remember, also, that <u>original values as well as imputed values can be kept</u> <u>on the microcomputer records</u>. A question develops: is it better to allocate when the data are available during the edit procedure, or better to allocate at the end, when no other information is available?

GENERAL COMPUTER EDITING

The proverbial better mousetrap is here in the form of a better edit package. Over the last decade, U.S. Bureau of the Census' International Statistics Programs Center (ISPC) developed CONCOR. CONCOR (CONsistency and CORrection) is a generalized computer package for editing census and survey data. Subject matter specialists and programmers can learn the few important CONCOR commands, and then use these commands with appropriate edit logic to communicate.

Microcomputers have revolutionized data processing, generally, and for this presentation, at least, census and survey processing in particular. For tabulations, for example, no longer must we check large quantities of data by hand, or, wait for hours or days to receive tabulations from a mainframe computer. Now we are able, through a small set of instructions, to get tabulations quickly and with as many breaks as we want.

Similarly, during computer edit, we can check large quantities of data and correct errors quickly. Manual census and survey editing used to take time and was subject to human error. Computer editing reduces both time and the chance of introducing human error. Computer edits check the validity of entries by examining them to see if they have acceptable values. We also can check the value of the entry against related entries for consistency.

We cannot always refer to original documents to correct errors for large volumes of data. Often the data recorded on the original questionnaires are wrong or inconsistent. Computer editing systems like CONCOR can correct erroneous data immediately. Error listings and assigned variables record all errors found and all changes made. Organizations plan computer edits carefully because

running large quantities of data through a computer system is time-consuming. The programmer should plan and design a computer edit to inspect the data and have the computer change them.

Inexpensive microcomputers make computer editing much more "user-friendly." Once programmers write and test the program, CONCOR edits about 4,000 census records per minute on an IBM PC/AT or compatible. Until recently, edit programs had to be custom-written, requiring expensive debugging and processing time. Programmers can develop CONCOR edits rapidly.

Neither CONCOR nor any other editing package or program solves all editing problems. Subject matter specialists still must make decisions about actual editing. Imputation probably introduces more errors into the data set than it removes in very small data sets. CONCOR can easily do imputation if needed, either automatically from a table of values, or by using a constantly changing 'hot deck'. Dumping and printing records using the hot deck is less efficient than simply correcting records with errors. Only in very small populations can staff recheck the original census data to be sure that the collected information is accurate. Changes made are not 'corrections' since, if the attributes of the variables are inconsistent, the changed attribute may introduce yet another error or inconsistency.

The primary advantage of an editing package like CONCOR is that when using the package properly, the data will be consistent and 'clean' so tabulations can be more timely. Most editing can be done more quickly with CONCOR than with custom-written programs because CONCOR does not require the same level of programming knowledge.

The purpose of editing is to make the data as nearly represent real life as possible by cutting omissions and invalid entries, and changing inconsistent entries. Below are some major principles:

1. Keep 'not reported' for certain items. Thus, for an omission or an inconsistent, impossible, or unreasonable entry, the edit assigns 'not reported'.

2. Make the fewest required changes to the originally recorded data.

3. Eliminate obvious inconsistencies among the entries.

Supply entries for erroneous and missing items by using other entries. These entries may be for the housing unit, person, or other persons in the household or comparable group as a guide. Always follow specified procedures.

Methods of changing data. Actual methods of correcting (i.e., changing) vary depending upon the item. Usually, data items are assigned valid codes with reasonable assurance that they are correct by using responses for other data items within the record, or in other records in the questionnaire.

When recorded responses are missing, impossible, inconsistent, or unreasonable and cannot be determined from other responses in the same questionnaire, some technique must assign entries.

The edit procedure can give a particular response for each occurrence of unknown entries, or a procedure can impute responses proportionally from a distribution of responses. We call this procedure the 'cold deck' method.

In the cold deck method, the edit does not update the original array. The cold deck values would not change from those in the starter deck after the first, second, tenth or any other person record. The edit assigns the original values for any allocations of missing data.

For proportional distribution of responses, suppose a tabulation of valid data on hours worked per week by males 33 years old employed in agriculture showed that 25 percent worked 50 hours a week, 40 percent worked 60 hours a week, and 35 percent worked 70 hours a week. Missing or invalid responses for hours worked for males 33 years old employed in agriculture would be replaced 25 percent of the time by 50 hours, 40 percent of the time by 60 hours, and 35 percent of the time by 70 hours. Unless reliable data are available from previous censuses, surveys, or other sources, this technique requires pre-tabulation of valid responses from the current census, which may not be economically or operationally feasible. Otherwise, replacement of invalid data may result in the production of inaccurate statistics. Part of the Integrated Microcomputer Processing System (IMPS) -- QUICKTAB -- helps in this by giving unedited and edited distributions.

Hot deck technique. Unknown data occur in all censuses and surveys. The missing data may be due to informant error, enumerator error in hearing or recording, or to coding, editing, or punching errors. If the enumerated data are readily available and time and money permit, coding, editing, or punching errors are simple to correct. We cannot correct informant and enumerator errors so easily; staff either have to contact the original respondent to correct the aberrant information, or the information remains 'unknown'.

In compiling and displaying census or survey data, we have a column or row showing the number of unknowns for a particular data item. Carrying this information along can be very cumbersome, especially since there will be different individuals and numbers of individuals for different items. Therefore, the number of persons for whom data is available varies from table to table. Procedures provide the information missing from data and to avoid discrepancies and the need to figure out percentages twice, with and without the unknowns. One method of ridding the data of unknowns is the use of 'hot deck'.

Hot decks allocate a value when it is unavailable, unknown, incorrect or inconsistent (and must change). The hot deck approach uses known information about individuals with similar characteristics (for example, sex, age, relationship). These characteristics help to find the 'most appropriate' information when some piece (or pieces) of related information for other individuals is unknown. The hot deck itself is a set of values, like cards in a deck, used to store, and then to provide, information for unknown values. The deck constantly changes, being systematically shuffled, so responses change as the edit processes the data.

At its simplest, a single variable is the 'deck'. For sex, for example, we assign an initial value (male or female) to the deck arbitrarily, thus determining the 'seed'. Then, if a person's sex is blank for some reason, the seed value becomes the sex of the first individual with unknown sex. If we know the first person's sex, the sex of that person replaces the seed value. If the second person's sex is unknown, the sex stored in the hot deck (the sex of the first person) becomes the sex of this person.

Some Thoughts on the Current Status of Computer Editing

Below is some sample information for a set of ten individuals. The numbers 9 for sex and 99 for age show missing information. Although other variables are available for use in allocation (e.g., education, occupation), this short example does not include them.

Person	Relationship	Sex	Age
1	1	1	39
2	2	2	35
3	3	1	13
4	3	9*	10
5	4	2	40
6	4	1	99 *
7	4	2	13
8	5	9*	99 *
9	5	1	44
10	5	2	36

We can use relationship to householder and sex to aid in determining the age to be assigned to an individual. That is, we use a two-dimensional array instead of a single variable. Assume we have the following list of relationship codes:

    1 = Householder
    2 = Spouse
    3 = Child
    4 = Other relative
    5 = Nonrelative

We can create a starter deck with age values that might approach the real situation for the relationship be sex we are considering. The values in the starter deck, as noted elsewhere, are not very important since they are almost certain to be replaced before being called for use. Also, if the hot deck assigns enough values, the few initial values in the starter deck used will not affect the final tabulations very much. The starter deck values might be like these:

	RELATIONSHIPS				
	Householder (1)	Spouse (2)	Child (3)	Other (4)	Nonrelative (5)
SEX					
M(1)	35	35	12	40	40
F(2)	32	32	12	37	37

Since the first person in our sample is a householder (code = 1) and he is male (code = 1), his age (39) replaces the first element (coordinates 1,1) during the hot deck allocation. The deck then contains the following values:

	Householder (1)	RELATIONSHIPS Spouse (2)	Child (3)	Other (4)	Nonrelative (5)
SEX					
M(1)	39*	35	12	40	40
F(2)	32	32	12	37	37

The second person is spouse (code = 2) and female (code = 2), so her age (35) replaces the value in the second row of the second column, changing the deck to these values:

	Householder (1)	RELATIONSHIPS Spouse (2)	Child (3)	Other (4)	Nonrelative (5)
SEX					
M(1)	39*	35	12	40	40
F(2)	32	35*	12	37	37

The ages of other individuals in the household similarly replace starter or subsequent values as we encounter them. After the fifth person, we find the following situation:

	Householder (1)	RELATIONSHIPS Spouse (2)	Child (3)	Other (4)	Nonrelative (5)
SEX					
M(1)	39*	35	13*	40	40
F(2)	32	35*	12	40*	37

We see that the hot deck changed four of the initial values. Note that the edit assigns person 4 sex 1 by the previous sex allocation procedure. Also, because the edit imputed a value for sex, we do not update the array with that person's age. We will update only with values from records when sex and relationship are both initially correct. When we get to person 6, we find that the age is unknown. We do know that the person is male, and he is an 'other relative' of the householder. We therefore look in the hot deck element for males whose relationship is 'other relative' (that is, the

fourth column in the first row), and assign the value of age for that category ('male other relative' -- here, 40).

Neither sex nor age is known for the eighth person. The edit allocates female. Then, the hot deck allocates age based on this allocated sex and the relationship code (5). Here the age is 37.

Although we have allocated the value for age from the known relationship, we have used a previously allocated value for sex for the other dimension of the matrix. This use of allocated values for further allocation is a poor editing procedure. It would be better to look for other known data items (e.g., marital status) for use in the allocation.

After the tenth person, the hot deck values are these:

		RELATIONSHIPS			
SEX	Householder (1)	Spouse (2)	Child (3)	Other (4)	Nonrelative (5)
M(1)	39*	35	13*	40	44*
F(2)	32	35*	12	13*	36*

In this example we only use one starter value in the allocation. Usually the edit uses few initial values in allocation, but most cases result in values assigned from the population.

How hot decks work. The following figure shows part of the starting values for a hot deck to obtain the number of children ever born based on marital status, household relationship, and age of mother:

```
47  MEDIUM M20-FERTILITY  (72,5)
48  . .................................................................
49  . .                         Marital and Household Status
50  . .................................................................
51  .                                        . Never married   .
52  .                                          ................... Hispanic
53  .                                              .   . Not a  .  Origin
54  .           Now        Widowed/              . House- . house- .    and
55  .         . Married . Divorced . Separated . holder . holder . Race
56  . ...............................................................-.
57  . .
58                                                     .     . HISPANIC
59                                                   .       .
60        1          1            1         1       1     .  15
61        1          1            1         1       1     .  16
62        2          1                      2       2     1 .  17
63        2          1            2         2       1     .  18
64        2          1            2         2       1     .  19
65        3          1            2         2       1     .  20
66        3          1            2         2       1     .  21
67        3          1            2         2       1     .  22
68        3          1            2         2       1     .  23
69        3          1            2         2       1     .  24
70        3          2            3         2       1     . 25-29
71        3          2            3         2       1     . 30-34
72        4          3            3         2       1     . 35-39
73        4          3            3         2       1     . 40-44
74        5          4            4         2       2     . 45-49
75        5          4            4         2       2     . 50-59
76        5          4            4         2       2     . 60-69
77        5          4            4         2       2     .  70+
```

Note that the hot deck has titles for both the rows and columns. The titling for the rows (the age groups) appears on the right because CONCOR reads from left to right. CONCOR reads the titles as initial values, if titling were on the left. As it is, the initial values are easy to identify.

Initial values usually come from some source other than the census itself. These initial values used to concern subject matter specialists, since, if the hotdeck values are not 'updated' before use, the edit uses initial values. Subject matter specialists often do not trust these values. About 2 percent of the time, the edit uses these initial or 'cold' deck values. Since no data are initially available, it would be difficult to assign initial values. Sometimes subject matter specialists use data from a previous census for initial values, sometimes data from an intercensal survey, sometimes from administrative records or another source. Census offices now often use microcomputers to edit census data. It is now possible to assign any values initially, then run through a large segment of the data, saving the 'updated' values. These values then become the initial values; we then rerun the edit. This

procedure does not eliminate all errors. The hotdeck could still donate a cell's value before being replaced by a hotdeck value, but the procedure reduces chances of pulling an initial value.

Also, in any hot deck procedure, we must obtain the distribution of allocated and unallocated values to make certain that the logic used is working properly. A subject matter specialist may not always want the distributions to look the same. For example, if all persons under 15 are to be "never married," then we would not expect a distribution of allocated values for marital status for these young persons to be the same as for adults. The distribution of allocated values for marital status for adults (unless the householder or spouse determines the other) should be about the same as the unallocated values.

Similarly, in the example given above, the distribution of allocated numbers of children ever born by age of mother should be about the same as the unallocated values.

The example shows a two dimensional matrix. For the fertility item, these dimensions are probably enough. There are other cases when problems develop from this fairly simple procedure. For example, if a parent does not know the age of one of his or her children, then probably the parent gives ages for none of the children. If a household has four children, none having age, then the edit might call the same cell each time. The family could end with quadruplets! With two children of each sex, and sex is one dimensions in the hotdeck, you get two sets of twins. The United States Bureau of the Census eliminates this problem partially by keeping eight values in each cell, and cycling through them, both for allocating and for updating. A series of pointers keeps everything straight.

Display formats. I developed some CONCOR edits from the Edit Specifications for the 1990 Census of the United States. I found that the display of CONCOR code can aid in interpreting the flow of the edit. CONCOR is a means of communication between the programmers and the subject matter specialists. This communication takes place both at the time of the census edit, and later. The communication helps adapt edits for intercensal surveys, and for use in developing edits for subsequent censuses.

The example below shows part of the fertility edit for the 1990 Census of the United States:

```
248   SUBROUTINE S-FERTILITY
249   . ....................................................
250   . .   Age and sex break        . Sex   . Age    .   RESULT          .
251   . ....................................................
252   .                               .       . Over   .                  .
253   IF SEX = 2                      . FEMALE . 14     . CALL             .
254       AND AGE > 14                .       . years  .   SUB-FERT       .
255       CALL SUB-FERT               .       . old    .                  .
256   ELSE                            ....................................
257     IF SEX = 1                    .       .        .                  .
258        ASSERT p20 = BLANK         .       .        .                  .
259        MSG "MALE WITH CHILD"      .       .        .                  .
260        P00    SEX AGE P20         .       .        . Blank out        .
261        FAIL                       . Male  . (X)    . fertility        .
262          ALLOC P20 .Male with child .     .        .                  .
263            = BLANK                 .      .        .                  .
264          MSG "P20:MALE WITH CHILD" .      .        .                  .
265          LIST "MALE WITH CHILD" P20 .     .        .                  .
266          WRITE "MALE WIT""H CHILD:" .     .        .                  .
267               " SEX =  " N1 P03    .      .        .                  .
268               " CEB= BLK"          .      .        .                  .
269        END-FAIL                    .      .        . if child         .
270     ELSE                           ................. is present        .
271      ASSERT P20 = BLANK msg        .      .        .                  .
272        "YOUNG FEMALE WITH CHILD"   .      .        .                  .
273          P00    SEX AGE P20        .      . Under 15 .                 .
274        FAIL                        . Female . yrs old .                .
275          ALLOC P20 .Female too young .    .        .                  .
276            = BLANK                  .      .        .                  .
277          MSG "P20:FEMALE TOO YOUNG" .      .        .                  .
278          LIST "FEMALE TOO YOUNG" P20 .     .        .                  .
279          WRITE "FEMALE T""OO YOUNG:" .     .        .                  .
280               " AGE =" N3 P05A      .      .        .                  .
281               " CEB= BLK"           .      .        .                  .
282        END-FAIL                     .      .        .                  .
283      END-IF                         .      .        .                  .
284   END-IF                            .      .        .                  .
285   END-SUBR                          ....................................
```

Follow the logic on the right side of the example. The columns form something of a decision chart. The last column always tells you what the edit does, depending on the previous columns. The first column looks at sex, and the second looks at age within sex. So, if the person is female AND she is more than 14 years old, we will call a subroutine called SUB-FERT (for SUBroutine for FERTility.) If the person is male (and has fertility), the edit blanks fertility; if the person is a female under 15 years old with fertility, the edit blanks fertility for her.

The example also illustrates some guidelines to aid both programmers and subject matter specialists. One useful rule is that no subroutine should be longer than a page. We use a single page for aesthetics, and because that is about what a single thought, a single piece of the decision chart

usually takes. In restricting the subroutine to a single page, we use extensive comments to help in developing the flow of the edit.

A second guide involves avoiding too much 'nesting.' Nesting occurs when a series of "IFs" within other "IFs" develops. When we restrict subroutines to single pages, nested IFs are less likely. Anyhow, the logic is easier to follow when we avoid this kind of nesting. CONCOR has a RETURN command that also helps lessen some need for nesting.

The actual CONCOR code used here is longer than most programmers would like. I have inserted extra commands to help reconcile the subject matter 'logic' with what the CONCOR program does. Three commands, in particular, help subject matter specialists and programmers communicate during CONCOR development and testing. We drop two of the three items during production runs.

MESSAGE DISPLAYS

CONCOR has three commands to help subject matter persons in developing edit specifications. I illustrate the use of these commands in the 1990 United States Census Fertility item example. The commands are:

1. ALLOCATE with MESSAGE

2. LIST

3. WRITE

1. ALLOCATE with MESSAGE

An example of the results of use of this command appears below:

```
CONCOR Version 3.0  Statistics by Edit Command using Dictionary - POA90  90/03/21  07:35:06  Page 1

Area: 0001

  Line                                              Number of   Cases    Cases   Percent
  Number   Message                                  Allocations Tested   Failed  Failed
  --------------------------------------------------------------------------------------
    260    MALE WITH CHILD                                        26        2      7.6
    264    P20:MALE WITH CHILD                           2
    273    YOUNG FEMALE WITH CHILD                                13        4     30.77
    277    P20:FEMALE TOO YOUNG                          4
    294    FEMALE WITHOUT FERTILITY                               39        2      5.13
```

The ALLOCATE command automatically generates error messages. We add NOSTATS to suppress messages. CONCOR reports messages and cases in order in the REPORT by COMMAND. If we do not include a MESSAGE, the program prints whatever is on the line with the ALLOCATE statement. Frequently, what the edit prints is of little use in analyzing the success of the edit. Therefore, it is a good idea to add a message giving some information about the allocation. Here, we print the first message "MALE WITH CHILD" when a male has recorded fertility - males should be blank in the fertility item.

The REPORT by COMMAND also gives the line numbers in the CONCOR program to help in finding and correcting logic errors. Line 260 contains the MESSAGE with the ALLOCATE statement blanking fertility information for males with children.

We find that the test deck had 2 failed cases of "MALE WITH CHILD"; that is, there were 26 males in the sample, 2 with children, a failure rate of 8 percent. This report is useful in analyzing the edits, both in preparation and in production.

2. LIST

We use the LIST command to get errors by questionnaire. LIST command displays appear in the REPORT by Questionnaire. An example appears below:

```
CONCOR Version 3.0  Statistics by Questionnaire using Dictionary - POA90 90/03/21  07:35:06  Page   1

Area: 0001

   Line
 Number   Message                Quest: 0001                      User Name and Current Value

--------------------------------------------------------------------------------------------------
    273   YOUNG FEMALE WITH CHILD                                 P00 (5) = //
                                                                  SEX = 2
                                                                  AGE = 10
                                                                  P20 (5) = 01
    280   FEMALE TOO YOUNG                                        P20 (5) = //
```

Line numbers help in correcting logic in the program. A series of displayed items (vertically along the right hand side of the page) helps decide about changes to the program. In this example person 5 is a female, aged 10 years old with 1 child. Edit specifications require blanking fertility for females less than 15 years old. Refer to line number 273 in the program to be sure that the edit is working.

CONCOR uses the LIST command with the IF-THEN-ELSE structure. We also can use the ASSERT statement, but ASSERT only triggers errors for negative results. That is, the statement with the ASSERT must fail to trigger the message. Most subject matter specialists do not write edits negatively, so sometimes a fair amount of work is necessary to reconfigure the edit for CONCOR.

Messages connected with the LIST can be lengthy, but the proposed format here - CONCOR on the left, narrative on the right, prohibits very long messages.

For production runs, we suppress LIST statements, either through commenting out, or removal.

