



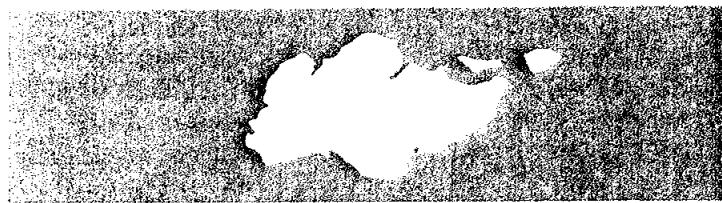
## Asian and Pacific CENSUS FORUM

### Early Results Reported from 1980 Round of Censuses

Many countries in the Asian and Pacific region held censuses in 1980, and more are scheduled for 1981. Results are beginning to come in—some in the form of final counts, others still as preliminary results or field count summaries. Over the next year or so we can expect new census data to be released at a furious rate, as more and more national statistical agencies take advantage of computer speed to meet deadlines. Early release of results means that a country's census isn't obsolete even before the tables are published, and it permits timely response to demographic changes.

This issue of the *Census Forum* summarizes results that have been received so far. The countries surveyed here include Malaysia, Singapore, the United States, Japan, Indonesia, the Republic of Korea, and Taiwan. Remarkably, some countries reported results only a month or two after field enumeration was completed. Thanks are due to *Census Forum* correspondents in many countries who arranged for results and preliminary reports to reach the East-West Population Institute almost as soon as they were available.

#### SINGAPORE



Singapore's eleventh census was held Tuesday, 24 June 1980, and results are being issued by the Department of Statistics in a series of nine releases. The total population of Singapore on Census Day was 2,413,945, an increase of 16.4 percent since the 1970 Census, or an average compound rate of 1.5 percent per year. The proportion of persons under 15 years of age declined from 38.8 percent in 1970 to 27.1 percent in 1980, re-

flecting, says the Department, the success of Singapore's family planning program. Consequently, the proportion of adults 15 to 59 years old increased from 55.5 percent in 1970 to 65.7 percent, and the percentage of married persons in this relatively older population went from 32.8 percent to 38 percent.

Singapore's literacy rate for persons aged 10 and over improved substantially during the intercensal period, from 72.2 percent to 84 percent. More significantly, says the Statistics Department release, the percentage of persons literate in two or more official languages more than doubled between 1970 and 1980—from 13.8 percent to 31.5 percent. The success of Singapore's education policy is credited with the substantial increase in literacy.

The sex ratio for the population as a whole was 104.2 (1,231,760 males and 1,182,185 females). Of the three major ethnic groups, the Chinese and Malays displayed fairly balanced sex ratios, 101.5 and 107.2 respectively; the Indians' less-balanced ratio, 132.3, reflects the residual effect of past migration.

The 1980 Census recorded the highest proportion of persons born in Singapore ever found in a census there, suggesting that Singapore is moving from the migrant society it was in earlier decades to a progressively settled population. In 1921 only 29 percent of Singapore's residents had been born there, but the figure has increased steadily, and the 1980 Census reported that 78 percent of the population was Singapore-born. This trend is also evident in proportions by age groups. Among persons 60 and over (that is, those born in 1920 and earlier), only 25 percent were born in Singapore. Seventy-seven percent of the middle group (those aged 15 to 59) listed Singapore as their birthplace, and a full 95 percent of those under 15 were born in Singapore. About 80 percent of the people who first arrived in Singapore before the Second World War were born in China, Hong Kong, and Taiwan. This pattern changed in the 1950s and 1960s, when arrivals from Malaysia predominated as a result of the relatively free movement of people between Malaysia and Singapore. Though still dominated by Malaysians in the 1970s, the stream of foreign-born arrivals was more di-

versified, reflecting Singapore's increasing international role and the inflow of foreign investment, technology, and labor.

Singapore collected 25 items of information from individuals in the Census, 16 from the entire population and the remaining nine from a 20 percent sample. The topics asked only of the sample were workplace, usual mode of transport to workplace and school, location of school, income from work, language or dialect used at home, religion, year of first marriage, and number of children born alive. The Department of Statistics plans releases covering most of these topics; following the nine releases there will be a series of self-contained monographs by specialists in the fields of demographic and socioeconomic subjects.

## INDONESIA



Indonesia's 1980 Census, held in September-October 1980, produced results that surprised many population watchers, both inside and outside Indonesia, and created something of an uproar over the size of the national growth rate. An article about the Census in a recent (24 January 1981) issue of *Tempo*, Indonesia's weekly newsmagazine, was translated for the *Census Forum* by Ms. Virginia Crockett, EWPI Degree Participant and student of Indonesia's population.

The Census results are being called the "Ji-Sam-Su Surprise," according to the article. With the Indonesian fondness for coining double entendres, notes Ms. Crockett, it was probably inevitable that the new national growth rate of 2.34 percent, higher than expected by most, would be dubbed "Ji-Sam-Su" after a popular brand of clove cigarettes whose Chinese name means "two-three-four."

## IN THIS ISSUE

The data harvest from the 1980 round of censuses is beginning to come in, and results are being released promptly, many of them being published only a few months after the census enumeration. Census information reported in this issue comes from Singapore, Indonesia, the Republic of Korea, Malaysia, Japan, Taiwan, and the United States. The numbers begin on page 1.

A technical note by Robert Retherford and Lee-Jay Cho describes decomposition of the change in Korea's total fertility rate between 1960 and 1975. Page 5.

Alice Harris has been reading again, and her selections include the thirtieth anniversary *United Nations Demographic Yearbook*, a U.S. Census textbook, and results from the 1979 Census of Vanuatu (you may remember it as the New Hebrides). Page 11.

Indonesia's total population now stands at 147,383,075—73,230,745 males and 74,152,330 females. These figures are subject to revision when the Central Bureau of Statistics (CBS) completes its postcensus evaluation survey. About 23.2 million persons have been added to the population during the nine-year period since the last census (held in September 1971). The earlier intercensal period (1961—71) showed an annual growth rate of 2.08 percent compared with the current 2.34 percent.