3. WRITE

CONCOR developers did not develop the WRITE command for subject matter use. Since neither of the other commands gives horizontal item listings, we use the WRITE command for this purpose. An example appears below:

```
FERTILITY  QUESTIONNAIRE = 0001
    PERSON     CEB    SEX     AGE    RELAT   RACE   HISP    ROW   COLUMN
 I:  0001               1     050     00      01     1     0034    0001
 O:  0001     00        1     050     00      01     1

 I:  0002     04        2     040     00      01     1     0032    0001
 O:  0002     05        2     040     00      01     1

 I:  0003     01        2     017     00      01     1     0021    0005
 O:  0003     02        2     017     00      01     1          .

 I:  0004     00        2     015     00      01     1     0019    0005
 O:  0004     01        2     015     00      01     1

 I:  0005     01        2     010     00      01     1     0019    0005
FEMALE TOO YOUNG: AGE =010 CEB= BLK
 O:  0005     00        2     010     00      01     1

 I:  0006               1     006     00      01     1     0019    0005
 O:  0006     00        1     006     00      01     1
```

The WRITE command gives the item tested (Fertility) and questionnaire number for each questionnaire during testing and prints a line of titles to help in bookkeeping.

In the example, persons 1 to 4 have no fertility inconsistencies. Person 5, has an inconsistency between age and number of children ever born. The edit prints the message "FEMALE TOO YOUNG: AGE = 010 CEB = BLK", showing the error message, and the variables affected. The "I" stands for input and the "O" for output. The second column gives the person number. For this person, the third column "CEB," for children ever born, is inconsistent with the fifth column - age. Females 10 years old cannot have children according to the edit specifications. The edit blanks the number of children ever born.

Note that person 2 has an increase in children ever born between input and output. In the United States, the fertility specialist reserves the code 00 for males and females underage. Therefore, females 15 years and over have 01 if they have no children, 02 for 1 child, etc. The edit makes the change.

Here, the WRITE command gives the column and row of the FERTILITY matrix for helping see whether the hotdeck is working properly. Finally, after testing, we delete WRITE commands.

TEST DECK DEVELOPMENT

It is useful to develop the deck systematically to test the edit logic. For the U.S. edits, I found the most useful way of developing the test deck is the following:

1. First, CENTRY describes a complete household for testing. We run CONCOR (either interactively or separately) to make certain that no errors occur in the initial household. The first household or the program changed until the test household and the program are compatible.

2. Then, we introduce a single error in the test deck to produce the Statistics by command. We replace the error by good data.

3. Next, we reproduce the good household (using CENTRY, or in my case, the NORTON editor) to get some good households.

4. Finally, we introduce errors, case by case, by going down the list of messages in the statistics by edit command.

5. By not numbering the housing units consecutively, it is possible to add households to detect new errors as they develop in the edit process.

6. After testing the edit with the test deck, it is a good idea to comment out LIST and WRITE commands.

CONCLUSIONS

This paper presents some thoughts about the current state of census and survey editing. Microcomputers have revolutionized many aspects of census data processing, census editing more than others. The tools are now available to do very sophisticated editing easily and efficiently. But the computer is just a tool. Subject matter specialists still have the responsibility of deciding what editing to do and how to do it. Subject matter personnel and programmers working together must decide whether to edit census data, and if they are to edit, how much editing is appropriate, efficient, and cost effective. In the end, the most useful, most aesthetic census product should result.

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FURTHER NOTES ON PARITY PROGRESSION PROJECTION
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The essential idea of parity progression projection is to disaggregate women by parity and duration in parity (note that duration in parity zero is age) and project forward one year at a time using birth rates specific for parity and duration in parity.

These notes review the principles briefly, indicate how progression to first marriage may be incorporated into the projection, and provide a formal description of the projection procedure. For further information see Feeney (1984,1985).

Parity progression projection may be thought of as conventional component projection applied to 'parity populations,' that is, populations of women with a given number of children. Consider for example the population of women who have had exactly one child. The distribution of these women at the beginning of any year by completed years duration in parity is analogous to the initial age distribution of a population in conventional component projection. The rates at which these women progress to first birth, which are at the same time the rates at which they exit the parity population, are analogous to death rates. The initial distribution of zero parity women is 'survived forward,' as in component projection, to obtain the numbers of women who remain in zero parity at the end of the year.

The analogy is not complete, of course, because the entries--'births'--to the population of parity one women come not from these women, but from parity zero women. Similarly, the exits, or 'deaths,' from the population of parity one women constitute entries to the population of parity two women. In general, ordering the parity populations from lower to higher order, each population receives entries from the population below it and contributes entries to the population above it. The population of zero parity women, which receives entries from all higher order parity populations, is the one exception to this general rule.

Note in this connection that each birth to the population represents three events, an entry to the population of zero parity women, an exit from the population of parity i women, and an entry to the population of parity i+1 women, for some i = 1, 2, ...

Note also that the 'survivorship ratios' applied to any parity population are simply the birth rates subtracted from one.

Thus if W(1,d) denotes the number of parity 1 women with d completed years duration in parity at the beginning of some year, and if R(1,d) denotes the rate at which these women have first births during the year, then the number of first births is W(1,d)R(1,d) and the number of the W(1,d) women remaining in parity one at the end of the year is W(1,d)[1-R(1,d)].

We thus ignore mortality proper, assuming that every woman who does not give birth during the year remains in the parity population at the end of the year. It would not be difficult to incorporate mortality, but mortality levels in the early reproductive ages will be too low to make this worthwhile in most applications.

Projection with Constant Rates. Display 1 provides a complete, formal description for a single cycle of parity progression projection incorporating progression to first marriage. Taken in conjunction with the above remarks, it is largely self-explanatory and may be used either as a guide for hand calculation or as a computer program specification. There are several points, however, that require comment.

First marriage is incorporated by inserting it in the appropriate position in the sequence {birth of woman, birth of first child, birth of second child, ...}. Progression to first marriage is then handled in the same way as progression to first birth, and progression from first marriage to first birth in the same way as progressions to higher order births.

Zero parity women are divided into never married women distributed by single year of age and ever married women distributed by completed years duration of marriage.

First marriage rates, defined as the number of never married women aged x at the beginning of a given year divided into the number of these women who first marry during the year, are applied to the distribution of never married women to determine the number of these women remaining unmarried at the end of the year and the number of first marriages during the year.

Rates of progression to first birth, defined as the number of ever married zero parity women with d completed years duration of marriage at the beginning of a given year divided into the number of first births these women have during the year, are applied to the distribution of ever married zero parity women to determine the number of these women who are still zero parity at the end of the year and the number of first births during the year.

Women may have two or more births in the same year, and this means that a woman may enter and leave a parity population in the same year. Thus in calculating, say, second births during a given year we must consider not only the births that occur to women who were in parity one status at the beginning of the year,

but also those women who have a first birth during the year.

This means that projected births must be calculated in increasing order, first births before second births, second births before third births, and so on, and it accounts for the RE(i) terms.

Confusion may occur on this point because these 'births to births' do not occur in ordinary component projection, births occurring during a projection period being too young to give birth during the period.

The last point concerns the handling of the 'open-ended' parity population of women with four or more children. The formulas, though written for an open interval of 5+, obviously generalize to any open interval.

It would be simpler to extend the parity classification to a parity sufficiently high that we could ignore the open-ended birth order group. Available birth order tabulations very often have relatively low open-ended group, however, forcing explicit introduction of formulas for the open-ended group.

We might choose to incorporate the open-ended group in any case, on the grounds that numbers of higher order births are too small to justifying carrying out detailed calculations to higher orders.

To see the rationale for the formula for B(5+) in Display 1, write out the expressions for fifth and higher order births individually.

$$B(5) = B(4)RE(4) + \sum_d W(4,d)R(4,d)$$
$$B(6) = B(5)RE(5) + \sum_d W(5,d)R(5,d)$$
$$\vdots \qquad \vdots \qquad \vdots$$

If we are going to aggregate these calculations, we must ignore differences in the rates of progression between fourth and higher parity women, so assume that $RE(4) = RE(5) = \ldots = RE(4+)$ and that $R(4,d) = R(5,d) = \ldots = R(4+,d)$ for $d=0,1,\ldots,9$. The above equations may then be written

$$B(5) = B(4)RE(4+) + \sum_d W(4,d)R(4+,d)$$
$$B(6) = B(5)RE(4+) + \sum_d W(5,d)R(4+,d)$$
$$\vdots \qquad \vdots \qquad \vdots$$

Summing these equations, but isolating the term B(4)RE(4+), we obtain

$$B(5+) = B(4)RE(4+) + \{ \sum_d W(4+,d)R(4+,d) \} + B(5+)RE(4+)$$

The term B(5+) occurs on both sides of this equation, but we may rearrange terms to obtain

$$B(5+) = \{B(4)RE(4+) + \Sigma_d W(4+,d)R(4+,d)\}/[1-RE(4+)] \qquad (A)$$

which is formula (6) in Display 1.

The formal manipulation that yields this result is worth further examination. Proceeding heuristically, we might argue that fifth and higher order births in any year may be expressed as the sum of three components, (i) fifth births during the year to women who had a fourth birth in the same year, (ii) fifth and higher order births during the year to women of fourth or higher parity at the beginning of the year, and (iii) sixth and higher order births during the year to women who have a fifth or higher order birth during the year.

Using the above notation, the first of these terms is B(4)RE(4+), the second is $\{\Sigma_d W(4+,d)R(4+,d)\}$, and the third is

$$\{B(4)RE(4+) + \Sigma_d W(4+,d)R(4+,d)\}RE(4+)$$

But if this is correct, then total fifth births during the year would be given by

$$B(5+) = [B(4)RE(4+) + \Sigma_d W(4+,d)R(4+,d)][1+RE(4+)] \qquad (B)$$

which is not the same as (A) above.

This apparent contradiction is resolved by observing that the argument in the preceding paragraph fails to take account of higher order multiple births. Though it is not immediately obvious, higher order multiple births are implicit in equations (3-5) in Display 1.

For example, RE(2) is applied to B(2), which includes the term B(1)RE(1), so that a portion of the women who have a first and a second birth in the given year also have a third birth in this same year.

To clarify the relation between (A) and (B), expand the 1/[1-RE(4+)] term of (A) into a geometric series,

$$1 + RE(4+) + RE(4+)^2 + \ldots$$

Since RE(4+) will be on the order of one percent, we may comfortably ignore second and higher order terms, and this reduces (A) to (B).

Projection with Changing Rates. Projection with changing schedules requires a complete set of progression rates for as many years into the future as the projection is to be carried out. Specifying such a series directly is very burdensome from

the purely mechanical point of view, and when the uncertainty over future rates is considered it is seen to be quite pointless as well. Hence for both practical and theoretical reasons we want a simpler way to specify assumptions about future trends in fertility.

The obvious solution is to specify a set of 'standard' rates for each progression birth to first marriage, first marriage to first birth, first birth to second birth, and so on through fourth and higher order birth to fifth and higher order birth, and then to define changing schedules by multiplying these standard schedules by a constant factor.

Thus we assume schedules FMR(a) and R(i,d) as in Display 1 and obtain the rates to be used in any given year of a projection by multiplying these schedules by suitably chosen constants. The input to a projection with changing rates will thus be, in addition to the initial distribution of women and the standard schedules, a series of constants, KFMR(t) and KR(i,t), say, by which to multiply the standard schedules at each year t for which the projection is to be carried out. Thus the first marriage rates for the t-th year will be FMR(a)KFMR(t), and the progression rates for the t-th year will be R(i,d)KR(t).

The natural way to specify these constants is to first specify the progression ratios for the projection, and then find the constants necessary to yield these values. In the case of progression to first marriage, for example, we would specify, for each year t, the value $P_{FM}(t)$, the period proportion of women who marry by age 50 for this year.

We must then determine, for each t, the value of KFMR(t) such that the rates FMR(a)KFMR(t) result in the proportion $p_{FM}(t)$ women marrying by age 50. To do so, observe that the given value $p=P_{FM}(t)$ is given by

$$p = 0.5[\{1 - \sum_{a=15}^{48} (1 - kr_a)\} + \{1 - \sum_{a=15}^{49} (1-kr_a)\}]$$

where for convenience we put $k=$KFMR(t) and $r_a=$FMR(a). Taking out the common factor and rearranging terms gives

$$p = 1 - 0.5(2 - kr_{49}) \sum_{a=15}^{48} \{1 - kr_a\}$$

and further rearrangement gives the equation

$$f(k) = \ln(2-kr_{49}) + \{\sum_{i=15}^{48} \ln(1 - kr_a)\} - \ln 2(1-p) = 0$$

Our problem is to solve this equation for k, given the standard rates r_a and the progression ratio p. Newton's method turns out to work very effectively for this purpose. The derivative of f is

$$f'(k) = \{-r_{49}/(2-kr_{49})\} + \{\sum_{d=15}^{48} -r_a/(1-kr_a)\}$$

Beginning with an initial value k_0 (one is a sensible and convenient choice), then, we calculate iteratively

$$k_{i+1} = k_i - f(k_i)/f'(k_i)$$

until we obtain a sufficiently precise solution. Convergence occurs very rapidly in practice, and a half a dozen iterations will usually suffice.

These remarks carry over completely to the cases of progression to first and higher order births. We specify values $p_{MB}(t)$, $p_1(t)$, $p_2(t)$, $p_3(t)$, and $p_{4+}(t)$, the period progression ratios for progression from first marriage to first birth, first birth to second birth, and so on. We then determine the constants by which the standard schedules must be multiplied to yield these progression ratios. We truncate progression at exactly ten completed years duration, so that the progression ratio p is expressed as

$$p = 0.5[\{1-(1-kr_E)\sum_{a=0}^{8}(1-kr_a)\} + \{1-(1-kr_E)\sum_{a=0}^{9}(1-kr_a)\}]$$

the only difference between this and the expression for first marriage by age 50 being the range of the summations.

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Display 1A.   Equations for Parity Progression Projection

                        OVERVIEW

Notation is defined below, with symbols appearing in alphabetical order.

The input to a single cycle of projection consists of the distribution of women at the beginning of the year, described by NMW(a) and W(i,d), and the projection parameters for the year, described by FMR(a), SSR(a), R(i,d), RE(i), LLO and SRB.

The output consists of updated values of NMW(a) and W(i,d), that is, of the distribution of women at the end of the year, and the numbers of marriages and births to the population during the year, described by M and B(i).

The procedure for executing a single cycle of projection is described by the equations given below. Projection consists of repeated application of these equations, with the output of each cycle of projection beyond the first providing input for the next cycle.

Input to a projection based on constant rates consists of an initial distribution of women and a single set of projection parameters. Input to a projection based on changing rates consists of an initial distribution of women and a set of rates for as many years as the projection is to be carried out. The essential output of these projections consists of the projected birth series, but any of the other quantities appearing may be retained as output.

Display 1B.   Equations for Parity Progression Projection

_____

EQUATIONS FOR A SINGLE CYCLE OF PROJECTION

(1) $M = \sum_{a=0} NMW(a)SSR(a)FMR(a)$

(2) $B(1) = M \times RE(0) + \sum_{d=0} W(0,d)R(0,d)$

(3) $B(2) = B(1)RE(1) + \sum_{d=0} W(1,d)R(1,d)$

(4) $B(3) = B(2)RE(2) + \sum_{d=0} W(2,d)R(2,d)$

(5) $B(4) = B(3)RE(3) + \sum_{d=0} W(3,d)R(3,d)$

(6) $B(5+) = \{B(4)RE(4+) + \sum_{d=0} W(4+,d)R(4+,d)\}/[1-RE(4+)]$

(7) $TB = B(1) + B(2) + B(3) + B(4) + B(5+)$

(8) $NMW(0)' = LL0 \times TB \times (1/SRB)/(1+1/SRB)$
(9) $NMW(a+1)' = NMW(a)SSR(a)[1-FMR(a)], \quad a=0,1,\ldots,48$

(10) $W(0,0)' = M[1-RE(0)]$
(11) $W(0,d+1)' = W(0,d)[1-R(0,d)], \quad d=0,1,\ldots,9$

(12) $W(1,0)' = B(1)[1-RE(1)]$
(13) $W(1,d+1)' = W(1,d)[1-R(1,d)], \quad d=0,1,\ldots,9$

(14) $W(2,0)' = B(2)[1-RE(2)]$
(15) $W(2,d+1)' = W(2,d)[1-R(2,d)], \quad d=0,1,\ldots,9$

(16) $W(3,0)' = B(3)[1-RE(3)]$
(17) $W(3,d+1)' = W(3,d)[1-R(3,d)], \quad d=0,1,\ldots,9$

(18) $W(4+,0)' = B(4) + B(5+)$
(19) $W(4+,d+1)' = EMW(4+,d)[1-R(4+,d)], \quad d=0,1,\ldots,9$

NOTATION

     Symbols are listed in alphabetical order. For quantities
referring to a point in time, a primed (') symbol refers to the
same quantity as the corresponding unprimed symbol, but at the
end rather than at the beginning of the year.

B(i)   - number of i-th order births during year, i=1,2,3,4,

B(5+)   - number of fifth and higher order births during year

FMR(a)   - First marriage rate for never married women aged a

LL0   - proportion of female births in year surviving to end
                of year

M	– number of first marriages during year
NMW(a)	– number of never married women aged a at beginning of year
RE(0)	– proportion of women first marrying in year who have first birth in same year
RE(i)	– proportion of women having an i-th birth during year who also have an (i+1)st birth during year, i=1,2,3
RE(4+)	– proportion of women having fourth or higher order birth during year who have a subsequent birth in the same year
R(0,d)	– duration of marriage specific first birth rates for ever-married zero parity women
R(i,d)	– duration in parity specific (i+1)st birth rates for parity i women
R(4+,d)	– duration in parity specific birth rates for fourth and higher parity women
SRB	– sex ratio at birth
SSR(a)	– proportion of never-married women aged a at beginning of year who survive to the end of the year
TB	– total births during year
W(0,d)	– number of ever-married zero parity women with d completed year duation of marriage at beginning of year
W(i,d)	– number of parity i women with d completed years duration in parity at end of year, i=1,2,3
W(4+,d)	– number of parity four and over women with d completed years duration in parity

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THE POPULATION OF THE FRENCH TERRITORIES OF THE PACIFIC
An overview

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THE POPULATION OF THE FRENCH TERRITORIES OF THE PACIFIC
An overview

Introduction: the Pacific Islands

The Pacific Ocean is the largest ocean on Earth. It is said that its surface can contain all the continents. For most of people, when they speak of the Pacific Ocean, they think to the nations of the Pacific Rim; these nations are generally large countries like Japan, Korea, China, Philippines, U.S.A., Australia or New Zealand. Outside the region many people forget that there are several countries or territories scattered between those large nations. Some are so tiny that a magnifying glass is necessary to see them on a map. Most of the Pacific countries and territories are located under the tropic of Cancer and above the tropic of Capricorn, and the majority under the Equator; for this last reason, we sometimes refer to South Pacific when speaking of the Pacific Islands.

There are several regional organizations in the Pacific. The largest is the South Pacific Commission, created by the Canberra Agreement in 1947; it provides training and assistance in social, economic and cultural fields to 22 countries and territories of the region it serves. These 22 countries and territories can be divided into 3 great geographic regions: *Melanesia*, *Micronesia* and *Polynesia*. *Melanesia* includes Papua New Guinea, Solomon Islands, Fiji, Vanuatu, New Caledonia. *Micronesia* refers to Guam, the Northern Mariana Islands, Palau, the Federated States of Micronesia, Palau, the Marshall Islands, Nauru, Kiribati and Tuvalu. The "Polynesian Triangle" is delimited by Hawaii, New Zealand and Easter Island and its center is French Polynesia. *Polynesia*, as part of the region, includes Tokelau, Western and American Samoa, Tonga, Niue, Cook Islands, Wallis and Futuna, French Polynesia and Pitcairn Island. In these 22 countries, the state of Hawaii is not included, as well as Easter Island (a Chilean possession). These 2 islands (or groups of islands) are part of Polynesia.

Altogether the 22 countries of the South Pacific Commission area

contain approximately 5 million people scattered over some 30 million square kilometres (11.7 million sq. miles); less than 2% of this area is land. In this context Papua New Guinea looks like a giant with its 463,000 square kilometres (180,000 sq. miles) and more than 3.3 million people compared to the 89,000 square kilometres (34,750 sq. miles) and the 2.2 million inhabitants of the remaining 21 countries and territories.