The *Tempo* article notes that the growth rate has implications for many Indonesian agencies. Bulog, the body responsible for keeping track of the national food situation, had estimated needs on the basis of a population of under 140 million. The census figure announced means that the country's food needs will be considerably higher than expected. It's the same problem for the education planners. At the Department of Education and Culture, Minister Daoed Joesoef immediately instructed the Data Research Section to collect data on the current supplies of teachers, equipment, and school buildings. Planning for educational facilities had been based on rather low estimates.

A commonly used estimate was 1.8 percent, a figure cited as evidence of the success of efforts to decelerate Indonesia's growth rate. According to *Tempo*, the World Bank is said to have used this figure to evaluate Indonesia's capacity to repay loans; it may have to revise its calculations now that the Census results are in.

Several theories have been offered as explanations of why the growth rate is still so high. Some claim that the family planning program has failed and that the National Family Planning Coordinating Board, known as BKKBN, had painted an overly optimistic picture of its successes. Dr. Haryono Suyono, BKKBN Deputy, argues that the high growth rate occurred in the early years of the intercensal period and does not reflect the progress made during the last four years. Moreover, he says, the family planning program has clearly been able to depress birth rates in Java and Bali, areas targeted for intensive program activity, and he is hopeful that the target of reducing fertility in Java-Bali by 50 percent by 1990 will be achieved.

According to Dr. Rudi Hendrawidjaja of BKKBN, the growth rate reflects Indonesia's falling death rate more than any failure in the family planning program. In other words, success in the national family planning program was overcome by the success of the national health program. The 1980 birth and death rates were 3.59 percent and 1.25 percent respectively, compared with the 1971 rates of 3.95 percent and 1.87 percent. Thus, says Dr. Rudi, the birth rate has actually been lowered from 39 per thousand to 36 per thousand.

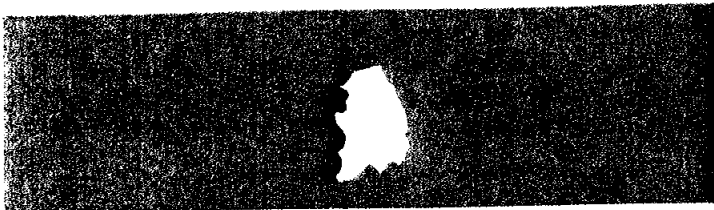
In addition to the "Ji-Sam-Su Surprise," the 1980 Census revealed some interesting population facts. The province of Lampung has the highest provincial annual growth rate, 5.82 percent, much higher than Jakarta's 3.99 percent. East Kalimantan is second with a growth rate of 5.8 percent. Java, with only 6.6 percent of Indonesia's territory, is burdened with 61.9 percent of the population, or about 91.3 million persons.

How accurate are the data collected by the Central Bureau of Statistics? According to CBS calculations, the undercount

in last year's Census was much smaller than the 4 percent estimated for the 1971 Census. *Tempo* notes that communications have improved greatly since 1971. In fact, some consider the results of this census to be "better than the U.S. Census."

New data produced by the 1980 Census were the size of Irian Jaya's population (over 1 million), counted for the first time in this Census, and of the twenty-seventh province, East Timor, which turned out to have only 552,954 inhabitants. Eagerly awaited are the results of the 5 percent sample census, which was administered to about 7.5 million people and consisted of a series of detailed questions ranging from income to contraceptive use. It is expected that these data will be available by mid 1981.

#### REPUBLIC OF KOREA



Korea's Population Census was held 1 October 1980, its twelfth census since 1925. The Population Census Decree stipulates that a full-scale census be taken in years ending in zero and a simplified census be held in years ending in five. In recent years, however, the demand for data has led to ever expanding quinquennial censuses, so that simplified censuses are now scarcely distinguishable from full censuses.

Preliminary figures from the 1980 Census were provided by Mr. Young Kwon Kim, Director of the Population Statistics Division of Korea's National Bureau of Statistics. The totals show a 1980 population of 37,448,836, of whom 18,764,130 are male and 18,684,706 are female. The 1975 Census counted 34,706,620 persons, putting Korea's growth rate during the five-year period at 7.9 percent. The sex ratio was 101.1 in 1975, but the 1980 figures show two sex ratios, one (100.4) for the population actually censused and the other (101.2) using figures that include Korean workers abroad who were not counted in the Census.

The size of a household has decreased during the last five years. The 1975 Census reported an average of 5.2 persons per household; the latest figures put the number of households at 7,969,590 for an average of 4.7 persons per household. The largest city by far in the Republic of Korea is Seoul; its 1980 population was 8,366,756, an increase of nearly a million and a half inhabitants since 1975. Other cities with more than a million persons are Busan (3,160,276), Daegu (1,607,458), and Incheon (1,084,730).

Only basic demographic characteristics (age, relationship to head of household, sex, marital status, educational attainment, and school attendance) were collected from the entire population. Other information was asked of a sample. Among the sample questions were place of birth, residence one year and five years ago, working status, occupation, industry, age at first marriage, and children ever born. Sample questions used for the first time in 1980 were location of respondent's office or school, major field of study, means of transportation, and disabilities or handicaps. A few items on the 1975 sample



Mr. Young Kwon Kim of Korea's National Bureau of Statistics was a fellow at EWPI.

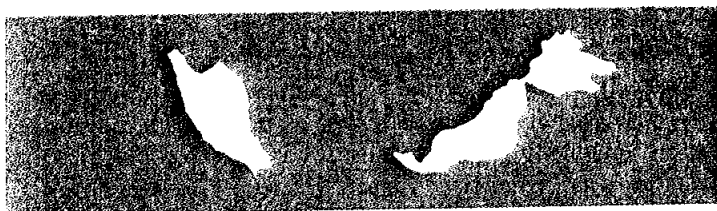
questionnaire—for example, household income and type of establishment—were dropped from last year's Census. Questions on the household (number of rooms occupied, fuel used, appliances owned) and the housing unit (construction material, total floor space, age of building, and so forth) were also asked of a sample of the population.

The 1975 Census used a 5 percent sample, but the size of the sample was increased in 1980 to 20 percent with varying sampling fractions by region. The main reason given for enlarging the sample size was the need for economic as well as demographic data for smaller areas.

The preliminary population count was based on the summary sheets prepared by enumerators and reviewed by each provincial office. To provide rapid release of information from the Census, an advance sample tabulation is being prepared and is expected to be available by the end of April. Complete-count information will be released by the end of 1981, and tabulations will be published in March 1982.

In earlier censuses, hundreds of temporary staff were recruited for data processing, particularly for keypunching. Only after they gained experience was their performance satisfactory. To avoid this problem, the National Bureau of Statistics is contracting with private business data centers to carry out data input for the 1980 Census. Editing programs written in IBM Assembler Language that were developed for the 1975 Census will again be used in census data processing.

#### MALAYSIA



Malaysia's second nationwide Population and Housing Census was conducted during May and June 1980, with Census Night set at midnight 10 June. Preliminary results were released in October, and the de facto population was found to be 13,435,588. Census Commissioner and Chief Statistician Khoo Teik Huat sent a copy of *Preliminary Field Count Summary*, a report in English and Bahasa Malaysian that briefly describes

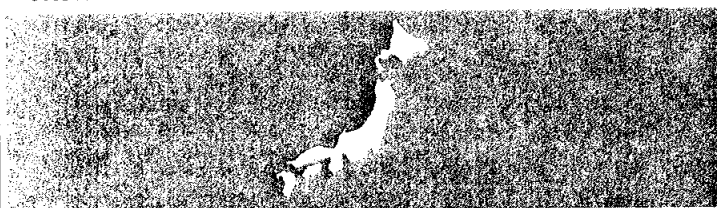
the census operations and contains tables showing population, households, and living quarters by state and administrative district. The total population counted in the 1970 Census was 10,439,430, so Malaysia's growth rate during the last decade averaged about 2.5 percent per year. The 1980 population contained 6,747,966 males and 6,687,622 females, for a sex ratio of 100.9.

The census was conducted in two stages. During the latter half of May enumerators listed every living quarter in the country and recorded some of its characteristics (type of building, construction material, toilet facilities, water supply, and so forth). Then, between 11 and 28 June, individuals present in the living quarters were questioned about their characteristics.

The individual census schedule asked sex, relationship to head of household, age in years, birthdate, Chinese birthdate, ethnic group, religion, citizenship, color of Malaysian Identity Card, education, birthplace, duration of residence in Malaysia and in present *kampung* (town), previous residence, reason for moving to present *kampung*, and physical handicaps. Persons ten years of age and over were asked a number of questions about employment, industry, and occupation; languages spoken, read, and written; current marital status; age at first marriage; and whether current marriage was first marriage. Women who had ever been married were asked the number of children borne and the number still living.

Malaysia's Department of Statistics expects the final census results to be published about a year after the census enumeration. Between the preliminary and final results is a program of editing the data for inconsistencies and inaccuracies, retabulating defective figures, and analyzing the results. The process of publishing the basic report is expected to continue for two or three years.

#### JAPAN



Japan's total population as of 1 October 1980 stood at 117,057,485, according to the preliminary count released on 19 December. Mr. Michio Matsumura, Statistical Specialist in the Population Census Division of Japan's Statistics Bureau and *Census Forum* correspondent, sent a summary of the press release and a copy of *1980 Population Census of Japan: Preliminary Counts of the Population on the Basis of Summary Sheets*. This 138-page bound book, written mostly in Japanese but with English headings on the tables, must set a record for speed in publishing census results: it was issued less than three months after Census Day in Japan. The report presents the preliminary counts for the whole country, prefectures, and municipalities; data were obtained from the summary sheets of *shi*, *ku*, *machi*, and *mura* prepared by local governments. The reader is warned that these data may not coincide with the final figures, which will be tabulated from individual census schedules.

Japan's population has increased by 4.6 percent, or 0.9

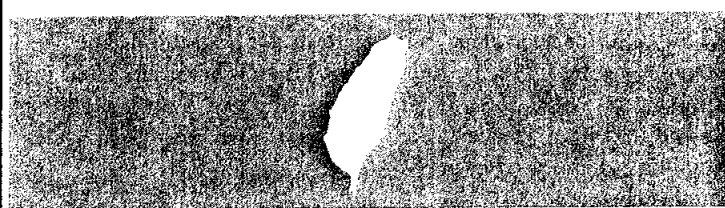
percent per year, since the 1975 Census. This growth rate is lower than that of the 1970-75 intercensal period (1.4 percent annually) and in fact is the lowest growth rate in the postwar period. Japan's migration from other countries is negligible, so nearly all the added population comes from natural increase (the surplus of births over deaths). Japan's birth rate continues to decline, as it has since 1973; in 1979 the crude birth rate was 14.7 per thousand population, almost the same as the U.S. rate.

The population in 1980 contained approximately 57,593,000 males and 59,464,000 females for a sex ratio of 96.9. The number of households totaled 35,976,517, an increase of 6.6 percent from 1975. This rate exceeded the population increase rate, so the average household size declined, down from 3.32 persons in 1975 to 3.25 in 1980. Japan's population density, one of the highest in the world, is 314 persons per square kilometer. It ranks fifth among the world's countries in density, after Bangladesh, the Republic of Korea, the Netherlands, and Belgium.

For the first time since the war the population of Tokyo prefecture decreased, down 0.5 percent from five years ago. Tokyo was the only prefecture that experienced a decline in population during the period. According to the Statistics Bureau, the 1980 Census data show that the rush to the cities is over in Japan. During the early 1960s large numbers of people moved from nonmetropolitan to metropolitan areas; out of 47 prefectures, 27 showed a decrease in population while areas around Tokyo, Osaka, and Aichi prefectures increased rapidly. After 1965 there was a change in the direction and rate of internal migration. The number of prefectures losing population declined to 20 in 1965-70 and to five in 1970-75. The 1980 Population Census reveals that all the prefectures that had recorded a decrease in population in the past now show a population increase.