The political statuses of these 22 countries are diverse; some are fully independent, some have a status of associated-state to a metropolitan country (U.S.A. or New Zealand), and some are still dependent of a metropolitan country (U.S.A. or France).

France is still present in the South Pacific in three territories: French Polynesia, New Caledonia and Wallis and Futuna. These 3 territories have a political status of French Overseas Territory. This status can vary from a territory to another. Generally France has direct competence in defense, legal currency, civil registration, justice and external relations; for this last topic the territories are associated, mainly for regional relations, and sometimes they can represent France in regional discussions.

Geography, resources and population of the French territories

French Polynesia consists of five main groups containing some 130 islands. They have a land area of 3,500 sq. km (1,400 sq. miles) in an area of four million square kilometres (1.6 million sq. miles) of ocean. French Polynesia is situated at 7° 50 and 27° 40 of South latitude and 140° 45 and 163° 47 of West longitude. The capital, Papeete, located on the island of Tahiti, is about 6,520 km south-west of California, and 4,500 km south of Hawaii.

The territory is divided in five archipelagoes:
   - the Society Islands include two groups
         - the Windward Islands which include Tahiti, Moorea and 3 others small islands;
         - the Leeward Islands (9 islands), the most famous of them is Bora Bora; they are located 200 km north-west of Tahiti;

- the Marquesas Islands, located 1,500 km north-east of Tahiti (6 inhabited islands);
- the Austral Islands (5 are inhabited), south of Tahiti, the closest, Rurutu, is 500 km from Tahiti, the most distant is Rapa, 1,130 km from Tahiti;
- the Tuamotu archipelago (80 atolls) is shaped as a crescent and is spread between Marquesas Islands and Windward Islands. The most remote island (Mururoa) is located 1,100 km south-east of Tahiti;
- the Gambier archipelago, 1,700 km south-east of Tahiti, covers 10 small volcanic islands which represent 30 square kilometres.

We should place Tahiti on Denver, the Gambier islands would reach Florida, the Marquesas islands would be in Canada, the Austral islands would be in Texas and the Leeward islands in Utah.

The islands, separated by large marine expanses, were created as a result of volcanic activities. There are two types of islands:
- the elevated islands have high and sharpened mountains (highest point in Tahiti: 2,241 metres). A narrow boarder lane circles the high peaks; they are usually surrounded by lagoons and coral reefs. Small passes connect the lagoons with the Ocean;
- the atolls are flat lands formed by a coral reef belt closing on to a lagoon. This belt's size varies from few meters to 300 meters and barely emerges from the sea waters.

The main source of revenues for the territory is the nuclear testing center based in Mururoa (Tuamotu) but which has induced effects on Tahiti and the other islands. Copra oil is still an export production but black pearls are now the most lucrative opportunity for French Polynesia and they have supplanted copra oil at the first rank of the export goods since 1985. More than one third of the active population is employed in the public sector.

The population of French Polynesia is composed of 4 groups. The group of Polynesians and part-Polynesians has a population of 156,322 persons at the last census (September 6, 1988) and

represents 82.8% of the total (188,814). The Europeans have the second largest group with 22,497 persons (11.9%). The Asiatics (mainly Chinese) are 8,851 (4.7%) and the others are 1,144 (0.6%).

The territory of *New Caledonia* consists of one large island, New Caledonia or "la Grande Terre", and several smaller islands. The largest island has an area of 16,750 sq. km and is one of the largest of the Pacific (18,103 sq. km area - 7,050 sq. miles - for the entire territory). The territory is located between 19 and 23° South latitude and 163 and 168° East longitude. Noumea, the capital, is located about 1,850 km north-east of Sydney (Australia). The Isle of Pines and Belep are located in the main island line which is northwest-southeast are close to this island. Both have inhabitants as the Loyalty Islands group (4 islands) which are located north-east of New Caledonia. Several dependent islands are uninhabited (Chesterfield group, Huon and Surprise group, Walpole, Hunter and Matthew).

The main island is about 400 km long by 50 km wide. It is surrounded about 10 km offshore by a barrier reef measuring 1,600 km in length. The mainland is cigar-shaped and divided by a central mountain chain (highest point: 1,637 metres). The Loyalty islands lie parallel to the east coast of the mainland, about 200 km offshore. They are formed of upraised coral forming low plateaux never reaching 100 meters above the sea level.

The main production of New Caledonia is the nickel ore. The nickel reserves of this territory are among the most important in the world. A part of the production is exported to Japan and a part is processed in Noumea. Agriculture and cattle breeding are the second activity, and aquafarming is an opportunity for the future.

New Caledonia is composed of several ethnic groups. The native population, the Melanesians, is the first group with 73,598 persons (44.8%) followed by the Europeans with 55,085 persons (33,6%). The Wallisians and Futunians are 14,186 (8,6%), the Indonesians 5,191 (3.2%); the Polynesians from French Polynesia are 4,750 (2,9%) and the Vietnamese 2,461 (1.5%). The other small

groups (Ni-Vanuatu, Chinese and others) are 8,902 (5.4%). The total population was 164,173 persons at the last census (April 4, 1989).

The territory of *Wallis and Futuna* consists of two main islands about 200 km apart. They extend from 13° 20 south to 14° 21 south latitude and from 176° 10 to 178° 10 west longitude. Futuna is about 240 km northeast of Vanua Levu, Fiji. The capital, Mata Utu is on Wallis Island. The entire area is estimated to 274 sq. km. (105 sq. miles).

Wallis (native name Uvea) consists of one major island surrounded by a barrier reef with 19 uninhabited islets. Uvea is of volcanic origin, but the highest point is only 145 metres above the sea level.

Futuna and Alofi are both of volcanic origin. Each is surrounded by a fringing reef. Alofi is uninhabited due to the lack of fresh water. Futuna reaches a height of 760 metres.

Money transfers from New Caledonia (from the families installed in this territory) are the main resource for Wallis and Futuna. Subsistence agriculture and the public sector are the only activities of the territory.

The population was 12,408 inhabitants at the last census (February 15, 1983), 7,780 were Wallisian (62.7%), 4,322 Futunian (34.8%) and only 306 (2.5%) were European or from another origin.

Sources of demographic data in the French Territories

The sources of demographic data in the French Pacific Territories are those you can find almost everywhere in developed or developing countries.

There is a *vital registration system* which is fairly good. It is similar to the French system and covers births, stillbirths, deaths, marriages. It also covers legal recognition of a child and legal decisions related to the civil status of persons. It was set up during the second part of the 19th century both in French Polynesia and in New Caledonia. For the Melanesians of New Caledonia the registration only began between the first and the

second world war, in separate registers. In Wallis and Futuna, the civil registration only started in 1957, but the entire population is catholic and parish registers can be used for the previous periods.

Divorces can be covered by transcriptions of justice decisions or directly by the Justice department statistics (when this department takes the time of doing these statistics).

The vital registers are held at an administrative level called "communes" or municipalities, except for Wallis and Futuna were they are held at the island level.

Besides the vital registration system, the statisticians have recently set up a system of statistical forms for civil registration, as in France. This system is parallel to the registers but gives more information than the registers. These statistical forms were organized in 1976 in New Caledonia and in 1983 in French Polynesia. The territory of Wallis and Futuna has no statistical bureau and has not yet set up these statistical forms. In the two largest territories, this system is now the principal source of data for the statisticians. Some complementary information included in the statistical forms are not totally filled like the rank of the birth, or the list and the dates of previous births for a mother.

Some family incentives exist in the 3 territories and the exhaustiveness of births could be easily considered as reached. The improvements of the public health organization allow to think that the registration of deaths and stillbirths is also now complete.

The creation and the use (for social security purposes) in French Polynesia of a *centralized system of identification of individuals* (Répertoire Territorial d'Identification des Personnes Physiques - Territorial Directory for Individuals' Identification) based on the vital registration system show that few births have been omitted in the past (most of them before the second world war), and that the main problems of the system are not located in the information used by the statistician or the demographer, but concern mainly the spelling of the names and, before the last war,

the rules of filiation and name attribution. This system has also shown that the registration of deaths has not been complete before the second world war, mainly in the outer islands. This directory contains the following items: last name, first name and all the given names, place of birth, date of birth, sex, father's name, mother's name, references of the births register (certificate of birth number); if the individual has previous identities, the file contains an indicator and these identities are accessible. Searches can be conducted by entering one or several informations known about a person. This register is often used to check missing informations on the statistical forms for civil registration and has been used during the census to check the missing dates of birth. There is no address in the directory.

In 1983, the territory of French Polynesia decided to organize a system of certificates of death causes. This system is now fully operational and, in 1989, 97% of the deaths were certified (with only 11.6% of ill-defined causes). New Caledonia expects to set up such a system in 1991 or 1992.

Censuses have been organized in the 2 largest territories since the end of the last century. Before 1946 they were mainly administrative operations with few statistical informations (sex, large age-groups, geographical distribution, and sometimes native and non-native population). Since the end of second world war, French Polynesia has taken censuses in 1946, 1951, 1956, 1962, 1971, 1977, 1983 and 1988. An enumeration was undertaken in 1967. In New Caledonia, the census years were 1946, 1951, 1956, 1963, 1969, 1976, 1983 and 1989; an enumeration was realized in 1974. Censuses were taken in Wallis and Futuna in 1969, 1976, 1983 and 1990. There is no obligation in the French Constitution to take the census at fixed dates. In the past the overseas territories took their census the same year as France, or the following year. It seems that this habit will be abandoned since the growth rate of the population of these territories is almost 6 times higher than the French population growth rate. The intervals between the censuses in France are generally 7 or 8 years.

Censuses are for the 3 territories an important source of

demographic, social and economic data since the permanent statistical systems are recent (1970 in New Caledonia, 1980 in French Polynesia) or non-existent (Wallis and Futuna).

As all the censuses were prepared and organized by the French National Bureau for Statistics (INSEE), most of the concepts used in these censuses were "imported" and "imposed". Some questions in the past were conceded to local authorities, like ethnicity and religion, questions generally asked in most of the countries or territories of the region. A law voted by the French Parliament in 1978 and applicable to all the French departments and territories, law called "data processing and liberties", prevented French Polynesia to add a question on religion in the 1983 and 1988 censuses; the question on ethnicity has been conceded after presenting an administrative file to the commission in charge to agree with the content of questionnaires (conformity with the law). In French Polynesia the last census was organized for the first time by the local statistical bureau. Some innovations were introduced like the question on ethnicity (see annex: "Ethnicity and mixed racial descent: experience of the 1988 French Polynesia census").

There are no particular difficulties to take the census in the French territories. The most important problem is the dispersion of the islands in French Polynesia and the high cost of transportation. No sampling methods were used in the past censuses. In the 1988 French Polynesia census a one-tenth sample was drawn after the enumeration to release faster results on some important topics (employment, age and sex structure, education). The 1989 New Caledonia census was processed on micro-computers, as is actually the 1990 Wallis and Futuna census. No question relating to indirect demographic method has been ever used in the censuses. There has never been any question on income (such a question could provoke an anti-census movement!) No post-enumeration survey has been ever done in the French territories; in my administrative report of the 1988 French Polynesia census, I strongly recommend for the next censuses to lighten the burden of questions (some are of a poor interest, some results are never

used by the administrators or the government's services), to focus on few topics, and to stress on the quality of enumeration (we must always have in mind that the statistician has to deal with a large staff of very low-educated enumerators); a post-enumeration survey is a necessity to estimate the quality of a census. The census must be considered as a basis for subsequent sample inquiries in which special topics could be covered with a small but well-trained staff.

The census provides the only measure of *internal migration*. Attempts in French Polynesia to use ships manifests conjointly with civil aviation statistics showed that the quality of the manifests was so poor that the figures could not be used in total confidence. These data refer mainly to de facto movements and French censuses always use de jure data. The same problem occurs for *international migration*. Each territory uses disembarkment/embarkment cards that can be counted. The main use of these documents is the border police control. In New Caledonia, these cards have been statistically used since more 30 years, mainly for measuring tourists' movements, but also to try to estimate the international migrations. They have been modified to try to separate visitors, temporary and permanent residents In Wallis and Futuna, the tally of these cards has been sporadic, but it seems that they will be now counted on a permanent basis. In French Polynesia, these cards are mainly used, besides the police control, for measuring the tourist flow, and the permanent processing started really in the 1970s. The comparison of the statistics realized from this source with the net migration movement as it appears in a census is always a difficult exercise due to the difference of concepts (de jure for the census and de facto for the disembarkment/embarkment cards' statistics).

No particular *demographic survey* was undertaken in the past 40 years in the French territories, except a very localized KAP survey (knowledge, attitudes and practice of contraception) in 1981 in the urban area of Tahiti. But the results of this survey using the quota method were very deceptive and disappointing.

Demographic indicators for the French Territories

The demographic past of each territory presents several similarities:

- decline of the native population after the Europeans' arrivals during the second part of the 19th century, but also in the first two decades of this century,
- rapid increase of the population since 1945,
- high levels of fertility
- actual low levels of mortality,
- age and sex-structure
- importance of the internal migrations (in New Caledonia and in French Polynesia),
- interaction of the external migrations (mainly in Wallis and Futuna, but also in both the largest territories).

Size and evolution of the population

The table shows that French Polynesia has outnumbered New Caledonia since the first part of the 1950s'. The demographic crisis that reached most of the Pacific Islands native populations after the Europeans' arrivals has been masked in New Caledonia by an important movement of immigration. A huge flow of immigrants arrived in French Polynesia in the 1960s' with the creation of the nuclear testing center.

Since 1907, the population of French Polynesia has been multiplied by 6; meanwhile the population of New Caledonia was multiplied by 3.

Size and evolution of the population
of the French Territories of the Pacific since 1887
(thousands)

census years	French Polynesia	New Caledonia	Wallis and Futuna
1887	24.4	62.5	
1901		54.4	
1902	29.9		
1906		53.3	
1907	30.6		
1911	31.9	50.6	
1921	31.6	47.5	
1926	35.9		
1931	40.4	57.2	
1936	44.0	53.2	
1941	51.2		
1946	55.4	62.7	
1951	62.7	65.5	
1956	76.3	68.5	
1962	84.5		
1963		86.5	
1969		100.6	8.6
1971	119.2		
1976		133.2	9.2
1977	137.4		
1983	166.8	145.4	12.4
1988	188.8		
1989		164.2	
1990*			14.0

*prov. estimation

The population of Wallis and Futuna is estimated to 14,000 persons in November 1990. The results of the census will be available at the beginning of 1991. It means that there is about the same number of Wallisians and Futunians in New Caledonia than in their own territory.

Growth rate

The following table shows the annual growth rate observed in the 3 territories between each of the last 4 censuses. The natural increase is calculated from the vital statistics and the net migration rate is determined from the total growth and the natural increase rates; it may include also the variation of enumeration errors.

The migration movements appear to be important in the growth rate of the population of Wallis and Futuna. In New Caledonia, the migratory movements are dependent of the economic and political situation. This observation is also pertinent for French Polynesia where the decrease of the 1971-1977 period is mainly due to the reduction of the military population following the passage from aerial nuclear tests to underground tests, and to the departures of Polynesians to New Caledonia during the nickel "boom".

The natural increase is still fairly high in Wallis and Futuna (one of the highest in the Pacific) and seems to be stabilized in French Polynesia.

New Caledonia is the most advanced of the 3 territories regarding the reduction of the natural increase. The presence of a large group of Europeans can easily explain this achievement.

Total annual growth rate and its components
in New Caledonia, French Polynesia, Wallis and Futuna
during the last three inter-censal periods

(%)

New Caledonia	1969-1976	1976-1983	1983-1989
Total	+ 4.0	+ 1.3	+ 2.1
Natural increase	+ 2.7	+ 2.1	+ 2.0
Net migration	+ 1.3	- 0.8	+ 0.1
French Polynesia	1971-1977	1977-1983	1983-1988
Total	+ 2.2	+ 3.0	+ 2.6
Natural increase	+ 2.6	+ 2.4	+ 2.5
Net migration	- 0.4	+ 0.6	+ 0.1
Wallis and Futuna	1969-1976	1976-1983	1983-1989
Total	+ 1.0	+ 4.4	+ 1.6
Natural increase	+ 3.4	+ 3.2	n.a.
Net migration	- 2.3	+ 1.2	n.a.

n.a. = not available

Age and sex-structure

The age-structure of the 3 territories is very similar. The next table shows the evolution in the age-structure for the past 20 years. Due to the migration of adults to New Caledonia the proportion of persons aged 15-59 years in Wallis and Futuna has been quite stable between 1976 and 1983.

The sex-ratio is high in French Polynesia due to the presence of a military population. The sex ratio for Wallis and Futuna has been influenced by the males' migrations to New Caledonia.

Age-structure and sex ratio in New Caledonia, French Polynesia
and Wallis and Futuna for the last 4 censuses

New Caledonia	1969	1976	1983	1989
0 - 14 years	36.3%	38.6%	36.2%	32.6%
15 - 59 years	58.2%	55.3%	57.6%	60.5%
60 years and +	5.5%	6.1%	6.2%	6.9%
sex ratio	110	108	105	104
French Polynesia	**1971**	**1977**	**1983**	**1988**
0 - 14 years	46.4%	42.1%	38.0%	36.0%
15 - 59 years	49.3%	53.2%	57.4%	58.9%
60 years and +	4.3%	4.7%	4.6%	5.1%
sex ratio	106	111	109	109
Wallis and Futuna	**1969**	**1976**	**1983**	**1989**
0 - 14 years	44.9%	46.6%	45.9%	n.a.
15 - 59 years	50.8%	47.5%	47.5%	n.a.
60 years and +	4.3%	5.9%	6.6%	n.a.
sex ratio	96	100	102	n.a.

n.a. = not available   sex ratio = males (per 100 females)

Fertility

Even if the age-structures are similar, the total fertility rate can give a more accurate comparison of the fertility than the crude birth rate. The next table shows this indicator calculated for different periods since 1959.

In French Polynesia the total fertility rate has almost been divided by 2 in 30 years, but the level remains high. The most important decrease was observed in the 1970s, as in New Caledonia. In the 1980s the decrease is slowing down in both territories. The level of New Caledonia is lower due to the presence of a more

important group of Europeans who have a low fertility (however slightly higher than in Europe). The fertility of Wallisian and Futunian women remains very high, even if the last computation dates of more than 10 years.

Evolution of the total fertility rate for various periods since 1959
in French Polynesia, in New Caledonia and in Wallis and Futuna

periods	French Polynesia		New Caledonia			Wallis and Futuna
	Total	Women born in F.P.	Europeans	Non Europeans	Total	
1959-1963	6.3	6.6				
1963-1967					5.6	
1967-1971					5.1	.
1969-1971	5.6	6.0				
1970-1972	5.4					
1972-1974						7.3*
1974-1978			2.7	5.0	4.1	6.5*
1975-1976	4.6	4.9				
1976-1977			2.4		3.9	
1977-1978	4.2	4.5				
1979-1980	3.9	4.2				
1981-1982	3.9	4.2			3.5	
1983-1984	3.8	4.0			3.3	
1985-1986	3.7	3.9			3.1	
1987-1988	3.6	3.8			3.2	

* calculated for Wallisian and Futunian women in Wallis and Futuna and in New Caledonia

The study of the age-specific fertility rates for French Polynesia shows that the intensity of fertility is now more concentrate before the age of 30 than it was in the previous periods. The level of fertility for the women aged 35-39 has been divided by 2.6 in 26 years and by 4 for women aged 40-44.

Mortality

The infant mortality rate is a good indicator to compare the

health situation in the different territories. In French
Polynesia, from 1945 to 1961, the infant mortality rate has been
almost always superior to 100 per thousand, mainly due to
infectious diseases and to the poor medical coverage of the outer
islands.

Evolution of the infant mortality rate
in French Polynesia and in New Caledonia since 1968

year	French Polynesia	New Caledonia		year	French Polynesia	New Caledonia
1968	55	36		1979	49	25
1969	73	36		1980	41	27
1970	67	41		1981	41	18
1971	64	32		1982	35	22
1972	34	52		1983	23	17
1973	42	39		1984	20	17
1974	50	42		1985	23	15
1975	42	35		1986	18	13
1976	68	35		1987	20	14
1977	57	29		1988	16	9
1978	64	30		1989	17	11

No calculation has been made for Wallis and Futuna.

The table shows the dramatic decrease observed in both
territories. The improvements will be more difficult to achieve in
the next years.

The early neo-natal mortality (generally considered as the
endogenous mortality) rate is now near 5.0 per thousand in both
territories.