Ten cities in Japan have populations of more than a million persons. They are the *ku* areas of Tokyo (8.35 million), Yokohama (2.77 million), Osaka (2.65 million), Nagoya (2.09 million), Kyoto (1.47 million), Sapporo (1.4 million), Kobe (1.37 million), Fukuoka (1.09 million), Kitakyushu (1.07 million), and Kawasaki (1.04 million).

#### TAIWAN



Taiwan now has a population of more than 18 million persons, according to results from the census taken in December. Decennial censuses are required by law in Taiwan, but recent censuses have been somewhat off-schedule. The population was first counted in 1956. A second population census, held in 1966, incorporated a housing census. The third census was originally scheduled for 1976, but urgent data needs for administrative purposes, along with the wish to comply with United Nations recommendations, led Taiwan's Executive

(continued on page 10)

## Decomposition of the Change in the Total Fertility Rate in the Republic of Korea, 1960-75

by Robert D. Retherford and Lee-Jay Cho

The downward plunge of the Korean total fertility rate (TFR) decelerated during the late 1960s, then reaccelerated between 1970 and 1975. The TFR declined from 6.0 children per woman in 1960 to 4.6 in 1966, 4.3 in 1970, and 3.2 in 1975 (Coale, Cho, and Goldman, 1980). The rate of economic development was high over this period, although it slowed slightly in the early 1970s. Real per capita GNP increased at an average annual rate of 8.0 percent between 1966 and 1970 and 7.6 percent between 1970 and 1975 (Korea Economic Planning Board, 1977).

An earlier paper (Retherford and Ogawa, 1978) decomposed the decline in the TFR between 1966 and 1970 into several components. It was found that about one-third of the fall was attributable to changes in population composition by education, urban-rural residence, and marital status, and about two-thirds to changes in age-specific birth rates cross-classified by these same characteristics. The own-children method of fertility estimation, applied to the Korean Censuses of 1966 and 1970, was used to generate the finely specified birth rates and compositional proportions necessary for this analysis. This paper revises the earlier results to accord with new fertility estimates for 1966 and extends the decomposition analysis to the periods 1960-66 and 1970-75. Decompositions for the latter two time periods are based on own-children fertility estimates and compositional proportions derived additionally from the 1960 and 1975 Censuses.

### Materials and Methods

Basic data sources are the Korean Censuses of 1 December 1960, 1 October 1966, 1 October 1970, and 1 October 1975. The analysis was based on a 10 percent sample from the 1960 Census, a 1 percent sample from the 1966 Census, a 10 percent sample from the 1970 Census, and a 5 percent sample from the 1975 Census. The own-children method of fertility estimation (Cho, 1973, 1974; Retherford and Cho, 1978) was applied to these data sets to estimate age-specific birth rates and TFRs, specific for education and urban-rural residence for 1960, based on the 1960 Census; for 1966, based on the 1966 Census; for 1970, based on the 1970 Census; and for 1975, based on the 1975 Census (in each case the reference year refers to the 12-month period immediately preceding the census).

In the case of the 1960 Census, special adjustments were made to correct for bias introduced by the form in which the age question was asked. In the Korean tradition, children are considered one year old at birth, and reported age increases by one year every 1 January; therefore, since the 1960 Census was taken on 1 December, the number of persons aged  $x$  in conventional completed years was estimated as 11/12 of the number of persons reported aged  $x+1$  plus 1/12 of the number

of persons reported aged  $x+2$ . Measures of population composition pertaining to the four census dates were obtained from these same sources and were used to approximate population composition six months before the census (i.e., at mid-year for the years to which fertility estimates pertain). Age-specific marital birth rates by education and residence were computed by dividing age-specific birth rates by education and residence by age-specific proportions currently married by education and residence.

The own-children method is, briefly, a reverse-survival method for estimating age-specific birth rates for years previous to enumeration. In essence, enumerated children, classified by own age and mother's age, are reverse-survived to estimate births by age of mother in previous years. Reverse-survival is also used to estimate numbers of women by age in previous years. After adjustments are made for incorrect enumeration and non-own children (children who for one reason or another cannot be matched to a mother within the same household), age-specific birth rates are calculated by dividing the number of births by the number of women.

Reverse survival requires life tables. Own-children fertility estimates based on the 1960 Census utilized female life tables for 1955-60 estimated by Coale, Cho, and Goldman (1980). Since male life tables are unreliable, reverse survival was done only for female children; male births were added in by multiplying estimated female births by 2.06 (the ratio of all births to female births, based on an assumed sex ratio at birth of 1.06). Derived birth rates were then adjusted to agree with the 1960 TFR as estimated by Coale, Cho, and Goldman (1980): rates were multiplied by the ratio of Coale, Cho, and Goldman's estimated TFR for the whole country to the unadjusted own-children estimate of the TFR for the whole country.

Own-children fertility estimates based on the 1966 and 1970 Censuses utilized life tables and adjustment factors described earlier by Retherford and Ogawa (1978); Retherford and Ogawa's estimated birth rates for 1966 were adjusted to agree with the 1966 TFR as estimated by Coale, Cho, and Goldman, using the same procedure, described above, that was used to adjust the 1960 rates. Own-children fertility estimates based on the 1975 Census utilized life tables and underenumeration adjustments derived by Coale, Cho, and Goldman.

The decomposition methodology has been described earlier by Retherford and Ogawa (1978); it is briefly recapitulated here for the reader's convenience. Consider a change in  $TFR = 5 \sum_x F_x$ , where  $F_x$  is the age-specific birth rate for the 5-year age group beginning at age  $x$ . Suppose we write  $F_x$  as a weighted sum of age-education-specific birth rates, where each weight  $k_{xe}$  is the proportion of the age group  $x$  to  $x+5$  with education  $e$  (none, primary, or more than primary). Then

$$TFR = 5 \sum_{x,e} k_{xe} F_{xe} \quad (1)$$

and

$$\Delta TFR = 5 \sum_{x,e} \bar{F}_{xe} \Delta k_{xe} + 5 \sum_{x,e} \bar{k}_{xe} \Delta F_{xe} \quad (2)$$

where the symbol  $\Delta$  denotes change and where  $\bar{F}_{xe}$  and  $\bar{k}_{xe}$  are average values over the period obtained by summing begin-

ning and end values and dividing by two. We thus obtain a sum of two principal contributions to  $\Delta TFR$ , the first of which can be interpreted as stemming from changes in population composition by education and the second from changes in age-education-specific birth rates. Each of these two principal contributions can be further broken down by age if so desired.

The above decomposition method can be extended to more variables by decomposing  $\Delta F_{xe}$  in the same way as  $\Delta TFR$ . Suppose we introduce variables in the order (after age) of education ( $e$ ), residence ( $r$ ), and marital status ( $m$ ). Education consists of three categories (none, some primary, more than primary); residence of two (urban and rural); and marital status of two (currently married and not currently married). We assume that all births occur within marriage, an acceptable assumption in view of Korea's low rate of illegitimacy. The final decomposition is then

$$\begin{aligned} \Delta TFR = & 5 \sum_{x,e} \bar{F}_{xe} \Delta k_{xe} + 5 \sum_{x,e,r} \bar{k}_{xe} \bar{F}_{xer} \Delta k_{xer} \\ & + 5 \sum_{x,e,r,m} \bar{k}_{xe} \bar{k}_{xer} \bar{F}_{xerm} \Delta k_{xerm} \\ & + 5 \sum_{x,e,r,m} \bar{k}_{xe} \bar{k}_{xer} \bar{k}_{xerm} \Delta F_{xerm} \end{aligned} \quad (3)$$

with symbols defined as follows:

- $k_{xe}$  : proportion of the  $x$ th age group ( $x$  to  $x+5$ ) with education  $e$  (females only)
- $k_{xer}$  : proportion of the  $x$ -eth age-education group with residence  $r$
- $k_{xerm}$  : proportion of the  $x$ - $e$ - $r$ th age-education-residence group with marital status  $m$
- $F_{xerm}$  : age-education-residence-marital status-specific birth rate

The first of the five principal terms on the right side of Equation 3 denotes the contribution to change in the TFR from changes in education composition. The second term denotes the contribution from changes in residence composition

**Table 1 Own-children estimates of total fertility rates: Korea, 1960, 1966, 1970, and 1975 (rates per thousand)**

Residence and year	Education			Total
	None	Primary	More than primary	
Urban				
1960	5,267	4,509	3,528	4,502
1966	3,724	3,384	2,576	3,133
1970	3,845	3,799	3,358	3,581
1975	3,083	3,049	2,589	2,756
Rural				
1960	7,000	6,146	5,240	6,602
1966	6,229	5,305	3,994	5,503
1970	5,572	4,792	4,017	4,814
1975	4,097	3,852	3,354	3,722
Total				
1960	6,721	5,449	3,958	5,976
1966	5,790	4,560	2,916	4,595
1970	5,174	4,382	3,493	4,257
1975	3,798	3,512	2,767	3,206

NOTE: Decompositions are based on detailed age-specific rates as well as TFRs, but the age-specific rates are voluminous and are not shown.

**Table 2 Own-children estimates of standardized marital general fertility rates (SMGFR): Korea, 1960, 1966, 1970, and 1975 (rates per thousand)**

Residence and year	Education			Total
	None	Primary	More than primary	
Urban				
1960	227	200	190	210
1966	169	151	133	150
1970	169	160	165	165
1975	151	139	143	143
Rural				
1960	269	252	253	267
1966	232	214	184	224
1970	205	194	187	200
1975	157	161	169	166
Total				
1960	262	229	205	251
1966	223	189	146	198
1970	199	180	169	185
1975	155	152	149	154

NOTE: Standardized marital general fertility rates are computed as  $SMGFR = \sum_x P_x^{ms} F_x^m$ , where  $P_x^{ms}$  is the proportion that currently married women aged  $x$  to  $x+5$  are of all currently married women aged 15-49 in a standard population, and  $F_x^m$  is the age-specific marital birth rate for women aged  $x$  to  $x+5$  in the observed population. The standard population is taken as currently married women aged 15-49 in the Korean 1975 Census; the standard proportions  $P_x^{ms}$  for age groups 15-19, 20-24, ..., 45-49 are .010, .110, .209, .201, .196, .158, and .116. Decompositions are based on detailed age-specific marital birth rates, which are not shown.

within education groups. The third term denotes the contribution from changes in marital status composition within education-residence groups. The fourth term denotes the contribution from changes in age-education-residence-marital status-specific birth rates. Note that the size of the education contribution in Equation 2 is unaffected by the addition of more compositional variables in Equation 3, since terms beyond the first in Equation 3 simply decompose further the fertility contribution in Equation 2.

The order in which variables are introduced into the decomposition in Equation 3 influences the results. In Equation 3, education is introduced before residence. When residence is introduced before education, the residence contribution increases and the education contribution diminishes in size. Since the order of residence, education, and marital status reflects for most persons a logical time sequence of life-cycle events, we shall consider this alternative ordering as well.

### Findings

Total fertility rates (on a per thousand basis), standardized marital general fertility rates, and summary measures of population composition, useful for interpreting decompositions, are shown in Tables 1-3 (detailed age-specific rates and proportions used in computing the decompositions are too voluminous to be shown). Decompositions of the change in the total fertility rate in Korea for 1960-66, 1966-70, 1970-75, 1960-75, and 1966-75 are shown in Tables 4 and 5. (Since age data for 1960 are poor, summary results are presented for 1966-75, omitting 1960, as well as for 1960-75.)