The *life expectancy at birth* is also a good indicator for
comparing mortality from a territory to another. Unfortunately
this indicator has never been calculated for Wallis and Futuna.
The following table compares life expectancy at birth for French
Polynesia and for New Caledonia. It appears that huge improvements
have been observed during the past decades. In New Caledonia the
European population has a life expectancy close to the level
observed in Europe, but the other ethnic groups, especially the
Melanesians, have a gap to fill. A policy of prevention by the
Public Health services in French Polynesia explains the gains

observed in the last decades, particularly for infant mortality.

Evolution of the life expectancy at birth
in French Polynesia and in New Caledonia for various periods since 1946

periods	sex	French Polynesia	New Caledonia		
			Europeans	Non Europeans	Total
1946-1950	M	43.1			
	F	44.6			
1951**	M	33.8			
	F	36.9			
1952-1958	M	52.6			
	F	55.2			
1959-1963	M	57.2			
	F	58.9			
1963-1967	M		67.5	44.7	53.6
	F		74.8	46.1	57.0
1964-1971	M	57.5			
	F	61.2			
1970-1972	M	59.1			
	F	62.5			
1974-1978	M			57.5	
	F			64.1	
1977-1980	M		70.0	59.3*	
	F		79.0	64.4*	
1975-1976	M	60.3			
	F	64.6			
1977-1978	M	60.0			
	F	64.9			
1979-1980	M	62.1			
	F	65.9			
1981-1982	M	63.2			63.3
	F	67.8			70.5
1983-1984	M	65.2			65.3
	F	70.5			71.5
1985-1986	M	65.0			65.5
	F	70.5			72.5
1987-1988	M	65.8			.66.0
	F	71.1			73.0

* Melanesian population only
1951** = epidemic of measles

The calculation in French Polynesia of the number of years of potential life lost in this territory shows that the prevention of road accidents (and of their causes: alcoholism and speeding) must be the next target of the government.

Migrations and urbanization

The next table shows the evolution of the distribution (in percentages) of the population of the 3 territories by place of birth. A great stability is observed in the two larger territories, but the results of Wallis and Futuna are the consequence of the return migration of Wallisians born in New Caledonia or in New Hebrides (now Vanuatu). In 1956, only 5% of the population of French population were born outside the territory. For New Caledonia in 1962, 81.8% were born in the territory.

Distribution by place of birth of the population
of the French Territories of the Pacific for the 4 last censuses

New Caledonia	1969	1976	1983	1989
born in New Caledonia	79.8%	74.6%	76.8%	78.0%
born outside New Caledonia	20.2%	25.4%	23.2%	22.0%
French Polynesia	1971	1977	1983	1988
born in French Polynesia	86.0%	86.8%	86.2%	86.7%
born outside French Polynesia	14.0%	13.2%	13.8%	13.3%
Wallis and Futuna	1969	1976	1983	1989
born in Wallis or Futuna	98.0%	95.7%	90.0%	n.a.
born outside Wallis and Futuna	2.0%	4.3%	10.0%	n.a.

n.a. = not available

Internal migrations between the islands of Wallis and Futuna are rare and concerned less than 3% of the population in 1983. The urban areas of Noumea in New Caledonia and Papeete in French Polynesia have been centres of attraction for the population of the outer villages or islands since years, as well as they have

accommodated the external migrants. From 1962 to 1989 the population of the urban area of Noumea has been multiplied by 2.4 and represents now 55.8% of the total population (44.0% in 1962). Meanwhile the population of Papeete and of the urban area has almost tripled (x 2.9) and represents now 55.0% of the population of the territory (42.0% in 1962).

There is no real urbanization in Wallis and Futuna.

Conclusion

The French territories present similar levels of fertility, mortality and their past has been tightly associated: migrations from French Polynesia to New Caledonia, but mainly from Wallis and Futuna to New Caledonia, and migrations from France to New Caledonia and to French Polynesia. Even if their populations are small, they offer some interest for demographic studies. They can particularly be used to compare groups of population from the same ethnic origin in the territory of birth and in the territory of migration.

French Polynesia and New Caledonia differ from their neighbors. The Polynesian and Micronesian islands use migrations as a way of population regulation and they are mainly oriented towards Australia and New Zealand for the Polynesian islands or towards the U.S.A. for Micronesian islands. The Melanesian countries (except Fiji), have few external relations (few outmigrations or immigrants). Only the territory of Wallis and Futuna presents similarities with its neighbors.

ETHNICITY AND MIXED RACIAL DESCENT: EXPERIENCE OF THE 1988 FRENCH POLYNESIA CENSUS

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1.- Ethnic characteristics in the censuses.

The term "ethnic origin" can hide a wide range of concepts. The international recommendations for the population census are generally cautious concerning this question. Asian and Pacific recommendations for the 1980 population and housing censuses (Asian and Pacific Recommendations for the 1980 Population and Housing censuses, United Nations, Economic and Social Commission for Asia and the Pacific, Bangkok, 1978, 369-370, p. 49) are as following:

"The type of investigation of nationality or ethnic characteristics is dependent upon national conditions and needs. In different countries, ethnic groups are identified in various bases: country or area of origin, race, colour, lingual affiliation, religion, customs of dress or eating, tribal membership, or various combinations of theses characteristics. In addition, some of the terms used as 'race' or 'origin', have a number of different connotations. The definitions and the criteria applied by each country investigating any aspect of ethnic characteristics of the population must, therefore, be determined by the groups which it desires to identify. By the nature of the subject, these groups will vary widely from country to country, so that no internationally accepted criteria can be recommended.

Because of the interpretative difficulties which may occur, it is important that where such an investigation is undertaken the basic criteria used should be clearly explained in the census report, so that the meaning of the classification will be readily apparent."

2.- The case of French Polynesia.

The first contacts with the navigators from Europe go back to the end of the 18th century, but it is only in the middle of the 19th century that really started the migratory flux toward Polynesia; unlike New Caledonia, other French overseas territory also located in the South Pacific, the proportion of non native in the total population is less high, but the mixed racial unions with the native population from Polynesian origin is here far more important. The mixed racial unions link Polynesians to Europeans but also to Asiatics, and more recently Asiatics to Europeans.

The mixed racial descent is of course a biological phenomenon, but it is interesting to study the sociological consequence. A social issue has appeared: the birth of a more or less homogeneous group called "demis" (literally "halves"). This group has been in first times limited to people of Polynesian and European ancestry.

The knowledge of the ethnic distribution is an important element in the political and social life of French Polynesia. The knowledge of interracial unions shows evidence of a sociological evolution and, in most of cases, is a proof of a progressive assimilation of the non native ethnic groups.

3. - The censuses before 1988.

It is in the 1956 census that appeared in French Polynesia the notion of "native root"; before that, the previous censuses mentioned the birthplace, even those of parents in order to distinguish Oceanian population from non native people, besides the notion of nationality. In the 1977 census, as in 1962 and 1971, the question asked to determine the ethnic group clearly mentioned the answer "demi". The 1983 census offered only the 4 basic ethnic groups found in French Polynesia (Polynesian, European, Asiatic and other), but individuals were permitted to tick 2 items when in case of mixed racial descent. This modification was introduced because of a French law called "Data processing and Liberties", law voted in 1978 and applicable to the whole national territory, whether metropolitan or overseas. This law includes an article, among other subjects, on questions about race. The term "demi" was excluded from the questionnaire at the request of the National Commission for Data Processing and Liberties, commission created by the 1978 law to verify the compliance of statistical questionnaires (and computer files) with the law.

When compared to 1977 results, the 1983 census lets appear a decrease in the number of "demis" by nearly a third when counting only persons from mixed Polynesian-European descent (definition of the previous censuses), and a near stability when including in the group "demis" persons from mixed Polynesian-Asiatic and Polynesian-other

descent; meanwhile unions between Polynesians and the other groups did not registered any decrease and any massive out-migration did not occur since the last census.

Three arguments could be used to explain the decrease of mixed Polynesian-European descent people:
1) the wording of the question;
2) the emergence of a certain cultural and political revival (France had agreed to grant French Polynesia with more political autonomy, and the "reo maohi" - Polynesian language - had been admitted as official language, on the same level as French); this revival could have led some "demis" to deliberately choose the item "Polynesian" more for cultural affinity rather than by concern for biological reality;
3) the possibility of a bias in the previous censuses, to be "demi" could have been perceived as a certain social success and so have incited Polynesians to declare themselves as "demi".

The answer is probably a combination of these three arguments.

4. - The 1988 French Polynesia census.

4.1. - The wording of the question.

In order to avoid the 1983 problems, to have a better knowledge of mixed racial descent between Polynesians and Europeans, between Polynesians and Asiatics, between Asiatics and Europeans, and in order to make the question more "biological" than "cultural" (to obtain more objective than subjective answers), it was decided to ask each person for the father's ethnic origin and for the mother's one, the notion of mixed racial origin being introduced at the parents' level by the possibility to tick one or two items.

The question to determine the ethnic origin was as following:

What is the ethnic origin	of your father	of your mother
Polynesian	❑	❑
European	❑	❑
Asiatic	❑	❑
Other	❑	❑

if your father and/or your mother is from mixed racial descent, please tick the two items corresponding to the main ethnic groups of origin.

This wording did not encounter any objection from the Commission for Data Processing and Liberties.

4.2. - The determination of the ethnic group and of the mixed racial descent group.

4.2.1. - The data of the operation.

The ethnic group is determined from the informations on the father's ethnic group and the mother's ethnic group.

There are four basic ethnic groups: Polynesians, Europeans, Asiatics, Others, presented in the question according to the decreasing numerical importance of each group in the last census.

When choosing the father's ethnic group, or the mother's one, no more than 2 ethnic groups could be mentioned. Coding has been done as following: 1 for a ticked item, 0 for a non-ticked item.

For the determination of the ethnic group, there is a maximum of 4 available informations (2 for the father, 2 for the mother), and at least 1 information (when the ethnic group of one parent has been omitted, only the other parent's ethnic group has been used).

The answer for the father's ethnic group is a number P_i of 4 figures.

Let x_i be each figure of the answer P_i for the father
  i is included in $\{1,4\}$ x_i is included in $\{0,1\}$
Let y_i be each figure of the answer M_i for the mother
  i is included in $\{1,4\}$ y_i is included in $\{0,1\}$
The indexes $i = 1$ correspond to the Polynesian group, $i = 2$ to the European group, $i = 3$ to the Asiatic group, $i = 4$ to the groups not mentioned formerly.

4.2.2. - Object of the operation.

The calculation of the ethnic group has for object to determine 3 variables, each having only 1 figure:
  - the main ethnic group, variable called MAJETH;
  - the stage of mixed racial descent, variable called MINETH, or secondary indicator for the ethnic group;
  - the ethnic group associated to the main ethnic group, in case of mixed racial descent, variable called

ETHASS.
The values for the variable MAJETH (main ethnic group) are as following:

1	Polynesian
2	European
3	Asiatic
4	Other

The values for the variable MINETH (stage of mixed racial descent) are as following:

1	No mixed racial descent
2	Mixed racial descent of 2 ethnic groups with one group dominant at 3/4
3	Half (2 ethnic groups equally associated)
4	Mixed racial descent including 3 ethnic groups, one of them representing the half
5	Mixed racial descent including 4 ethnic groups

The values for the variable ETHASS (ethnic group associated to the main ethnic group) are as following:

0	No associated ethnic group (no mixed racial descent) or difficult to separate (2 or 3 associated ethnic groups)
1	Polynesian
2	European
3	Asiatic
4	Other

The combination of the 3 variables, in the order where they are presented above, forms a new variable with 3 figures called ETHNIE (detailed ethnic group), the values of which being presented in the annex.

4.2.3. - The process of calculation of the variables.

a) If one of the parents has a unique ethnic origin (only 1 information), a weighting of 2 is attributed to this group.

$\Sigma P_i = 1$, then $P_i = P_i + P_i$ $\qquad$ $\Sigma M_i = 1$, then $M_i = M_i + M_i$

b) We calculate $A_i = P_i + M_i$.

A_i is a number of 4 figures, like P_i or M_i.

Let z_i be each of the figures of the result A_i

i is included in $\{1,4\}$ $\qquad$ z_i is included in $\{0,4\}$

c) Determination of the main ethnic group. We look for the position of A_i where is located the maximum of z_i. This position determines the main ethnic group called MAJETH. If 2 positions are equal (2 z_i equal to 2, or the 4 positions equal to 1), priority is given to the lowest index (i.e., to the basic ethnic group with the most important size).

d) Determination of the stage of mixed racial descent and of the associated ethnic group. We count the number n of 0 in A_i, with n = 0, 1, 2 or 3.

if n = 0, it means that we are in presence of a mixed racial descent including 4 ethnic groups.
then MINETH = 5 and ETHASS = 0

if n = 1, it means that we are in presence of a mixed racial descent including 3 ethnic groups, one of them representing the half, the two others representing each 1/4,
then MINETH = 4 and ETHASS = 0

if n = 2, it means that it is a mixed racial descent including 2 ethnic groups, but 2 situations may occur:
- one of the 2 ethnic groups is majority (maximum of z_i = 3), then MINETH = 2
- the 2 ethnic groups are equally represented (maximum of $z_i \neq 3$), then MINETH = 3
- in both cases, the determination of the associated ethnic group (ETHASS) is done by placing 0 to the index of MAJETH and then by looking for the maximum in A_i.

if n = 3, it means that there is only one ethnic group represented and therefore there is no mixed racial descent.
then MINETH = 1 and ETHASS = 0.

5. - Evaluation of the method.

5.1. - The 1988 results.

The goal was to avoid the problem that occurred in 1983, the deliberate choice to be classified as Polynesian for "affective" or "subjective" reasons, rather than being classified "biologically" or "objectively" as "demi". The following table presents the distribution by ethnic group of the population of French Polynesia for the last 3 censuses.

The table shows some coherent evolutions. It shows that the wording of the 1983 question could have been the

cause of a distortion in the results. The notion of "demi" in 1977 must have gone beyond the simple association of mixed racial descent including Europeans and Polynesians and must have include persons of mixed racial descent with a Chinese ancestry or another ancestry.

Distribution by ethnic group of the French Polynesia population - Censuses of 1977, 1983 and 1988

ethnic group (1983 classification)	censuses of		
	1977	1983	1988
Polynesians and allied	n.a.	137 905	156 322
Polynesians	90 160	114 280	125 532
Polynesian-Europeans (demis in 77)	23 720	15 851	19 747 (4)
Polynesian-Chineses	(1)	6 356	9 264
Polynesian-Others	(2)	1 418	1 779
Europeans	15 338	19 320	21 773 (5)
Chinese/Asiatics	7 356	7 424	8 851 (6)
European-Chineses (or Asiatics in 88)	(3)	494	724
Others	808	1 610	1 144
Total	137 382	166 753	188 814

n.a. = not available, or not comparable.
(1) not distinct, grouped either with Chinese, or with Polynesian-Europeans (?)
(2) not distinct, grouped either with others, or with Polynesian-Europeans (?)
(3) probably split among Europeans and Chineses.
(4) including 1 512 Polynesians from mixed racial descent "demi" associated with 2 other ethnic groups, and 20 Polynesians from mixed racial descent associated with 3 other ethnic groups.
(5) including Europeans from mixed racial descent not mentioned elsewhere in the table.
(6) including Asiatics from mixed racial descent not mentioned elsewhere in the table.

5.2. - The limits of this operation.

This operation, as it was prepared and realized, contributed to the improvement of data in comparison with previous censuses. This operation was largely made easy by the small number of basic ethnic groups present in French Polynesia.

However we must specify the limits of this operation. The notion of "ethnic group" is not an evident one, the notion of mixed racial descent is much less obvious. The results must be used carefully. The mixed racial descent looks like the painter's palette on which colours mixed together, but where limits are not clearly defined. But the statistician wants to set up limits between the different groups. Only a genealogical survey could afford to determine the stage of mixed racial descent for each person, but first numerous uncertainties and unknown factors must be removed, as for example the high number of extra-marital births for which the father's characteristics are not always available. To be more complete the survey must concern several generations.

6. - Conclusion.

For the statistician the questions on the ethnic group remain delicate to be treated in a statistical operation like a population census. In the countries where the ethnic groups are clearly delimited and where the inter-racial unions are not very numerous, the census can contribute to give some informations providing that "the classification will be readily apparent." In countries where inter-racial unions are far from being negligible, the knowledge of mixed racial descent could be very useful, indeed even necessary to understand the social evolution. Even if it does not give a complete answer to the exact measure of mixed racial descent, the question on the parents' ethnic group could be proved to be a satisfactory technique, but it is easier to use it if you have only a small number of basic ethnic groups.

Annex: Detail of the variable ETHNIE

The variable ETHNIE (detailed ethnic group) is defined as the combination of the variables MAJETH, MINETH et ETHASS. It is split up as following:	
110 Polynesian with no mixed racial descent	210 European with no mixed racial descent
122 Polynesian mixed dominant with European	221 European mixed dominant with Polynesian
123 Polynesian mixed dominant with Asiatic	223 European mixed dominant with Asiatic
124 Polynesian mixed dominant with Other	224 European mixed dominant with Other
132 Polynesian mixed half with European	233 European mixed half with Asiatic
133 Polynesian mixed half with Asiatic	234 European mixed half with Other
134 Polynesian mixed half with Other	240 European mixed half with 2 other ethnic groups
140 Polynesian mixed half with 2 other ethnic groups	
150 Polynesian mixed with 3 other ethnic groups	
310 Asiatic with no mixed racial descent	410 Other with no mixed racial descent with one of the
321 Asiatic mixed dominant with Polynesian	3 basic ethnic groups
322 Asiatic mixed dominant with European	421 Other mixed dominant with Polynesian
324 Asiatic mixed dominant with Other	422 Other mixed dominant with European
334 Asiatic mixed half with Other	423 Other mixed dominant with Asiatic
340 Asiatic mixed half with 2 other ethnic groups	440 Other mixed half with 2 other ethnic groups

SUMMARY

Ethnicity and mixed racial descent: experience of the 1988 French Polynesia census

Measuring the ethnic distribution of a population is not a simple operation. There are no international recommendations. Assessing the importance of mixed racial descent inside each ethnic group could seem impossible, even utopian, within the strict scope of a statistical operation. However it is what the Territorial Institute for Statistics of French Polynesia tried to do in the last census of this French overseas territory, on September 6, 1988.

A question on the parents' ethnicity was asked to each person with the possibility to mention a double origin at father's and/or mother's level. This kind of formulation of the question on ethnic group was used to avoid "subjective" answers. The ethnic variable is defined as the combination of 3 single variables: the main ethnic group, the degree of mixed racial descent, and the secondary ethnic group.

Even if it permitted to obtain more detailed informations on ethnicity and on mixed racial descent, this method has limitations. It works better with a small range of basic ethnic groups. A genealogical study could give better results but cannot be undertaken in a census. However a larger detail was obtained permitting a better knowledge of mixed ethnicity in French Polynesia.

THE DEPOPULATION OF POLYNESIA:[1] MIGRATION TO NEW ZEALAND

Synopsis

Polynesian emigration has been very high in the past 2 or 3 decades especially to New Zealand. The New Zealand census data reveal some interesting characteristics of migrants. A large proportion of migrants are in the age-range 15-29 and females outnumber males. Educational levels are associated with the population size of country of origin. Young people attain higher levels of education that their predecessors. Unemployment is high for all migrant groups, especially for the 15-19 years-olds. But the unemployment rates reduce as duration of residence increases.

Introduction

Within a period of about 30 years, there has been a dramatic change in the demography of many of the Polynesian island states. During the early 1960's, for example, the population growth rate for Western Samoa was almost 4 per cent per annum, characterised as it was by high fertility and low mortality. Though not quite as high, growth in Tonga shared some of the same characteristics. In the Cook Islands and Niue, lower fertility and relatively greater migration to New Zealand had reduced growth to lower levels, but, as for example the Niue census of 1966 records, mean annual population increase remained above 1 per cent.

By 1986, the last round of population censuses in these four small countries, fundamental changes had occurred. In both Western Samoa (0.05 per cent)[2] and Tonga (0.5 per cent)[3], small mean annual growth had been recorded. Yet in both of these States, it is estimated that the growth curve was generally in decline during the intercensal period and that by 1986 the populations were actually in real decline. In the smaller countries of Cook Islands[4] and Niue[5] the position was less ambiguous. Populations were in decline and rates of decline were increasing; in Niue the mean annual decline of nearly 7 per cent was the highest on record.