The first point to note is that fertility declined much faster during 1960–66 and 1970–75 than during 1966–70. As shown in Table 1, the TFR declined by 1.4 children, from 6.0 to 4.6, between 1960 and 1966; by 0.3 child, from 4.6 to 4.3, between 1966 and 1970; and by almost 1.1 children, from 4.2 to 3.2, between 1970 and 1975. During 1966–70, fertility rose in urban areas and fell in rural areas, with the rise in urban fertility concentrated among the educated. During 1960–66 and 1970–75, when fertility decline was faster, fertility fell in both urban and rural areas and among all education groups. Table 2 shows a broadly similar pattern in the trend of the standardized marital general fertility rate.

Table 3 shows that proportions with more than primary education increased substantially over all three periods, 1960–66, 1966–70, and 1970–75. Within education categories, urban-rural proportions changed slowly or, for those with more than primary education, virtually not at all. Within education-residence categories, proportions married increased substantially in most cases during 1960–66 and 1966–70, then declined moderately during 1970–75. (Note that for 1960–66 and 1970–75 the increases in proportions married are less evident for all education groups combined, shown in the total column, than for each education-residence group separately; the reason is that population was rapidly shifting from lower education groups to higher education groups, where proportions married are lower, during each of these two periods.)

**Table 3 Summary  $k$  values: Korea, 1960, 1966, 1970, and 1975**

$k$ category and year	Education			Total
	None	Primary	More than primary	
$k_e$				
1960	.4674	.4140	.1186	1.0000
1966	.2890	.4984	.2126	1.0000
1970	.1935	.5056	.3007	1.0000
1975	.1127	.4647	.4226	1.0000
$k_{er}$				
Urban				
1960	.1676	.3449	.6706	.3007
1966	.1812	.3643	.7146	.3858
1970	.1951	.4080	.7394	.4664
1975	.2243	.4274	.7168	.5268
$k_{erm}$				
Urban				
1960	.7232	.6334	.4083	.5973
1966	.7101	.6486	.4619	.5834
1970	.7295	.6872	.5088	.6056
1975	.7353	.6772	.4918	.5734
Rural				
1960	.8032	.5857	.3782	.6951
1966	.8371	.6407	.4346	.6960
1970	.8556	.6932	.4299	.7020
1975	.8577	.7206	.3871	.6616

NOTE:  $k_e$ ,  $k_{er}$ , and  $k_{erm}$  are defined similarly to  $k_{xe}$ ,  $k_{xer}$ , and  $k_{xerm}$ , except that the former refer to the entire age range 15–49, whereas the latter refer to 5-year age groups. For  $k_{er}$ , rural = 1 – urban. Decompositions are based on the detailed age-specific values of  $k_{xe}$ ,  $k_{xer}$ , and  $k_{xerm}$ —which are not shown.

**Table 4 Percent decomposition of the change in the total fertility rate in Korea**

(Case 1: Education introduced before residence)

Period and age group	Edu- cation	Resi- dence	Marital status	Fer- tility	Total
1960–66					
15–29	14.1	1.1	-5.4	15.6	25.3
30–49	14.1	-0.8	-1.8	63.2	74.7
Total	28.1	0.3	-7.2	78.8	100.0 (-1,381)
1966–70					
15–29	31.1	10.1	-6.9	-21.5	12.8
30–49	39.5	-2.5	-13.9	64.1	87.1
Total	70.5	7.6	-20.8	42.7	100.0 (-338)
1970–75					
15–29	6.1	0.6	18.9	1.7	27.3
30–49	7.5	0.5	-0.7	65.5	72.7
Total	13.6	1.1	18.1	67.2	100.0 (-1,052)
1966–75					
15–29	14.1	3.4	11.4	-5.1	23.7
30–49	16.2	0.4	-3.3	63.0	76.3
Total	30.3	3.7	8.1	57.9	100.0 (-1,390)
1960–75					
15–29	11.2	2.3	4.5	6.7	24.5
30–49	12.9	-0.2	-3.3	65.9	75.5
Total	24.0	2.1	1.3	72.6	100.0 (-2,770)

NOTE: Because of rounding errors, rows and columns do not always add precisely to marginals. Numbers in parentheses in the lower right of each panel indicate change per thousand in the TFR over the period indicated (see Table 1); discrepancies with Table 1 are again due to rounding errors.

The impact on the overall TFR of changes in detailed subgroup fertility and composition shown in Tables 1–3 is summarized succinctly in the decompositions in Table 4. The total change in the TFR, as computed from Table 1, is shown in parentheses at the lower right of each of the five panels in the table. The percentaged decomposition is given in the body of each panel, with 100 percent corresponding to the total unpercentaged change shown in parentheses.

Over the period 1960–66, during which the TFR fell substantially—by about 1.4 children per woman—changes in educational composition accounted for 28 percent of the change in the TFR, as shown in the first panel of the table. With education introduced first, changes in urban-rural residence composition did not account for much additional change. In keeping with rising proportions married over the early 1960s, changes in marital status composition acted to increase the TFR by 7 percent, thus braking the overall TFR decline. Declines in education-residence-marital status-specific fertility accounted for 79 percent of the TFR decline; the fertility contribution was concentrated at ages above 30, where major declines in age-specific fertility occurred.

The pattern for 1966–70, shown in the second panel of Table 4, is somewhat similar to that for 1960–66, except that compositional contributions are proportionately more important relative to the fertility contribution; this is not surprising,

since the TFR declined much less during the last four years than during the first six years of the decade. During 1966–70, changes in educational composition accounted for 71 percent of the change in the TFR. Again, with education controlled, changes in residence composition contributed little. Changes in marital status composition acted to increase the TFR by 21 percent, reflecting continued increases in proportions married within education-residence groups. Declines in education-residence-marital status-specific fertility now account for only 43 percent of the TFR decline. (These figures for 1966–70 differ substantially from those reported earlier by Retherford and Ogawa [1978]. In the present paper, the TFR decline between 1966 and 1970 is 0.3 child [adjusted to agree with Coale, Cho, and Goldman's (1980) estimates], whereas the unadjusted decline analyzed earlier by Retherford and Ogawa is 0.6 child; the halving of the estimated TFR decline increases the importance of compositional changes relative to fertility changes.)

The third panel of Table 4 shows a rather different picture for 1970–75. The education contribution, though still relatively large, is now only 14 percent. The residence contribution is again small. Changes in marital status composition within education-residence subgroups now contribute to, rather than subtract from, the overall TFR decline; indeed, the marital status contribution of 18 percent (note its concentration at ages below 30) now exceeds the education contribution. The fertility contribution is now about two-thirds of the total. Given that marital status now contributes positively instead of negatively to the decline, one might have expected the fertility contribution to be reduced in relative magnitude; the principal reason it is not is that education-residence-marital status-specific fertility declined so much more substantially during 1970–75 than during 1966–70. The fourth and fifth panels show summary decompositions over two longer periods, 1966–75 and 1960–75. Over the 1960–75 period as a whole, compositional changes accounted for 27.2 percent and fertility changes for 72.8 percent of the TFR decline of about 2.8 children per woman.

Table 5 shows that when residence is introduced before education, the contribution of changes in education composition and residence composition is about evenly split instead of concentrated on the education side (*k* values for this reverse ordering are not shown). Otherwise the decompositions are virtually identical to those in Table 4.

It is evident from comparison of Tables 4 and 5 that the education contribution in Table 4 captures some of the effect of changes in residence composition, simply because education is introduced before residence. When the order of introduction of the two variables is reversed in Table 5, the capturing effect is also reversed, with the residence contribution now capturing some of the effect of changes in education composition. Because capturing effects are order-specific, the relative sizes of compositional contributions in a given decomposition do not necessarily give an accurate indication of relative degree of explanatory importance. Interpretation of results of decompositions based on alternative orderings depends mainly on the analyst's perception of causal relations among the variables. In this paper, education and residence are viewed as causally prior

**Table 5 Percent decomposition of the change in the total fertility rate in Korea**  
(Case 2: Residence introduced before education)

Period and age group	Residence	Education	Marital status	Fertility	Total
1960–66					
15–29	7.0	8.1	-5.3	15.6	25.3
30–49	6.3	6.9	-1.8	63.3	74.7
Total	13.3	15.0	-7.2	78.9	100.0
					(-1,381)
1966–70					
15–29	24.5	16.5	-6.9	-21.4	12.8
30–49	17.2	19.7	-14.0	64.2	87.1
Total	41.7	36.2	-20.7	42.9	100.0
					(-338)
1970–75					
15–29	2.6	4.2	18.9	1.7	27.3
30–49	4.6	3.4	-0.7	65.4	72.6
Total	7.1	7.6	18.1	67.2	100.0
					(-1,052)
1966–75					
15–29	9.7	8.1	11.4	-5.2	23.9
30–49	8.4	7.7	-3.3	63.2	76.3
Total	18.2	15.8	8.0	58.0	100.0
					(-1,390)
1960–75					
15–29	6.9	6.7	4.4	6.6	24.6
30–49	5.8	6.5	-3.3	66.2	75.4
Total	12.8	13.2	1.2	72.8	100.0
					(-2,770)

NOTE: See note to Table 4. Discrepancies with Table 1 are due to rounding errors.

to marital status and fertility for most individuals. But the causal priority ordering of education and residence is more ambiguous, so results based on alternative orderings of these two variables are both presented. In this circumstance, it is appropriate to view the education and residence contributions as falling within bounded ranges instead of given as point estimates. Note that the marital status and fertility contributions in the decompositions are unaffected (except for rounding errors) by varying the order in which education and residence are introduced.

A final caution in interpreting the decompositions (see also Retherford and Ogawa, 1978) is that the fertility contribution to change in the TFR cannot be interpreted as a family planning program contribution. This is evident when one considers that addition of another compositional variable (say, income) might substantially alter the size of the fertility contribution. Moreover, over time the fertility implications of membership in a given compositional category may change owing to changes in social context; for example, the bearing of a primary school education on occupational mobility, which in turn affects fertility, changes significantly as modernization proceeds.

#### Conclusion

To summarize, the Korean TFR fell by about 1.4 children per woman between 1960 and 1966, 0.3 child between 1966 and 1970, and 1.1 children between 1970 and 1975. The analysis shows that changes in population composition by educational



attainment were large over all time periods and accounted for a substantial proportion of the decline in the TFR, especially during 1966–70. But largely because fertility declined so much more during the other two periods, the proportional contribution of changes in educational composition was smaller in 1960–66 and 1970–75. With education and residence statistically controlled, changes in marital status composition contributed to increase the TFR during 1960–66 and 1966–70 but to decrease it during 1970–75. With educational composition controlled, changes in urban-rural residence composition accounted for little of the change in the TFR during either period; however, when residence was introduced into the decomposition before education, the education contribution was approximately halved and became about equal to the residence contribution, which increased to make up the difference.

Changes in composition by education, residence, and marital status together accounted for approximately 21 percent of the change in the TFR during 1960–66, 57 percent during 1966–70, and 33 percent during 1970–75; changes in fertility specified by these same variables accordingly accounted for 79 percent of the change during 1960–66, 43 percent during 1966–70, and 67 percent during 1970–75.

A noteworthy aspect of the analysis is that it is based entirely on census data. Indeed, the finely specified birth rates necessary for the analysis would be difficult to obtain from a vital registration system even in advanced industrial countries. Given the vast array of finely specified rates that the own-children method is capable of producing, the decomposition technique is useful for compressing this detailed information into a concise and easily understood format that brings out its analytical significance. □

#### ACKNOWLEDGMENTS

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#### INTERNATIONAL STATISTICAL PROGRAMS CENTER ANNOUNCES TRAINING COURSES FOR 1981–82

The U.S. Bureau of the Census's International Statistical Programs Center (ISPC) is again offering a full range of training programs for statisticians and technicians who have had working experience in national statistical agencies. Diploma training programs, two joint master's degree programs in cooperation with George Washington University, and special-purpose short-term training programs are available during the training year that begins in September 1981. The offerings are described in detail in *International Statistical Training Programs*, a 52-page book produced by the Census Bureau.