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[1]   The use of the term Polynesia in this paper includes only Western Samoa, Tonga, Cook Islands and Niue.

[2]   Report of the Census of Population and Housing 1986 (Western Samoa, Department of Statistics).

[3]   1986 Population and Housing Census of the Kingdom of Tonga (In draft)

[4]   Cook Islands Census of Population and Dwellings 1986, CPD3-87, CPD4-88, and CPD5-88 (Provisional Reports).

[5]   Niue Census of Population & Dwellings - Census 1986 (Alofi, Statistics Unit, Administrative Department, 1988).

With fertility in slow decline, mortality at very low levels, migration now plays the larger role in determining the age-sex composition and distribution of the population. More importantly, the long-term effects of migration on the economy, on social attitudes and culture and on the ability of governments to achieve national development goals, provide an important focus for the study of Polynesian migration.

New Zealand as destination

New Zealand has assumed high primacy as a favoured destination for Polynesian emigrants. Niue and Cook Islands have constitutional arrangements with the New Zealand Government that permit near freedom to enter the country. While quotas restrict the intake of Western Samoans, the effects of their introduction in the early 1980's has ironically been to increase the migration stream. For Tonga too, though without the past Colonial links of the other States, New Zealand has been the favoured destination. More recently, migration to Australia and the United States has increased rapidly, but the numbers remain small relative to New Zealand. This provides the first reason why this paper looks closely at Polynesians in New Zealand. The second reason is more technical in nature. Population censuses do quite well at measuring internal migration, but are less successful in capturing overseas movement. This is especially true where entire households or families emigrate, a common feature Polynesia emigration. The large international outflows from Polynesia would mean, even if it were possible to identify absentees, a large number of interviews were conducted by proxy.

In contrast, the destination based New Zealand census data[6] cover all Polynesians resident at the time of the census. They are obtained from direct interviews, and cover a wide range of useful characteristics including country of birth and duration of residence in New Zealand, which facilitate analysis.

Demographic characteristics of Polynesian Migrants

The Polynesian residents in New Zealand in total amounted to more than 40 per cent of those living in the countries of ethnic origin. As table 1 shows, for the small countries of Cook Islands and Niue the number in New Zealand considerably exceeds the home islands population.

Ethnicity	In Polynesia[7/]	In New Zealand
Samoan	157408	62643
Tongan	94649	12561
Cook Island Maori	17455	31119
Niuean	2531	11538
TOTAL	272043	117861

The age-sex distributions reveal some of the very specific characteristics of Polynesian migration. The Pacific island age sex pyramid is not particularly remarkable. The rathe₁ rectangular base up to about age 20 reflects recent declines in fertility; the abrupt declines

Age-Sex Pyramid: Polynesian Populations

7/   Includes non-indigenous

Age-Sex Pyramid: N.Z. Polynesian Population

between ages 20-35 suggest selective migration at these ages. The more bell-shaped distribution for the New Zealand resident Polynesian population, with little change to the cohort sizes up to about age 40, provides support, as it might be expected to do, to the argument that in-migration occurs at relatively youthful ages.

But even more revealing is the distribution restricted to Polynesians born in the island States, since it reflects entirely the immigrant population. This distribution has two striking features. Firstly, the inverted structure to age 35 is consistent with our knowledge of migration and emphasizes the importance of education and employment in the motives for migration. Secondly, and more unusual, the age pattern from ages 15 to 35 shows that more females than males migrate at these ages.

Polynesian Migrants

While heavy migration to New Zealand is relatively recent, the life-time migration distribution distorts the true age pattern of migration. Data restricted to persons with less than 5 years residence in New Zealand provides an even more faithful reflection of the true pattern. It is even more apparent that migration is concentrated in the age groups 15-29. The predominance of females at ages 15-24 is more marked, though at ages 25-34 sex ratios rise above 100. Whether this suggests that the dominance of females at ages 15-24 is relatively recent, or whether females are more likely to return to their countries of origin is an interesting point.

Polynesian Migrants: 0-4 years duration


```
75+
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
 5-9
 0-4

15    10    5    0    5    10    15
```

▦ Male   ▨ Female

Population distribution

Bearing in mind the agrarian economies of the Pacific island states of Polynesia, it is ironic that migration to New Zealand is characterised by its high level of urban settlement. Of 87258 ethnic Polynesian residents at ages 5 and above, over 92 per cent resided in the major urban areas. Auckland was by far the most favoured destination accounting for 71.5 per cent of the urban dwellers.

There is some evidence that overtime the Polynesian populations are becoming more dispersed, moving from the main urban areas towards secondary and minor urban areas and even to the rural areas. As table 2 shows, based on a question about usual residence in 1981, the main urban areas experienced a loss of population, while other areas gained. While the figures are not very large, it should be noted that the sum of the stream and counterstream flows exceeded the stayers in rural areas, suggesting that the process is of recent origin and may therefore gain in momentum.

Table 2: Polynesian migration within NZ
1981-86

Area	Stayers	In-migrants	Out-migrants	Net-migrants
Main Urban	79548	997	1339	-342
Semi/Minor Urban	3840	1059	868	+191
Rural	1035	714	563	+151

Education and employment

It is quite clear from the youthfulness of migrants that education and employment exert important influences over the decision to migrate. There are several ways in which the census might be used as a commentary on the experiences of migrants in New Zealand. One might be to compare migrants with the home island populations to assess the selectiveness of migrants and their achievements. Another would be to compare migrants with the general New Zealand population to identify their distinguishing characteristics. In the short analysis that follows neither of these approaches has been taken. Instead, duration of residence has been used as a variable that attempts to trace the process of adaptation to the host environment that occurs over time. In this there is a danger that the effects of return migration result in a selection process in which the more successful remain; this process can lead to an overstatement of the speed of adaptation. But in truth, return migration rates may not be high and the trends shown in the analysis, especially where they are marked, should give some indication of changing behaviour over time.

Education

For the analysis of school attainment, only persons aged 20 and above have been considered, since the rates for younger persons are complicated by incomplete education for those still in full-time institutions. Attainment is associated with several factors, including age, country of birth and duration of residence in New Zealand. As indicators of attainment, the proportion reaching at least New Zealand School Certificate level and University level have been considered.

Largely reflecting the improvement of basic education in the Pacific islands attainment is negatively associated with age. At ages 20-29, 47.2 per cent have attained school certificate. This figure falls sharply to 37.2 per cent by ages 30-39 and to 18.8 per cent for persons aged 40 and above. The New Zealand born Polynesian population attain higher education at all levels than migrants. At higher levels the relative advantage increases. The

proportion of New Zealand born Polynesians with degrees was greater than three time the proportion for migrants.
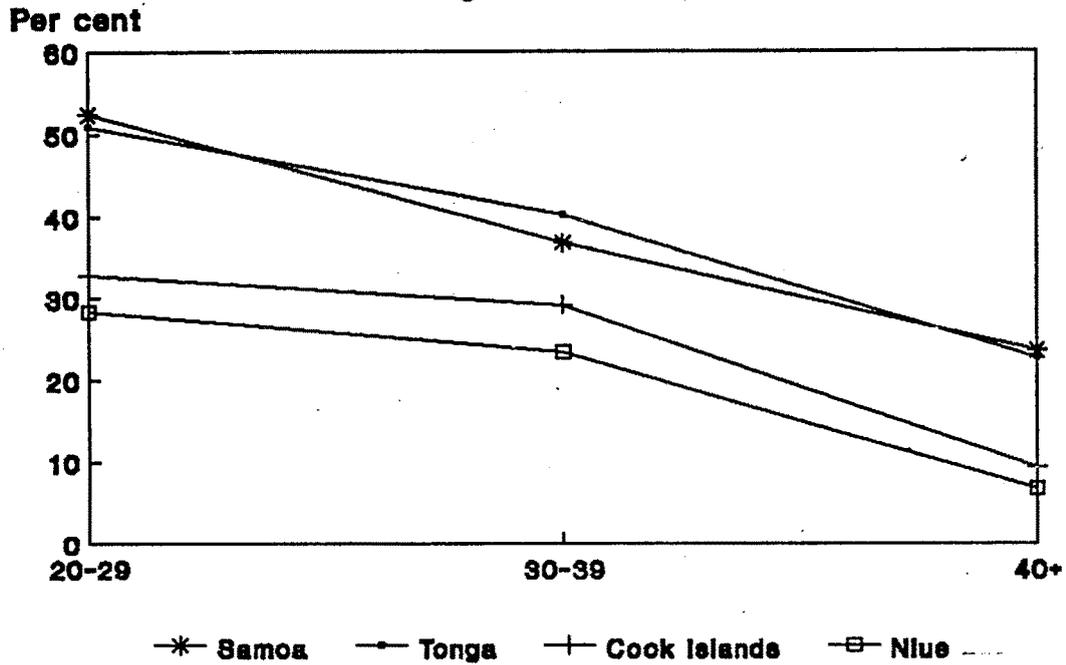
Education attainment of migrant and NZ born Polynesians

Considerable variation in attainments exists, even among migrants. Generally speaking, attainment is associated with the size of country of origin rather than the size of the migrant population. Thus migrants from Samoa and Tonga perform rather better than those from Cook Islands or Niue. Very wide differences exist for these migrant groups and confirm the point made for all Polynesian migrants, that education levels have improved over the years.

The relation between education and duration of residence is less clear. Controlled for age, the data show that the highest attainment is for recent migrants, both for school certificate and degree levels.

Polynesian migrants: per cent attaining school certificate

Per cent

Legend: —*— Samoa —•— Tonga —+— Cook Islands —□— Niue ----

For those attaining school certificate, decline in achievement occurs between those with less than one year residence, 1-4 years residence and 5-9 years residence. But for longer durations of residence, the attainment levels improve. Not wishing to make too much of this distribution, I nevertheless suggest that at least two influences are at work. At younger

durations, the effects of highly selective migration with growing emphasis on education attainment can be observed. At the other end of the scale, the process of adaptation to New Zealand norms at longer durations are more apparent. Even for university level attainment,

Percent migrant Polynesians attaining school certificate

—•— Duration of res.

there is some evidence of these processes, to the extent at least that while migrants of recent origin perform best, migrants with 20 years or more residence do no worse than those with 10-19 years.

Proportion of migrant Polynesians attaining university degree

Residence Duration

Employment

In education, it seems, recent migrants have some advantages over those with longer periods of residence. In employment the situation is very different. Using the unemployment rate as an indicator of difficulties migrants have in entering the New Zealand labour market some interesting features are revealed.

One of these features, shared in common with education, is that the New Zealand born Polynesian

Table 3: Unemployment rates[8/] by duration of residence

Duration of Residence	Unemployment Rate
Less than 1 year	22.5
1-4 years	15.6
5-9 years	13.1
10-19 years	11.4
20 years and above	8.9
All Migrants	14.2
New Zealand Born	10.4

population does somewhat better than migrants. This advantage remains at all ages. At ages 15-19, almost 30 per cent of migrants are unemployed compared with less than 25 per cent of New Zealand born Polynesians. As age advances, unemployment falls, but rates for the New Zealand populations remain below the migrant rates.

Polynesian unemployment rates by age group and place of birth

···•·· Born Overseas ─┼─ Born In NZ

8/   Age-standardized on the total resident Polynesian population.

The trend in unemployment by duration of residence is even more impressive. Unemployment is high for persons aged 15-19 but there is a considerable range according to duration, from 36 per cent for migrants with less than 1 year duration to 27.9 per cent for migrants with more than 20 years.

Polynesian unemployment rates by age group and duration of residence in NZ

Legend:
— Less than 1 year   —+— 1-4 years   ·*· 5-9 years
—■— 10-19 years   —✕— More than 20 years

Indeed, the differences by duration persist at all age groups. It is interesting that the differences are widest at ages above 40; at short durations particularly, unemployment rates rise steeply after age group 35-39.

Mean Income of Polynesian Migrants
by Duration of Residence

Thousands

4.79	7.652	9.155	10.831	12.709
Less than 1 year	1-4 years	5-9 years	10-19 years	20+ years

▦ Mean Income (NZ$)

The New Zealand census also asked questions about income, which provide very useful indicators of economic well-being. It is very clear that income rises steeply as a function of duration of residence, perhaps suggesting once again that the characteristics of migrants quite rapidly approach those of the host population. Yet the apparent simplicity of the graph, reveals some hidden problems in interpretation. Age has not been controlled, and, in its relation with duration, probably serves to explain much of the variation. The question of return migration might also have some effect, on the argument that the most successful migrants are most likely to remain. At the very least, the interesting data suggests some possibilities for further research.

CENSUS AND DEMOGRAPHY IN THE U.S.

PACIFIC ISLANDS

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DRAFT

INTRODUCTION

In addition to the 1990 Census of Population and Housing of the United States, the U.S. also enumerates Puerto Rico and the Outlying Areas -- Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Islands, and Palau. In 1990, the Census Bureau developed separate questionnaires for Puerto Rico, the Virgin Islands, and the Pacific Islands -- so there were four questionnaires in all.

The Census Bureau developed, implemented, and processed the 1980 Census of the Pacific Islands with minimal input from the Pacific areas themselves. To involve these areas more fully in the process, the Census Bureau worked with the Office of Territorial and International Affairs (OTIA), Department of Interior, to provide technical training in general statistical training. More specifically, the two agencies are working together for training in collection, processing, and distribution of data from censuses, surveys, and administrative records.

STATISTICAL TRAINING

Integrated statistical programs require censuses, surveys, and administrative records. The United States includes all Pacific areas. Several of the areas have statistical yearbooks. But only American Samoa and Guam have had periodic survey programs.

In 1986, the Population Division, U.S. Bureau of the Census, and the Office of Territorial and International Affairs began an informal arrangement to offer technical assistance in statistical training to the Pacific Islands areas. From October to December 1986, eight participants (two each from Guam, American Samoa, the Northern Mariana Islands, and the Virgin Islands) came for courses in (1) questionnaire design and (2) analysis of the 1980 Censuses of their areas. The latter course resulted in a decision to do a series of historical demographic monographs for each of the areas.

As seen in the territory summaries below, Guam and American Samoa have published OTIA-funded monographs. The Commonwealth of the Northern Mariana Islands also finished its monograph,

but did not publish it. Palau developed tables for its monograph, but they wrote no text. A companion for the American Samoa volume on Samoans in the United States (Levin, 1990) has also been developed but not published.

In 1988, a second OTIA-Census workshop occurred at the East-West Center in Hawaii. This workshop had participants from each of the territories in the first workshop as well as participants from Palau, the Marshall Islands, and the Federated States of Micronesia. The workshop concentrated on the formation of U.S. territories-wide table shells for administrative records. These tables would be used, and modified as needed, to produce data for the territories, and also remain consistent with the State of Hawaii's reporting. We made changes to the American Samoa Statistical Digest (1987) before the workshop. OTIA funded a project to send two statisticians to Saipan (Michael Levin and Vai Filiga) to aid the Northern Mariana Islands in developing their first statistical yearbook.

The administrative records for morbidity (reported diseases) and mortality (causes of death) were among the most inconsistently reported items. The University of Hawaii School of Public Health is involved in a large scale communicable diseases reporting program. We had hoped to have a workshop on medical records, similar to the general workshop on statistical yearbooks, but more focussed on vital statistics only, but that workshop did not develop.

In January, 1991, Levin and Filiga will coordinate an OTIA sponsored workshop on Intercensal surveys at the East-West Population Institute, Honolulu. Each of the current and former U.S. Pacific territories (and the Virgin Islands) will attend. We will use the 1990 Census of the Pacific Islands as a base for discussion about sample selection and survey questionnaire design.

The following paragraphs summarize current statistical work in the various current and former U.S. territories:

GUAM

The United States has included Guam in U.S. decennial censuses since 1920. In 1988, the government published Guam's People: "A Continuing Heritage", edited by Peter R. Barcinas, Michael J. Levin, and Cynthia L. Naval, but including contributions by 10 authors from various agencies on Guam. The monograph gives a fairly complete recent demographic history of Guam.

In another OTIA-funded project, an analysis of census data from published and unpublished sources provided a demographic, social, and economic profile of Umatac village on Guam. This paper provides a model for profiles for other villages on Guam, and other specific small areas in the other territories.

Guam has quarterly labor force surveys. These surveys provide unemployment rates and labor force participation rates. Also, as part of its annual Economic Review, Guam's Department of Commerce publishes annual statistical summaries of administrative records. Commerce also produces quarterly summaries.

AMERICAN SAMOA

The U.S. started including American Samoa in decennial censuses in 1920. The territory also had special censuses in 1956 as part of a Polynesia-wide round of censuses, and in 1974, the data collected in cooperation with the East-West Center. A historical analysis of censuses in American Samoa appears in Population Profile of American Samoa (1980 Census), by Vai Filiga and Michael J. Levin (1988).

American Samoa took sample surveys in 1977 (a 10 percent survey using the 1974 census questionnaire, a labor force survey in 1985, and a Household Income and Expenditures survey in 1988. The Office of Economic Planning and Development publishes a comprehensive annual statistical report.

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS

The Commonwealth of the Northern Mariana Islands (CNMI) was part of the United States Trust Territory of the Pacific Islands (TTPI) from 1947 until 1986. A previous, Japanese administration

collected the first systematic census data in 1920 for the areas which became TTPI, and continued

to collect these data in 1925, 1930, and 1935. Reports exist of a 1940 census, but no results are

available. The U.S. collected annual counts for reports to the United Nations between the late 1940s

and the 1980s, but these counts are notoriously unreliable (see, for example, Levin, 1976). The TTPI

High Commissioner's Office took a TTPI-wide census in 1958. In 1973, the TTPI administration

collected another census, after finding serious deficiencies in the 1970 Decennial census. The 1980

Census was the second decennial census, the first to separate data for CNMI from the rest of the TTPI.

The Statistical Profile of the Commonwealth of the Northern Mariana Islands on the 1980 Census by

Juan S. Borja and Michael J. Levin analyzes historical data for CNMI. (Unfortunately, unlike Guam and

American Samoa, the government of the CNMI chose not to publish their volume -- the volume should

be available in manuscript from the Department of Commerce and Labor, CNMI Government.)

The government of the Commonwealth of the Northern Mariana Islands took labor force

surveys in 1984 and 1985, but apparently did not use the results for policy or planning. Also, in 1987,

the Office of Territorial and International Affairs (OTIA), Department of Interior (DOI) funded technical

assistance to develop the first statistical yearbook for CNMI. CNMI did not publish the resulting

yearbook.

PALAU

Until 1986, Palau had the same census experience as the Northern Mariana Islands, described

above. In 1979, Palau's Community Action Agency conducted a special census of the total

population, focussing on labor force participation. The first census of the Republic of Palau was in

1986, conducted in cooperation with UN personnel. OTIA funded two Palau Statistics Office personnel

to come to Washington for two months of training, and table preparation for a historical demographic

monograph. The government of Palau has not written text for the tables.

Its small size and homogeneity probably prohibits much intercensal survey work. Palau

publishes statistical abstracts periodically.

Thirteenth Population Census Conference, East-West Population Institute, Honolulu   *DRAFT*

MARSHALL ISLANDS

Until 1986, the Marshall Islands were part of the Trust Territory of the Pacific Islands, and had the same census experience as the Northern Mariana Islands, described above. In 1988, the Marshalls conducted a special census with UN funding. The Marshall Islands published an analytical report in 1989. That government prepared no historical analysis.

The Marshall Islands does not have an organized intercensal survey program. The government does, however, produce annual statistical reports.

FEDERATED STATES OF MICRONESIA

The Federated States of Micronesia (FSM), like the Marshall Islands, were part of the Trust Territory of the Pacific Islands until 1986, and had the same census experience as the Northern Mariana Islands, described above. The TTPI government conducted a survey of skills and occupations in 1977. During the 1980s, the government conducted a series of state censuses - Ponape (1985), Kosrae (1986), Yap (1987), and Chuuk (1989). The first three states prepared analytical reports. The government is now processing Chuuk's data.

The U.S. Congress has recently funded an FSM-wide census to take place in 1991. Even with the Chuuk census, no post-1980 FSM-wide data will be available except through computer-manipulated estimates for the various states to get 'snapshot' information. Also, many of the newly-reapplicable Federal programs require data available only from decennial censuses. Since the Cnesus Bureau collected income only in 1980, FSM will probably have to continue to use those data, for example, for applying for Federal programs related to income until another sanctioned census or survey. The 1991 Census, if it takes place, will satisfy these needs.

The Federated States of Micronesia does not have an organized intercensal survey program. Various foreign and international agencies have helped the government in small scale surveys, notably an Income and Expenditures Survey in 1984 connected with the FSM's First Five-year plan, and a later survey along the same lines.

In 1981, FSM produced its first (and last) annual statistical report. Since then, the various states have all produced at least one statistical summary.

1990 CENSUS OF POPULATION AND HOUSING

ENUMERATION PROCEDURES

The Geography Division in the U.S. Bureau of the Census mapped all of the Pacific Islands areas and computer digitized the islands using the TIGER system. The Seattle Regional Office supplied enumerator and office maps to the areas. These maps contained enumeration boundaries, and features to aid the enumerators in putting "map spots" on the maps as they enumerated the housing units in their areas.

The United States enumerated more than 80 percent of the housing units in the United States by a procedure called mailout/mailback. In this procedure, the Bureau mailed questionnaires to all housing units in the United States, and respondents filled the forms, and then mailed them back to processing offices. None of the Pacific Islands, however, have home mail delivery. In the Pacific areas, all enumeration was done by a list/enumerate procedure. The enumerators went to housing units, listed the unit, and then did the enumeration.

Since there is little mail delivery, few streets are named, and fewer have sign posts to help in enumeration. So, many people described where they lived in reference to geographic features or other housing units in the area. A person might report his or her unit as being "three houses down the road from John Smith."

Very few people refused to answer the census. The census remains an 'event' in the Pacific. Also, many people are eager to answer the questionnaires because they understand the relationship between the census and federal funding.

QUESTIONNAIRE

The U.S. Bureau of the Census changed the questionnaire and procedures used in the 1990 Census of Population in the Outlying Areas of the Pacific Islands in three ways. (Much of this

discussion appeared earlier in Levin and Hines, 1985). First, many changes reflected the unique characteristics of the Pacific Islands, including differences in environment, technology, and material culture. Changes in labelling (of names, definitions, or responses) made questions and answers more comprehensible to local respondents.

The second group of changes included questions where the content of a question or answer changed as well as the labels. The data collected in the Pacific were, as a result, not exactly like the data collected in the United States. However, the questions used in the Pacific elicited data to build inferences comparable to those based on responses from the United States.

The third group of changes consisted of questions added because of Pacific Islands cultural needs. Some questions in the census of the Pacific Islands reflected analysis documenting their significance to the Pacific communities.

Label changes. Many definitions and responses used in the U.S. census are inappropriate in the Pacific Islands.

Modified codes for ethnicity, for example, matched the probable responses in the Pacific Islands. The Bureau also made parallel changes to the question on place of birth. Codes for these questions represented the most likely patterns of inter-island migration, given the level of specificity permitted in a census.

Housing questions changed to reflect local land tenure patterns. The Bureau used the question on the value of property (H25) in the United States for Guam, the Northern Mariana Islands, and Palau, with varying degrees of success. Traditional land tenure is communal in the Pacific territories. Individuals have no precedent for gauging the value of the property under their dwelling, so even when the question covered only the value of the dwelling, there were still reporting problems. On Guam, for example, with value of property reported, one man who lived on the beachfront in a "chicken house" reported value of $1 million; the Census advisor verified the value.

Because of the infusion of wealthy Asians, particularly Japanese, 'snowbirding' -- persons who have second homes in warm places so they can escape the cold winters -- has developed on Guam. Some people keep condominiums on Guam for occasional use. These condominiums, of course, were frequently vacant, and had to be enumerated as such.

The Questionnaire Reference Book (QRB) and the enumerator's manual prepared for the Pacific Islands showed other examples of relatively simple label changes. In 1980, although not in 1990, for example, the instructions for recording respondent names, for example, describe the procedures for dealing with hereditary titles:

> Samoa: Reference to matai title...when a person uses his title as the last name, the people who "belong" to this title may also take this name. For example, a person whose real last name is Talofa might report his name as John Samoa (the name of his title). His children might have either Talofa or Samoa reported as the last name, print the last name as reported.

Additions to the enumerator's manual and QRB dealt with the special characteristics of housing in the Pacific. The Pacific Islands census asked for the material used to build the walls and roof of their dwelling. One of the answers was 'thatch,' defined as "palm or pandanus thatch, palm leaves, straw, etc." (QRB, p. 14).

Also, changes made to questions about kitchen and bathroom facilities reflect the simpler technology of the Pacific territories. The United States, which takes complete facilities for granted, used summary questions. Instead of "complete kitchen facilities," the Pacific Islands form divided kitchen facilities into the constituent parts - cooking facilities, refrigerator, and, and piped water. Even here, there were problems. For example, many people used more than one type of cooking facility, but could only select one for the census.

Content changes. Many items on the Pacific Islands questionnaire were similar, but not the same as those on the United States questionnaire. The Pacific Islands governments requested these changes to provide more appropriate data.

The form asked only one question on fertility -- children ever born alive -- on the 1990 census questionnaire. By 1990, all areas had fairly good vital registration, so the Census dropped the series of questions usually asked to get information for indirect methods. Some data loss develops from this approach since we cannot get mortality estimates for selected fertility characteristics. That is, if there is differential mortality for females with different educational attainment, or urban and rural residence, we cannot use these data for indirect fertility estimation.

To show the difference, questions on fertility in 1980 allowed demographers to use the data from the Pacific Islands to make analyses and estimates like those for the United States. Earlier tries at measuring individual fertility in the Pacific territories based on questions used in the U.S. census did not always consider the higher rate of adoption among households in certain islands. In addition, incomplete vital registration in the Pacific Islands made indirect measures of fertility necessary . To analyze individual fertility it was necessary first to match children to their biological mothers, and then use the own children method to get fertility estimates.

More Pacific Islands questions on fertility provided better estimates of fertility and mortality. Cultural attitudes about vital registration of such events as infant mortality and adoption made it necessary to ask additional questions to get data comparable with the U.S. The instructions excluded adopted children among the children ever born. Additionally, questions asked women how many of their children were still living, and if any were born alive in the last 12 months.

Despite the distances between the islands, many people live (for work, school, or other reasons) far from the island of their birth or their residence 5 years before the census. Traditionally, most young men moved around the islands before settling down. Today, young people of both sexes travel to distant Pacific territories or to the United States for schooling. As a result, many adults live far from their place of birth. Many others lived elsewhere 5 years before the census. The Census recorded both long term migration (migration since birth), and short term migration (migration in the 5 years before the census) in this way.

Migration patterns are significant in the Pacific for many reasons. Perhaps the most critical is that, on small islands, population growth can very quickly get out of balance with limited ecological resources. Migration is the most important source of population shifts in Pacific Islands in this century.

In the Pacific territories, migration data are also significant because of public policies concerned with education and labor. Analysts need data to measure the potential effect of these policies; for example, is there resistance to migration? What is the rate? What factors cause return migration? Who migrates, and what happens to those left behind?

Before 1990, a question on year of immigration appeared on the U.S. questionnaire (and was also on the Pacific Islands questionnaires.) However, to get information on movements to the United States from Puerto and the outlying areas, the 1990 census changed the item to "year of entry." In this way, we obtained the year of entry, whether for immigration purposes or "in-migration" (from the territories). Although the 1990 U.S., Puerto Rico and Virgin Islands censuses used grouped years of entry, the Pacific Islands censuses collected single year of entry because all had 50 percent or more of their populations born elsewhere.

Questions about language used in the U.S. census cause problems in the Pacific. Few native residents of the Pacific Islands territories use English as their primary language at home. The non-European population in the Pacific territories reported native languages (and even multiple native languages) more frequently than English as the language used at home. The question used in the U.S. census to measure fluency in English (How well does this person speak English?) would be of little use among a population with most non-English speakers. In the Pacific census, therefore, a question for all respondents identified language practice.

The 1990 Census also had major changes in the questions dealing with the 'work' in the Pacific. Economic activity in the Pacific Islands is very different from that in the United States. A high proportion of adults in the islands derive support from indigenous noncash-related subsistence

activities. This includes producing food or goods for home consumption, with little or nothing exchanged for cash or other goods.

The Pacific censuses provided subsistence activity as an alternative response in the question on activity last week. The series of income questions incorporated the item, partly as a check to be sure that persons reported only non-cash income activities. These questions identified persons involved exclusively in subsistence activity and distinguished them from persons in the cash labor force who were not working. They also allowed subsistence activity as a distinct activity pursued along with participation in the cash economy in some form.

The questions referring to "subsistence activity" caused some problems on Guam in 1990. For the military, "subsistence activities" are those specifically military activities employed to sustain life. Subsistence activity defined this way was completely different from the intended meaning.

Finally, the Census changed the question on type of transportation to work, used to help determine commuting patterns, by dropping those modes of transportation not appropriate for the Pacific Islands. For example, since there are no subways or trains in the Pacific Islands, these possibilities did not appear on the form.

Different questions for the Pacific territories. The final group includes questions unique to the Pacific census, items included because they dealt with significant Pacific Islands topics meriting collection of data in a costly, decennial census.

The simplest example is literacy. Citing patterns of native language use and English fluency, the areas requested a question on literacy. Data from this question were important in analyzing programs related to education, training, and employment. The enumerator instructions defined literacy as the ability to read and write a personal letter providing an explanation comprehensible both to native enumerators and respondents.

The Pacific Islands questionnaire also had vocational training at the Islanders' request. This item collected information on whether the person had vocational training, and if so, whether that training was on or off-island.

A second major illustration involves questions dealing with migration. Several questions on migration reflected the immense significance of migration phenomena to the interpretation of a variety of related social processes in the Pacific territories. The census also asked each respondent about mother's and father's place of birth. Parental birthplace appeared on U.S. censuses between 1870 and 1970, but the ancestry item replaced it in 1980. Parental birthplace did appear, however, on both the 1980 and 1990 census questionnaires for the Pacific islands. These items help the various governments get information on generational migration. These migration data, with the information on birthplace and residence 5 years before the census, aid the governments in determining migration flow.

In conclusion, the census in the Pacific territories differed from the U.S. census in many ways. Some of the differences appeared superficial. Other changes allowed the answers from the Pacific to serve the same analytical purposes as answers from the United States. These changes required familiarity with local culture, including knowledge of native languages and native use of English.

DEMOGRAPHIC, SOCIAL, AND ECONOMIC CHARACTERISTICS

OF THE U.S. PACIFIC ISLANDS

The 1990 Censuses of the Pacific Islands enumerated the population as of April 1, 1990. The results will be available next year. The compacts of Free Association excluded the Federated States of Micronesia and the Marshall Islands from the 1990 census.

Demographic, social and economic chracteristics of the populations of these areas will be available over the next two years. The Bureau has keyed data from all areas, and is now running the edit programs. The tabulation programs will follow.

In the mean time, the 1980 data show the general characteristics of these areas. We exclude

Palau because it was involved in compact negotiations at the time we prepared these tabulations. In

1980, Guam had 106,000 persons, American Samoa 32,000, and Northern Mariana Islands 17,000

(Table 1).

Housing units in the U.S. Pacific Islands areas were more crowded than those in the United

States -- about one more person per household on Guam, two more per household in the Northern

Mariana Islands, and 4 more per household in American Samoa.

Table 1. Characteristics of Year-round Housing Units: 1980

Characteristics	United States	Guam	American Samoa	Northern Marianas
Total persons...............	226,545,805	105,979	32,297	16,780
Total housing units.......	88,411,263	28,249	4,728	3,432
Mean persons............	2.37	3.74	6.56	4.89
Year-Round Housing Units:				
Total.....................	86,692,832	28,091	4,688	3,373
Median rooms...................	5.1	4.7	3.5	4.1
Percents:				
3 or more bedrooms............	50.5	53.5	35.8	43.6
One unit in structure..........	71.1	74.0	93.5	90.9
5 or more units in structure...	17.8	15.6	1.1	4.4
Structure built 1970 to 1980...	26.2	58.7	44.9	57.6
Structure built before 1940....	25.8	0.3	4.2	0.8
Lacking complete plumbing in this building................	2.7	4.2	56.3	49.8
Source of water: Public system.	83.6	99.6	77.4	92.1
Public sewer...................	74.0	71.6	12.1	24.8
Electric power.................	N/A	98.1	96.2	94.1
Air conditioning...............	55.0	59.8	7.9	24.3

Source: U.S. Bureau of the Census publications, 1980.

On the other hand, housing units in the Pacific Areas had fewer rooms, and were more likely

to have only one unit in their structures. Also, while 18 percent of U.S. housing units were of 5 or

more units in the structure, only 4 percent of those in the Northern Mariana Islands were in such

structures, and only 1 percent of those in American Samoa. Because of climatic conditions - both long

term and short term -- few houses in the territories were more than 40 years old, and much larger

proportions were built within the last ten years.

Only about 1 in every 20 occupied housing units in the United States had more than 1 person

per room, compared to 1 in 4 for Guam, 1 in 2 for the Northern Mariana Islands, and about 3 in 4 for

American Samoa (Table 2). Householders were more likely to have moved into their units recently

(1979 or 1980) in Guam (probably because of the military) and the Northern Mariana Islands (probably

because of the many immigrants) than in the U.S. or American Samoa.

Table 2. Characteristics of Occupied Housing Units: 1980

Characteristics	United States	Guam	American Samoa	Northern Marianas
Occupied...................	80,389,673	24,834	4,513	3,028
Owner occupied................	51,794,545	11,469	3,337	1,809
Median rooms.................	5.2	4.8	3.5	4.2
Percent:				
1.01 or more persons per room.	4.5	24.4	73.5	53.9
Householder moved into unit				
between 1979 to March 1980..	22.7	38.3	22.6	31.6
1 or more vehicles available..	87.1	93.5	44.8	84.8
Specified Owner:				
Median value...............$.	47200	57600	11200	10400
Renter Occupied:				
Median contract rent........$.	198	193	100	125
Median gross rent..........$.	243	251	158	153

Source: U.S. Bureau of the Census publications, 1980.

Also, while 87 percent of the occupied housing units in the United States had 1 or more

vehicles available, the percentage for Guam was 94 percent, partly because of the lack of public

transportation, and 45 percent in American Samoa, where public transportation is very good.

Housing units were worth more on Guam ($57,600 compared to $47,200 for the United

States). As noted earlier, only the value of the house itself was collected in the other areas in 1980.

The values of these houses in American Samoa and the Northern Mariana Islands were necessarily

lower. Rents on Guam were comparable to those in the U.S., but were lower in the other two areas.

In general, housing on Guam was similar to that of the U.S. as a whole, partly influenced by

the large military component on Guam. The other areas were less developed. Within the next two

years, housing data from the 1990 census for the U.S. and the Pacific Islands will be available to show

the current housing situation, and trends over the period.

Although 2.5 percent of the U.S. population lived in group quarters in 1980, almost double that

percentage lived in group quarters on Guam -- primarily military personnel and foreigners in barracks

(Table 3).

Table 3. Selected Demographic Characteristics: 1980

Characteristics	United States	Guam	American Samoa	Northern Marianas
Total population	226,545,805	105,979	32,297	16,780
Households	80,389,673	24,834	4,513	3,028
Persons per household	2.75	4.07	7.08	5.36
Percent in group quarters	2.5	4.7	1.0	3.3
Percent:				
Under 18 years	28.1	41.1	48.3	47.1
18 to 64 years	60.6	56.0	48.8	50.0
65 years and over	11.3	2.8	2.9	2.9
Median age	30.0	22.2	18.8	19.6
Mean age at Marriage (1976-1980)	(NA)	21.9	23.8	23.2
Percent:				
Males, now married, 15+	60.1	62.2	54.6	60.5
Females, now married, 15+	54.8	63.4	54.5	56.0
CEB per 1000 women 35-44 years	2639	3589	4884	5211
Total fertility rate, 1976-1980	(NA)	3.02	4.67	4.24
Age specific fertility rate:				
15 to 19 years	(NA)	66	42	103
20 to 24 years	(NA)	171	175	227
25 to 29 years	(NA)	164	254	208
30 to 34 years	(NA)	110	200	163
35 to 39 years	(NA)	64	143	86
40 to 44 years	(NA)	24	76	42
45 to 49 years	(NA)	6	44	17

from OCR

Source: U.S. Bureau of the Census publications, 1980.

The median age of the populations in the Pacific Islands areas was much younger than in the

United States. The U.S. had a median age of 30.0 years compared to 22.2 years on Guam, 19.6 in

the CNMI, and only 18.8 years in American Samoa. Also, 11 percent of the U.S.'s population was 65

years and over compared to less than 3 percent in the three Pacific areas. On the other hand, 28 percent of the U.S. population was less than 18 years old compared to 41 percent of Guam's population, 47 percent of the Northern Marianas' population and 48 percent of American Samoa's population.

The age at first marriage on Guam between 1976 and 1980 was 22 years compared to almost 24 years in American Samoa. The differences are also seen in the percentage married, with Guam's percentages being higher than those of American Samoa. Besides the earlier marriages on Guam, it is possible that military personnel are coming as married couples, and many immigrants, whether accompanied by their spouse or not, are married.

The average female 35 to 44 years old in the United States had 2.6 children at the time of the 1980 census. The average female on Guam in this age cohort had 3.6 children, about one child more, and the average in the Northern Mariana Islands was 5.2 children. The total fertility rates -- the average number of children a female has over her complete reproductive period -- were also high in these areas. The average female on Guam was having 3 children at the time of the census, compared to 4.2 in the Northern Mariana Islands, and 4.7 in American Samoa. Females in the Northern Mariana Islands were having babies at younger ages than those in the other areas, but Samoans continued to have babies into their later reproductive years.

About 6 percent of the United States population in 1980 was born outside the United States (Table 4). However, almost 48 percent of Guam's population was born off island, 42 percent of American Samoa's population, and 28 percent of the Northern Mariana Islands. By 1990, we expect those born in the area for each of these areas to be in the minority.

Table 4. Selected Social Characteristics: 1980

Characteristics	United States	Guam	American Samoa	Northern Marianas
Percent:				
Born outside this area...........	6.2	47.7	41.6	27.6
5 years and over:				
Different house in 1975......	44.5	61.3	33.9	45.2
Speak other language at home.	11.0	64.3	96.1	95.0
25 years old and over:				
High school graduates..........	66.5	65.6	42.1	44.7
Completed 4+ yrs. college......	16.2	17.5	7.6	11.3

Source: U.S. Bureau of the Census publications, 1980.

Both the U.S. census and the Pacific Islands' census questionnaires asked about residence 5 years before the census. This information gives short-term migration. About 44 percent of the U.S. population lived in the same house in 1975 as 1980. More than 61 percent of Guam's population moved during the period, partly because of military movements, but also because of greatly increased immigration during the period.

Only 11 percent of the population of the United States spoke a language other than English at home in 1980. More than 64 percent of Guam's population spoke another language at home, and 95 percent or more of the populations of American Samoa and the Northern Marianas spoke a language other than English. These large percentages showed both retaining the native languages as well as increasing numbers of immigrants speaking their languages at hme.

Guam's educational attainment was about the same as that of the United States. On the other hand, persons in American Samoa and the Northern Mariana Islands were much less likely to have finished high school, partially because many of the older people did not have access.

The labor force participation in Guam was higher than in the other areas or than the United States because of the effects of the military personnel (Table 5). The labor force participation was much lower than in the other areas, partly because in American Samoa a small reliance on subsistence agriculture and fishing continued as well as too few jobs commensurate with skills and education. In all areas, as in the United States, the percentages for female labor force participation were considerably lower than for males. Unemployment rates for 1980 meant very little, and for American Samoa, at least, had no value in 1980. The Census Bureau definition of unemployment does not consider subsistence activities.

Table 5. Economic Demographic Characteristics: 1980
```
------------------------------------------------------------------
                                    United           American Northern
Characteristics                     States    Guam      Samoa Marianas
------------------------------------------------------------------

16 years and over:
   Males in labor force..............    75.1    82.2     55.6     77.1
   Females in labor force............    49.9    49.2     35.5     47.6
   Unemployed, Civilian labor force..     6.5     4.9      2.4      2.4

Median hhld income in 1979 ($)......   16841   15752     9718     8955
Median family income in 1979 ($)....   19917   16203     9615     8809
Per capita income in 1979 ($).......    7298    4793     1866     2418
Persons below poverty (%)...........    12.4    16.3     60.1     59.3
Families below poverty (%)..........     9.6    13.8     58.3     53.2
------------------------------------------------------------------
```
Source: U.S. Bureau of the Census publications, 1980.

Guam's household income was about $1,000 less than the U.S. average, but that was still more than 50 percent higher than in American Samoa or the Northern Mariana Islands. Median family income was about the same in the areas as median household income. The per capita income on Guam was about 2/3rds that of the United States. The Northern Marianas per capita income was only 1/3rd that of the U.S., and American Samoa's was only 1/4, attesting to the smaller incomes and large families in these places.

CONCLUSIONS

This paper has discussed three topics: (1) the state of statistical work in the United States Pacific Islands present and former areas; (2) the 1990 Census of the Pacific Islands questionnaire and procedures; and, (3) a demographic, social, and economic analysis of the 1980 censuses of the Pacific Islands areas. After the 1990 census data are available, we will be able to see the effects of the massive migration occurring in all of these areas. All three areas are likely to have less than half of their populations having been born in the area. What this means in relation to the land and the new populations moving in should be a matter of some debate over the next decade and beyond.

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PERSON 3

Last name

_____

First name   **Middle initial**

_____

2. How is ... related to (Person 1)?
Mark (X) ONE box.
If Other relative of person 1 on page 5, mark (X) that box and print exact relationship, such as mother-in-law, grandparent, son-in-law, niece, cousin, and so on.

If a RELATIVE of Person 1:

1 ☐ Husband/wife   4 ☐ Brother/sister
2 ☐ Natural-born or   5 ☐ Father/mother
    adopted son/daughter   6 ☐ Grandchild
3 ☐ Stepson/stepdaughter   7 ☐ Other relative

If NOT RELATED to Person 1:

8 ☐ Roomer, boarder, or foster child
9 ☐ Housemate, roommate
10 ☐ Unmarried partner
11 ☐ Other nonrelative

3. Is ... male or female?   Mark (X) ONE box.
1 ☐ Male   2 ☐ Female

4. What is ...'s ethnic origin or race?
Print no more than two groups.

For example: Chamorro, Samoan, White, Black, Carolinian, Filipino, Japanese, Korean, Palauan, Tongan, and so on. ☐☐☐ ☐☐

5. Age and year of birth
a. How old is ...? (Age should be as of April 1, 1990.)
If unknown, say — Please give me your best estimate.
Print the age in the boxes.

☐☐☐ Age

b. In what year was ... born?
Print the year of birth in the boxes.
☐ 1 ☐☐☐ Year of birth

6. Is ... now married, widowed, divorced, separated, or has ... never been married?
Mark (X) ONE box.
1 ☐ Now married   4 ☐ Separated
2 ☐ Widowed   5 ☐ Never married
3 ☐ Divorced

7. Where was ... born?
Print the name of the island, U.S. State, or foreign country in the space below.

☐☐☐

8. If the answer to question 7 appears in one of the first two "Yes" categories listed below, mark (X) the appropriate "Yes" category. Otherwise, ask —
Is ... a CITIZEN or NATIONAL of the United States?
1 ☐ Yes, born in this area — Skip to 10
2 ☐ Yes, born in the United States or another U.S. Territory or Commonwealth
3 ☐ Yes, born elsewhere of U.S. parent or parents
4 ☐ Yes, U.S. citizen by naturalization
5 ☐ No, not a U.S. citizen or national (permanent residence)
6 ☐ No, not a U.S. citizen or national (temporary residence)

9. When did ... come to this area to stay? If entered the area more than once, ask — What is the latest year?
☐ 1 ☐☐☐ Year

10. At any time since February 1, 1990, has ... attended regular school or college? Include only pre-kindergarten, kindergarten, elementary school, and schooling which leads to a high school diploma or a college degree.
If "Yes," ask — Public or private?
1 ☐ No, has not attended since February 1
2 ☐ Yes, public school, public college
3 ☐ Yes, private school, private college

11a. How much school has ... COMPLETED?
Read categories if person is unsure. Mark (X) ONE box for the highest grade COMPLETED or degree RECEIVED. If currently enrolled, mark the previous grade attended or highest degree received.
30 ☐ No school completed
31 ☐ Pre-kindergarten
32 ☐ Kindergarten

Grades 1—11
1 ☐ 1st   4 ☐ 4th   7 ☐ 7th   10 ☐ 10th
2 ☐ 2nd   5 ☐ 5th   8 ☐ 8th   11 ☐ 11th
3 ☐ 3rd   6 ☐ 6th   9 ☐ 9th

12 ☐ 12th grade, NO DIPLOMA
13 ☐ HIGH SCHOOL GRADUATE - high school DIPLOMA or the equivalent (For example: GED)
14 ☐ Some college but no degree
15 ☐ Associate degree in college - Occupational program
16 ☐ Associate degree in college - Academic program
17 ☐ Bachelor's degree (For example: BA, AB, BS)
18 ☐ Master's degree (For example: MA, MS, MEng, MEd, MSW, MBA)
19 ☐ Professional school degree (For example: MD, DDS, DVM, LLB, JD)
20 ☐ Doctorate degree (For example: PhD, EdD)

b. Has ... completed the requirements for a vocational training program at a trade school, business school, hospital, some other kind of school for occupational training, or place of work? Do not include academic college courses.
If "Yes," ask — Was training received in this area?
1 ☐ No
2 ☐ Yes, in this area
3 ☐ Yes, not in this area

12a. Where was ...'s father born?
Print the name of the island, U.S. State, or foreign country in the space below.

☐☐☐

b. Where was ...'s mother born?
Print the name of the island, U.S. State, or foreign country in the space below.

☐☐☐

13. Is ... a dependent of an active-duty or retired member of the Armed Forces of the United States or of the full-time military Reserves or National Guard? "Active duty" does NOT include training for the military Reserves or National Guard.
1 ☐ Yes, dependent of active-duty member of the Armed Forces
2 ☐ Yes, dependent of retired member of the Armed Forces, or dependent of an active-duty or retired member of full-time National Guard or Armed Forces Reserve
3 ☐ No

14a. If the person was born after April 1, 1985, mark (X) box without asking 14a, and go to the next person.
Did ... live in this house or apartment 5 years ago (on April 1, 1985)?
1 ☐ Born after April 1, 1985 — Go to questions for the next person
2 ☐ Yes — Skip to 15a
3 ☐ No

b. What is the name of the island, U.S. State, or foreign country where ... lived 5 years ago?

☐☐☐
If outside this area, print the answer above and skip to 15a.

c. What is the name of the village where ... lived?

☐☐☐

15a. Does ... know how to read and write in any language?
1 ☐ Yes   2 ☐ No

b. Does ... speak a language other than English at home?
1 ☐ Yes   2 ☐ No — Skip to 16

c. What is this language?

☐☐☐
For example: Chamorro, Samoan, Carolinian

d. Does ... speak this language at home more frequently than English?
1 ☐ Yes, more frequently than English
2 ☐ Both equally often
3 ☐ No, less frequently than English
4 ☐ Does not speak English

16. INTERVIEWER CHECK ITEM — Mark (X) based on question 5.
1 ☐ Born before April 1, 1975 — Go to 17a
2 ☐ Born April 1, 1975 or later — Go to questions for the next person

17a. Has ... ever been on active-duty military service in the Armed Forces of the United States? "Active duty" does NOT include training for the military Reserves or National Guard.
1 ☐ Yes, now on active duty — Skip to 17c
2 ☐ Yes, on active duty in past, but not now — Skip to 17c
3 ☐ No

b. Has ... ever been in the United States military Reserves or National Guard?
1 ☐ Yes, now in Reserves or National Guard
2 ☐ Yes, in Reserves or National Guard in past, but not now   } Skip to 17e
3 ☐ No

c. Did ... serve on active duty during — Read each category and mark (X) each box for which the answer is "Yes."
1 ☐ September 1980 or later
2 ☐ May 1975 to August 1980
3 ☐ Vietnam era (August 1964—April 1975)
4 ☐ February 1955—July 1964
5 ☐ Korean conflict (June 1950—January 1955)
6 ☐ World War II (September 1940—July 1947)
7 ☐ World War I (April 1917—November 1918)
8 ☐ Any other time

d. In total, how many years of active-duty military service has ... had?
☐☐ Years

e. Is ... receiving military retirement, survivor, or disability benefits, or VA disability compensation?
1 ☐ Yes   2 ☐ No

18. Does ... have a physical, mental, or other health condition that has lasted for 6 or more months and which —
a. Limits the kind or amount of work ... can do at a job?
1 ☐ Yes   2 ☐ No

b. Prevents ... from working at a job?
1 ☐ Yes   2 ☐ No

19. Because of a health condition that has lasted for 6 or more months, does ... have any difficulty —
a. Going outside the home alone, for example, to shop or visit a doctor's office?
1 ☐ Yes   2 ☐ No

b. Taking care of his or her own personal needs, such as bathing, dressing, or getting around inside the home?
1 ☐ Yes   2 ☐ No

20. If this person is a female, ask —
How many babies has ... ever had, not counting stillbirths? Do not count stepchildren or children ... has adopted.
0 ☐ None   1 ☐ 1   6 ☐ 6   11 ☐ 11
         2 ☐ 2   7 ☐ 7   12 ☐ 12
         3 ☐ 3   8 ☐ 8   13 ☐ 13
         4 ☐ 4   9 ☐ 9   14 ☐ 14
         5 ☐ 5   10 ☐ 10   15 ☐ 15 or more

21a. Did ... work at any time LAST WEEK, either full time or part time? Work includes part-time work such as delivering papers, or helping without pay in a family business or farm; it also includes active duty in the Armed Forces. Work does NOT include own housework, school work, or volunteer work. Subsistence activity includes fishing, growing crops, etc., NOT primarily for commercial purposes.
Read each category and mark (X) the ONE box that applies.
1 ☐ Yes, worked full time or part time at a job or business AND did NO subsistence activity
2 ☐ Yes, worked full time or part time at a job or business AND did subsistence activity
3 ☐ Yes, did subsistence activity only
4 ☐ No (did not work OR did only own housework, school work, or volunteer work)   } Skip to 25

b. How many hours did ... work LAST WEEK at all jobs, excluding subsistence activity? Subtract any time off and add any overtime or extra hours worked.
☐☐ Hours

22. Where did ... usually work LAST WEEK?
Exclude subsistence activity. If ... worked at more than one location, ask —
Where did ... work most last week?
If outside the area (for example, another territory, commonwealth, or country), skip to 22b.

a. **What is the name of the village?** ⌐

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│                                      │
└─────────────────────────────────────┘
```
Skip to 23a.

b. **What is the name of the territory, commonwealth, U.S. State, or foreign country where ... worked?** ⌐

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┌─────────────────────────────┐  ┌──┬──┬──┐
│                             │  │  │  │  │
└─────────────────────────────┘  └──┴──┴──┘
                                 ┌──┬──┬──┐
                                 │  │  │  │
                                 └──┴──┴──┘
```

23a. What type of transportation did ... usually use to get to work LAST WEEK? *Exclude transportation to subsistence activity. If more than one method of transportation usually was used during the trip, mark (X) the box for the one used for most of the distance.*

1 ☐ Car, truck, or private van/bus
2 ☐ Public van/bus
3 ☐ Boat
4 ☐ Taxicab
5 ☐ Motorcycle
6 ☐ Bicycle
7 ☐ Walked
8 ☐ Worked at home — *Skip to 28*
9 ☐ Other method

Ask only if "car, truck, or private van/bus" is marked in 23a.

b. **How many people, including ..., usually rode to work together LAST WEEK?**

1 ☐ Drove alone   5 ☐ 5 people
2 ☐ 2 people   6 ☐ 6 people
3 ☐ 3 people   7 ☐ 7 to 9 people
4 ☐ 4 people   8 ☐ 10 or more people

24a. What time did ... usually leave home to go to work LAST WEEK? *"Usually" means on most days last week.*

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┌─────────┐   1 ☐ a.m.
│         │   2 ☐ p.m.
└─────────┘
```

b. **How many minutes did it usually take ... to get from home to work LAST WEEK?**

```
┌─────────┐
│         │  Minutes — Skip to 28
└─────────┘
```

25. Was ... on layoff from a job or business LAST WEEK?
If "No," ask — Was ... temporarily absent or on vacation from a job or business last week?

1 ☐ Yes, on layoff
2 ☐ Yes, on vacation, temporary illness, labor dispute, etc.
3 ☐ No

26a. Has ... been looking for work to earn money during the last 4 weeks?

1 ☐ Yes
2 ☐ No — Skip to 27

b. **Could ... have taken a job LAST WEEK if one had been offered?**
If "No," ask — For what reason?

1 ☐ No, already has a job
2 ☐ No, temporarily ill
3 ☐ No, other reasons (in school, etc.)
4 ☐ Yes, could have taken a job

27. When did ... last work at a job, business, or farm, even for a few days?

1 ☐ 1990 ⎫
2 ☐ 1989 ⎬ Go to 28
3 ☐ 1988 ⎪
4 ☐ 1985 to 1987 ⎭
5 ☐ 1980 to 1984 ⎫
6 ☐ 1979 or earlier ⎬ Skip to 32
7 ☐ Never worked; or did subsistence only ⎭

28-30. The following questions ask about the job worked last week. If ... had more than one job, describe the one ... worked the most hours. If ... didn't work, the questions refer to the most recent job or business since 1985.

28a. For whom did ... work?
If now on active duty in the Armed Forces or full-time military Reserves or National Guard, mark (X) this box ▬▶ 1 ☐ and print the branch of service. If not the Armed Forces, print the name of company, business, or other employer. ⌐

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                              │  │  │  │
                              └──┴──┴──┘
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b. **What kind of business or industry was this?**
Describe the activity at location where employed. ⌐

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┌─────────────────────────────────────┐
│                                     │
└─────────────────────────────────────┘
```
For example: hospital, fish cannery, retail bakery.

c. **Is this mainly manufacturing, wholesale trade, retail trade, or something else?**

1 ☐ Manufacturing
2 ☐ Wholesale trade
3 ☐ Retail trade
4 ☐ Other (agriculture, construction, service, government, etc.)

29a. What kind of work was ... doing? ⌐

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┌─────────────────────────────────────┐
│                                     │
└─────────────────────────────────────┘
```
For example: registered nurse, industrial machinery mechanic, cake icer.

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┌──┬──┬──┐
│  │  │  │
└──┴──┴──┘
```

b. **What were ...'s most important activities or duties?** ⌐

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┌─────────────────────────────────────┐
│                                     │
└─────────────────────────────────────┘
```
For example: patient care, repair machines in factory, icing cakes.

30. Was ... — Read list. Mark (X) ONE box.

1 ☐ Employee of a PRIVATE FOR PROFIT company or business or of an individual, for wages, salary, or commissions
2 ☐ Employee of a PRIVATE NOT-FOR-PROFIT, tax-exempt, or charitable organization
3 ☐ Local or territorial GOVERNMENT employee (territorial/commonwealth, etc.)
4 ☐ Federal GOVERNMENT employee
5 ☐ SELF-EMPLOYED in own NOT INCORPORATED business, professional practice, or farm
6 ☐ SELF-EMPLOYED in own INCORPORATED business, professional practice, or farm
7 ☐ Working WITHOUT PAY in family business or farm

31a. Last year (1989), did ... work, even for a few days, at a paid job or in a business or farm, excluding subsistence activity?

1 ☐ Yes
2 ☐ No — Skip to 32

b. **How many weeks did ... work in 1989, excluding subsistence activity?** *Count paid vacation, paid sick leave, and military service.*

```
┌─────────┐
│         │  Weeks
└─────────┘
```

c. **During the weeks WORKED in 1989, how many hours did ... usually work each week?**

```
┌─────────┐
│         │  Hours
└─────────┘
```

32. The following questions are about income received during 1989.
If an exact amount is not known, accept a best estimate. If net income in b, c, or question 33 was a loss, write "Loss" above the dollar amount.

a. **Did ... earn income from wages, salary, commissions, bonuses, or tips? Report amount before deductions for taxes, bonds, dues, or other items.**

1 ☐ Yes — How much from all jobs? ▬▶
2 ☐ No

```
┌─────────────────────┐
│ $            .00     │
└─────────────────────┘
Annual amount — Dollars
```

b. **Did ... earn any income from (his/her) own farm or nonfarm business, proprietorship, or partnership? Report net income after business expenses.**

1 ☐ Yes — How much? ▬▶
2 ☐ No

```
┌─────────────────────┐
│ $            .00     │
└─────────────────────┘
Annual amount — Dollars
```

c. **Did ... receive any interest, dividends, net rental or royalty income, or income from estates and trusts? Include even small amounts credited to an account.**

1 ☐ Yes — How much? ▬▶
2 ☐ No

```
┌─────────────────────┐
│ $            .00     │
└─────────────────────┘
Annual amount — Dollars
```

d. **Did ... receive any Social Security or Railroad Retirement payments? Include payments to retired workers, dependents, and to disabled workers.**

1 ☐ Yes — How much? ▬▶
2 ☐ No

```
┌─────────────────────┐
│ $            .00     │
└─────────────────────┘
Annual amount — Dollars
```

e. **Did ... receive any income from government programs for Supplemental Security Income (SSI), Aid to Families with Dependent Children (AFDC), or other public assistance or public welfare payments?**

1 ☐ Yes — How much? ▬▶
2 ☐ No

```
┌─────────────────────┐
│ $            .00     │
└─────────────────────┘
Annual amount — Dollars
```

f. **Did ... receive any income from retirement, survivor, or disability pensions? Include payments from companies, unions, Federal, State, and local governments, and the U.S. military. Do NOT include Social Security.**

1 ☐ Yes — How much? ▬▶
2 ☐ No

```
┌─────────────────────┐
│ $            .00     │
└─────────────────────┘
Annual amount — Dollars
```

g. **Did ... receive any remittances? Include money from relatives outside the household or in the military.**

1 ☐ Yes — How much? ▬▶
2 ☐ No

```
┌─────────────────────┐
│ $            .00     │
└─────────────────────┘
Annual amount — Dollars
```

h. **Did ... receive any income from Veterans' (VA) payments, unemployment compensation, child support, alimony, or any other regular source of income? Do NOT include lump-sum payments such as money from an inheritance or the sale of a home.**

1 ☐ Yes — How much? ▬▶
2 ☐ No

```
┌─────────────────────┐
│ $            .00     │
└─────────────────────┘
Annual amount — Dollars
```

33. *Do not ask this question if 32a through 32h are complete. Instead, sum these entries and enter the amount below.*

What was ...'s total income in 1989?

0 ☐ None   OR

```
┌─────────────────────┐
│ $            .00     │
└─────────────────────┘
Annual amount — Dollars
```

Please turn to the next page and ask the questions for Person 4 listed on line 4 of question 1a. If this is the last person listed in question 1a on page 1, go to page 19.

TH
THIRTEEN CENSUS CONFERENCE

HONOLULU, HAWAII - 10-14 DECEMBER, 1990

MRS VASEMACA LEWAI
BUREAU OF STATISTICS
P O BOX 2221
SUVA
FIJI

CONTENTS

DISSEMINATION OF THE 1986 CENSUS DATA

PART I

INTRODUCTION

A Census is not just a mere count of heads. However, modern day definition of census defines it as the process of collecting, processing and disseminating of numerous information about the characteristics of the population in a defined country at a particular point of time.

HISTORY OF CENSUS IN FIJI

Fiji has a long history of Census taking beginning in 1881. Thence,censuses were held every ten years until 1921. A lapse of fifteen years went by until 1936 when the next census was taken. From then on census resumed in deccenial pattern. Fiji's last census was conducted in 1986. A table on Population by Ethnic origin and sex at successive censuses beginning in 1881-1986 is attached at the appendix.

1986 CENSUS OF POPULATION

CENSUS DAY

Census Day was Sunday night 31st of August 1986. It was a defacto census. The choice of the date was directed and centered on a specified time to facilitate the analysis of the demographic, social and economic characteristics of the past and future trends.

OBJECTIVES

After consultation with the potential users, the objective of the census was defined as:-

    (a)   to determine the number and distribution of the population;

    (b)   to determine the rates of fertility and mortality;

    (c)   to obtain information on the labour force and economic activity and;

    (d)   to obtain basic information on housing and services.

PILOT CENSUS

A Pilot Census was carried out with reference to Monday 24 February where 6,846 persons were enumerated in 1,275 households. Its purpose was to test draft questionnnaire and also provide experience which offered a base for planning the enumeration. The pilot survey adequately demonstrated the operational advantage of a single round procedure. Double round visit was then abandoned and single round adapted which was less expensive in terms of manpower and time.

OPERATION

The entire operation of the Census was controlled from the Census Office under direction of the Census Commissioner.
Active census preparation began in January 1986.

FRAME

There was no time for elaborate mapping. Fortunately the 1976 frame was basically sound and the rural population relatively stable in location. This allowed direct comparison with the 1976 level of enumeration (100 households). Field work was concentrated on urban and peri-urban areas where there had been rapid development. In rural areas the scale 1:50,000 topographical base maps from 1976 was updated to show recent physical development mainly rural roads.
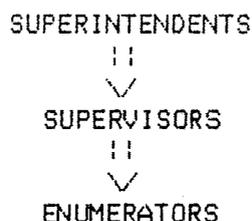
QUESTIONNAIRE AND INSTRUCTIONAL MANUALS

Questionnaires and instructional manuals were critically examined and improved in the light of experience from the Pilot Census.

FIELD OPERATION

As in the past censuses, District Officers were once again appointed by the Census Commissioner to be Census Superintendents.

FIELD ORGANISATION CHART

SUPERINTENDENTS
! !
\/
SUPERVISORS
! !
\/
ENUMERATORS

ENUMERATION

The period 1-6 September was allowed for enumeration which was completed within the time in all except few areas where field checking went on for an additional couple of days. By 26 September, all field records were received at the census office.

CODING

Coding started on 20 October 1986 and by 29 January 1987 all records were coded. 25% of them were coded at bonus rates. An incentive-bonus was introduced at the coding stage where coders received an extra four cents (4c) for every person/records beyond their weekly quota (1,250 persons).

DATA ENTRY

Six computer terminals were installed at the Census Office where data entry was performed. With six terminals, five key operators and one Supervisor, commenced data entry on 14/11/86 on a eight hourly shift per day from Monday to Friday. By 19/2/87 all census records were entered on the main frame two (2) weeks ahead of schedule.

DISSEMINATION OF CENSUS DATA

History of Census taking in Fiji and many other countries focussed much attention and resources towards the pre-census and actual enumeration phases. While this is vital and necessary post census communication activities have been relatively neglected.

The importance of disseminating census information served to promote greater utilisation of census data and secondly it increases awareness of the population situation within a country. Furthermore, a national census is a very cumbersome and enormous operation in terms of manpower and money. Therefore, data distribution to users should be systematically prepared to maximize its utilisation.

The 1976 Census of Population was the first of its kind where attempts were made to improve the system of disseminating census data. Prior to this, census information was only available in one single condense report consisting of all information from the administrative to the analytical reports.

In 1976 the following volumes and papers were published:-

    (1)   Volume 1 - Administrative Report and Tables

    (2)   Volume 2 - Demographic Characteristics

    (3)   Volume 3 - Social and Economic Characteristics

    (4)   Volume 1, Part 4 - Maps

    (5)   Two Occassional Papers.

DISSEMINATION OF 1986 CENSUS DATA

The dissemination of the 1986 Census data was more improved andd elaborate than any of the previous censuses. During the planning stage, the potential data users or target groups were identified and their data needs assessed.

Census Circular No. 1 of 1986 was sent to potential users who were mostly government departments and statutory organisations inviting submissions on the specific topics they need collected from the census. As usual, more submissions were received than could be accomodated. As a result of these submissions, Fiji, for the first time considered adding questions on Housing as well as some social amenities. However, this housing questionnaire did not encompass the United Nations recommended questions but only questions considered relevant to the present need of the country.

DISSEMINATION OF DATA

The early release of the result in stages was proposed to be the best in disseminating census data. It was then finally approved to release the data in six volumes each with a specified topic:-

(i)   Volume 1 - General Tables and Administrative Report

(ii)   Volume 2 - Small Area Data and Maps

(iii)   Volume 3 - Economic Characteristics

(iv)   Volume 4 - Fertility and Mortality

(v)   Volume 5 - Internal Migration

(vi)   Volume 6 - Housing and Services.

Prior to the release of Volume 1, three quick results were released as Statistical news. This was done due to the demand for timely release of information and it was considered important to publish basic data as soon as it became available. The Statistical News items were as follows:-

(i)   No. 27/86 dated 06/10/86 - 1986 Census of Population
                                  Provisional Data

(ii)   No. 20/87 dated 24/07/87 - 1986 Census of Population Final
                                  Results - Part 1

(iii)   No. 27/87 dated 25/09/87 - 1986 Census of Population Final
                                  Results - Part 2.

Before the release of item (ii) above, a briefing was convened at the Census Office by the Census Commissioner. Those invited were potential data users and the purpose of the briefing was to inform them of the type of information available from the census. A list of all census tables were distributed to those present. Detailed information not available in the release was available at the Census Office. Photocopy facilities were also offered at the following charges:-

(i)   A3 - 10c per copy
(ii)   A4 - 5c per copy.

STATISTICAL NEWS NO. 27 - 1986

Statistical News No. 27 of 6 October 1986, released the Census provisional results based on the head count from the census schedules received at the Census Office. This was a very brief release consisting of the total population and distribution of the population by Ethnic origin, province and urban and rural.

STATISTICAL NEWS NO. 20 - 1987

On 24 July 1987, Statistical News No. 20 of 1987 was released with the final results of the census thus revising the provisional figures of 6 October 1986. The purpose of this release was to inform the public that the census final results were available and would soon be published. However, summary tables of the final figures were released for general information.

This was a forty one pages release divided into two parts. Part I consisted of a brief write up and Part II was the statistical tables. Both Parts I and II covered the following topics:-

(1)   The Size and Growth of Population
(2)   Racial and Age-Sex Composition of Population
(3)   Spatial Distribution of Population
(4)   Household and Family
(5)   Migration
(6).   Religion
(7)   Economic Activity
(8)   Fertility and
(9)   Housing and Services

STATISTICAL NEWS NO. 27 - 1987

The next Statistical News No. 27 of 25 September 1987, was infact part of the previous issue published earlier. This issue intended to complete the remaining information on Household and Family, and Housing and Services which were partly covered previously.

VOLUME 1

On 30 December 1987, Volume 1 of the 1986 Census of Population was published. This first volume contains general tables and the administrative report. It has 21 tables of general interest and their titles are listed in the appendices. The remaining 5 volumes carry information of a more specified nature.

VOLUME 2

This second volume of the census contains small area data on Fijian villages, settlements, and enumeration areas. Included in this volume are Population Density and Rural Enumeration area maps. It was published in August 1989 almost three years after the census day of 31 August 1986.

VOLUME 3

This third volume of the census results was published in August 1988 and it contains 14 tables on economic characteristics of the population. As in previous censuses the information on economic characteristics was derived by asking all persons who were over the age of 15 years to determine their type of activity the week before the census.

VOLUME 4

This fourth volume of the census contains 10 tables on fertility and mortality and it was published in February 1988. For the first time, information on children ever born had been indirectly derived from three questions (18-20). Previously this information was derived by directly asking the women on how many children they have had in their lifetime. By asking these questions there is a better chance of including all the children, especially those who had left the household that are most likely to be missed. Also for the first time information on the last live birth was gathered.

VOLUME 5

This fifth volume of the census was published in May 1988 and it contains 9 tables on internal migration. Questions on internal migration are questions 10 and 11. While question 10 was intended to gather information on lifetime migration, question 11 on the other hand was to gather information on current migration. The 1986 version of the migration questions was an improvement over the previous census because additional questions were asked to determine whether the person was born or residing in an urban or rural area. This, of course would yield important information on rural to urban migration and vice versa.

VOLUME 6

The sixth and final volume of the census contains 22 tables on housing and services and was published in February 1988. The 1986 census marks a milestone in the history of census taking in Fiji because for the first time ever, information on housing and services was also gathered. The collection of extra information did not pose any problems in the field and the public co-operated well with the enumerators.

ANALYTICAL REPORT

While the work on the Analytical Report was under way, two quick releases were published summarising analytical findings.

STATISTICAL NEWS NO. 24 - 1988

Statistical News No. 24 of 2 September 1988, published provisional figures of some of the demographic characteristics already analysed. The following topics were released:-

    (i)   Infant Mortality
    (ii) Expectancy of Life at Birth
   (iii) Fertility Level

STATISTICAL NEWS NO. 7 - 1989

Statistical News No. 7 of 31 March 1989, released information on the Summary of the Report on the Analysis of the 1986 Census of Population.
All Statistical News and Publications when published were sent out to those who are on our mailing list. The remainder are then sold at Government Printer to those who wish to buy them.

NEXT CENSUS OF POPULATION 1996
1.   Improving the EA Maps.

    (a) Delienation
    (b) Better description of boundaries

2.   Improvement of data processing towards better Dissemination and for reliable Database.

3.   Operation - No likely change from previous Census of Population.

POPULATION BY ETHNIC ORIGIN AND SEX AT SUCCESSIVE CENSUSES : 1881–1986

CENSUS DATE

ETHNIC ORIGIN		1881 4 APR	1891 5 APR	1901 31 MAR	1911 2 APR	1921 24 APR	1936 26 APR	1946 2 OCT	1956 26 SEP	1966 12 SEP	1976 13 SEP	1986 31 AUG
Chinese*	Male	+	+	+	276	845	1,476	2,105	2,624	2,910	2,503	2,546
	Female	+	+	+	29	65	275	769	1,531	2,239	2,149	2,238
	Total	+	+	+	305	918	1,751	2,874	4,155	5,149	4,652	4,784
European	Male	1,879	1,273	1,531	2,403	2,297	2,263	2,467	3,374	3,427	2,605	2,240
	Female	792	763	928	1,304	1,581	1,765	2,127	3,028	3,163	2,324	1,956
	Total	2,671	2,036	2,459	3,707	3,878	4,028	4,594	6,402	6,590	4,929	4,196
Fijian	Male	68,899	56,445	50,357	46,118	44,022	49,869	59,862	74,989	102,479	131,413	167,256
	Female	53,849	49,355	44,040	40,984	40,453	47,782	58,208	73,145	99,697	128,519	162,049
	Total	114,748	105,800	94,397	87,096	84,475	97,651	118,070	148,134	202,176	259,932	329,305
Indian	Male	388	4,998	11,353	26,073	37,015	48,246	64,988	88,359	122,632	147,194	175,829
	Female	200	2,478	5,752	14,213	23,619	36,756	55,426	81,044	118,328	145,702	172,875
	Total	588	7,468	17,105	40,286	60,634	85,002	120,414	169,403	240,960	292,896	348,704
Part-European	Male	387	529	759	1,217	1,454	2,325	3,195	4,008	4,951	5,358	5,396
	Female	384	547	757	1,184	1,327	2,249	2,947	3,802	4,736	4,918	4,901
	Total	771	1,076	1,516	2,401	2,781	4,574	6,142	7,810	9,687	10,276	10,297
Rotuman	Male	1,126	1,056	1,036	1,843	1,129	1,413	1,696	2,232	2,939	3,666	4,387
	Female	1,326	1,163	1,194	1,133	1,186	1,483	1,617	2,190	2,858	3,625	4,265
	Total	2,452	2,219	2,238	2,176	2,235	2,896	3,313	4,422	5,797	7,291	8,652
Other Pacific Islanders	Male	5,629	1,923	1,584	2,429	1,271	1,470	2,145	2,839	3,207	3,474	4,499
	Female	471	344	366	329	293	883	1,572	2,481	2,888	3,348	4,128
	Total	6,100	2,267	1,950	2,758	1,564	2,353	3,717	5,320	6,095	6,822	8,627
All Others	Male	93	143	254	457	431	132	273	50	202	737	415
	Female	63	171	213	355	358	72	241	41	71	533	395
	Total	156	314	467	812	789	204	514	91	273	1,278	810
Total	Male	78,401	66,367	66,874	80,808	88,464	107,194	136,731	178,475	242,747	296,958	362,568
	Female	57,885	54,813	53,250	59,533	68,802	91,185	122,907	167,262	233,980	291,118	352,807
	Total	127,486	121,188	120,124	139,541	157,266	198,379	259,638	345,737	476,727	588,868	715,375

* Includes Part-Chinese in 1946, 1956, 1966, 1976 and 1986

+ Included with 'All Others'

1980 POPULATION CENSUS
31 AUGUST

locality | household number

village locality settlement | household number

		Person 1	Person 2	Person 3	Person 4	Person 5	Person 6	Person 7	Person 8	Person 9	Person 10
FOR ALL PERSONS											
1 NAME	all who stayed on census night										
2 RELATIONSHIP	to head of household										
3 SEX	M for males, F for females										
4 DATE OF BIRTH	if date unknown estimate year	Day Month Year	Day Month Year	Day Month Year	Day Month Year	Day Month Year	Day Month Year	Day Month Year	Day Month Year	Day Month Year	Day Month Year
5 ETHNIC GROUP	Chinese, part-Chinese, European, Fijian, Indian, Rotuman, Tongan, etc.										
6 MARITAL STATUS	never married, married, widowed, divorced or separated										
7 REAL FATHER	alive or dead										
8 REAL MOTHER	alive or dead, person number if present										
9 RELIGION	exact denomination or sect										
10 PLACE OF BIRTH	if in hospital, where mother lived. province, country if outside Fiji. town, if urban area; village or settlement if rural										
11 WHERE LIVING IN 1981	province, country if outside Fiji; town, if urban area; village or settlement if rural										
12 SCHOOL ATTENDANCE	attending school, left school, never been										
13 EDUCATIONAL ATTAINMENT	highest level attained										
FOR ALL PERSONS BORN IN 1971 OR BEFORE											
14 TYPE OF ACTIVITY LAST WEEK	what did person do last week? cash work, other work. If no work, what was the reason? looking for work, not looking, housewife, student, pensioner, too old, disabled etc.										
15 OCCUPATION	what is person's occupation? what kind of work does person do?										
16 INDUSTRY	who does person work for? department if government or large company. If self employed, what is person's trade or business?										
17 EMPLOYMENT STATUS	how is person paid? wage, salary, by sale or job done, unpaid										

FOR ALL WOMEN BORN IN 1971 OR BEFORE

		Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
18 HOW MANY OF THE CHILDREN THIS WOMAN HAS BORNE ALIVE WERE HERE ON CENSUS NIGHT?	If none, 0																		
19 HOW MANY WERE ELSEWHERE?	If none, 0																		
20 HOW MANY HAVE DIED?	If none, 0																		
21 WHEN WAS THE LAST CHILD BORN?	Day Month Year																		
22 IS THE CHILD STILL ALIVE?	yes or no																		

HOUSEHOLD AND HOUSING

tick appropriate left hand box

1 TYPE OF LIVING QUARTERS

Does this household live in

an independent dwelling	1
a building housing two or more households	2
a hotel or lodging house	3
other, specify	4

2 CONSTRUCTION OF OUTER WALLS

Is the building constructed with

walls of concrete, brick or cement	1
wooden walls	2
permanent walls of tin or corrugated iron	3
walls of traditional bure materials	4
walls of makeshift or improvised materials	5
walls of other materials, specify	6

3 NUMBER OF ROOMS

How many rooms are there for this household

4 WATER SUPPLY

Is the household's water

metered	1
from a communal standpipe	2
rooftank	3
borehole	4
well	5
river or creek	6
other, specify	7

Does the household's water supply dry up

never	1
sometimes	2
every year	3

5 ELECTRICITY

Does the household have electricity

yes	8
no	9

If yes, by which supply

FEA	1
FSC	2
Vatukoula	3
village power plant	4
PWD	5
own plant	6
other, specify	7

6 LIGHTING

What does the household mainly use for lighting

electricity	1
kerosene lamp	2
benzine lamp	3
solar power unit	4
other, specify	5

7 COOKING FUEL

What fuel does the household mainly use for cooking

wood	1
kerosene	2
LPG	3
electricity	4
other, specify	5

8 TOILET FACILITIES

Does the household have

flush toilet for exclusive use	1
water sealed privy for exclusive use	2
toilet or privy shared with others	3
pit latrine	4
other, specify	5
none	6

9 TENURE

Does this household

own these living quarters	1
rent them from a private landlord	2
rent them from the Housing Authority	3
occupy government or institutional housing	4
occupy housing by leave of the employer	5
squatter	6
occupy living quarters in some other way, specify	7

APPENDIX III - LIST OF TABLES FOR VOLUME 1

APPENDIX IV - LIST OF TABLES AND MAPS FOR VOLUME 2

TABLES

1. Population by Locality, Ethnic Origin and by Number of Households

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MAPS

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Map 2	Viti Levu	1986 Population Census Enumeration Area Boundaries
Map 3	Vanua Levu	1986 Population Census Enumeration Area Boundaries
Map 4	Yasawa	1986 Population Census Enumeration Area Boundaries
Map 5	Lomaiviti	1986 Population Census Enumeration Area Boundaries
Map 6	Kadavu	1986 Population Census Enumeration Area Boundaries
Map 7	Lau	1986 Population Census Enumeration Area Boundaries
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Map 11	Yasawa	Population Distribution of Fijians and Indians, 1986
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Map 13	Kadavu	Population Distribution of Fijians and Indians, 1986
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TABLES

1. Population Aged Fifteen Years and Over by Economic Activity, Urban and Rural, Ethnic Origin, sex and Age

2. Population Aged Fifteen Years and Over by Economic Activity, Martial Status, Ethnic Origin and Age

3. Economically Active Population by Industry, Occupation and Sex

4. Economically Active Population by Occupation, Urban and Rural, Ethnic Origin, Age and Sex

5. Economically Active Population by Industry, Urban and Rural, Ethnic Origin, Age and Sex

6. Economically Active Population by Employment Status, Industry, Urban and Rural, Ethnic Origin and Sex

7. Economically Active Population by Education, Industry, Urban and Rural, Ethnic Origin and Sex

8. Economically Active Population by Employment Status, Occupation, Urban and Rural, Ethnic Origin and Sex

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10. Population Unemployed and Those Not Seeking Work by Education, Rural and Urban, Ethnic Origin, Sex and Age

11. Economically Active Women by Occupation, Martial Status, Ethnic Origin and Age

12. Economically Active Women by Employment Status, Martial Status and Age

13. Population Unemployed and Not Seeking Work by Place of Enumeration, Place of Birth, Ethnic Origin, Sex and Age

14. Population Unemployed and Not Seeking Work by Place of Enumeration, Place of Residence in 1981, Ethnic Origin, Sex and Age

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<u>TABLES</u>

1. Women Aged Fifteen Years and Over by Age, Ethnic Origin and Number and Sex of Children Born Alive

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3. Women Aged Fifteen Years and Over by Age, Ethnic Origin, Number of Children Born Alive and Number of Children Dead

4. Women Aged Fifteen Years and Over Who Bore a Child in the Twelve Months September 1985 - August 1986 by Age, Ethnic Origin, Number of Children Ever Borne and Survival of the Child

5. Women Aged 15-49 Years Who Bore a Chlid inthe Twelve Months, September 1985 - August 1986 by Age, Ethnic Origin, Rural and Urban

6. Women Aged Fifteen Years and Over Who Bore a Child in the Twelve Months September 1984 - August 1985 by Age, Ethnic Origin, Number of Children Ever Borne and Survival of the Child

7. Women Aged Fifteen Years and Over with Date of Last Live Birth 1981-1986 by Age, Ethnic Origin, Year of the Birth and Survival of the Child

8. Population by Survival of Fathers, Ethnic Origin, Sex and Age

9. Population by Survival of Mothers, Ethnic Origin, Sex and Sex

10. Population Less Than Sixteen Years of Age whose Mother is in the Same Household by Single Years of Age, Ethnic Origin and Age of Mother

APPENDIX VII - LIST OF TABLES FOR VOLUME 5

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1. Population by Country of Birth, Ethnic Origin, Sex and Age

2. Population by Province of Enumeration, Province of Birth, Ethnic Origin, Sex and Age

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5. Population Aged Five Years and Over by Place of Enumeration, Place of Residence in 1981, Ethnic Origin, Sex and Age

6. Population Aged Five Years and Over by Province of Residence in 1981, Province of Birth, Ethnic Origin, Sex and Age

7. Population Aged Five Years and Over by Place of Residence in 1981, Place of Birth, Ethnic Origin, Sex and Age

8. Population Aged Five Years and Over vy Coincidence of Province of Birth, Province of Residence in 1981 and Province of Enumeration and Ethnic Origin, Sex and Age

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