Students in the one-year diploma training programs may specialize in any of the following areas: sampling and survey methods, agricultural surveys and censuses, population statistics and demographic analysis, economic surveys and censuses, computer data systems, statistical technology and survey management, or agricultural economics. The two master's degree programs combine ISPC training with additional graduate-level courses at George Washington University. The 18-month Demography Degree Program leads to a Master of Arts in Sociology (Demography); a Master of Science in Special Studies with a concentration in Social and Economic Statistics may be earned in a separate 16-month degree program. All training is given in English.

Special-purpose programs of varying lengths on general statistical technology or other statistical topics may be arranged according to the particular needs of participants. Group training may be given on such topics as census and survey cartography, printing and reproduction, seasonal adjustment of economic data, or the construction of social indicators. In addition, a three-week workshop on the management of post-data collection survey operations is scheduled for August 1981, and an eight-week workshop is planned for June and July 1982 for training in planning and implementing a household survey program.

Participants in ISPC training programs may be sponsored by the U.S. Agency for International Development, the United Nations Development Programme or other UN specialized agencies, the Organization of American States, other international and regional organizations, foundations, or the participant's own government. For a copy of *International Statistical Training Programs*, write to Chief, Training Branch, International Statistical Programs Center, U.S. Bureau of the Census, Washington, D.C. 20233.

## 1980 Census Results (continued from page 4)

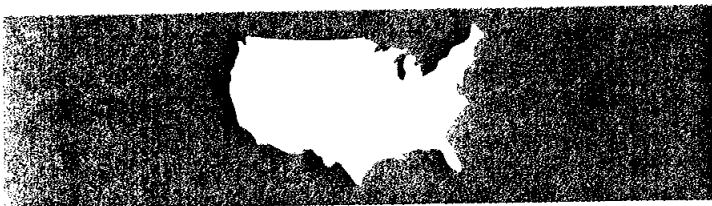
Yuan to plan for censuses in years ending in zero. Sample censuses were held in 1970 and 1975, and a complete Population and Housing Census was taken on 28 December 1980.

Highlights from the preliminary census report were provided by Ms. Li-shu Lee, Section Chief in charge of international communications and social statistics in Taiwan's Bureau of Statistics. The total population of the Taiwan-Fukien area was 18,031,825, of whom 9,401,029 were males and 8,630,796 were females. The sex ratio is 108.9. The total number of housing units occupied by family households was 3,265,742. Of these, nearly 80 percent were owned by the family, about 12 percent were leased or mortgaged, and 6.4 percent were owned by an employer.

About 89 percent of the population six years old and over is literate. People with secondary education made up 36.5 percent of the population, and those with college or other higher education constituted 7.9 percent. The economically active population comprised about 55 percent of those 15 years of age and over, and more than 95 percent of these people were employed. Of the noneconomically active population, 54 percent were housewives and 26.5 percent were students.

The census in Taiwan used a personal interview. Enumerators began visits to households two weeks prior to Census Day to assist respondents in completing questionnaires. On Census Day traffic control was in effect for part of the day, during which enumerators revisited households to check for inconsistencies and to make corrections. The corrected questionnaires were submitted within five days of enumeration to supervisors, who then made a random check of 5 percent of the questionnaires and compiled preliminary statistics for supervision areas. Data were then passed to senior supervisors, under whose direction teams of checkers examined questionnaires. After final data checking senior supervisors compiled the preliminary statistics and sent the questionnaires to the National Census Office of the Executive Yuan.

### UNITED STATES



The 1980 Census of Population and Housing found a total of 226,504,825 persons in the United States as of 1 April 1980—at least, that is the figure reported by Census Director Vincent Barabba on 31 December 1980. By law the Census Bureau must formally report to the President of the U.S. the population of each of the United States on the last day of each year that ends in a zero. This time the courts almost blocked release of those figures. A number of lawsuits, particularly those brought by Detroit and New York, sought to require the Census Bureau to adjust its figures for underenumeration before making the official presentation of the decennial count. The evening before the statutory reporting date, a decision from the Supreme Court stayed the ruling from New York, ending

the drama and allowing the Bureau to submit the official figures for the nation, the 50 states, and the District of Columbia. Court proceedings continue, but meanwhile the Census Bureau is publishing its data with the accompanying caveat: "The 1980 figures in this publication are subject to change pending the outcome of the various lawsuits dealing with the census counts."

The U.S. population as a whole grew by 11.4 percent during the ten-year period between 1970 and 1980. The West and South regions of the country grew fastest, with 23.9 percent and 20.0 percent increases respectively, while the Northeast (New England and Middle Atlantic states) showed a sluggish 0.2 percent growth and the North Central region increased by 4 percent during the decade. Population shifts to the West and South were also reflected in changes to the political map of the country: 17 seats in the 435-member House of Representatives will be changed in time for the next election. States gaining more than one seat are Florida (4), Texas (3), and California (2); those losing more than one are New York (5), Pennsylvania (2), Ohio (2), and Illinois (2). Only two states—New York and Rhode Island—lost population during the intercensal period. The state with the largest land area, Alaska, still has the smallest population of any state (400,481), even though it registered a 32.4 percent increase between 1970 and 1980.

Figures on race show that the black population grew by 17 percent in the last decade, increasing its proportion of the U.S. population from 11.1 percent to 11.7 percent. Not all of that growth was attributable to a higher birth rate among blacks; according to Census officials, improved counting procedures in black neighborhoods meant that fewer blacks went uncounted. The 1980 Census questionnaire included a special question on Spanish origin, and about 14.6 million persons (6.4 percent of the population) indicated that they were of Spanish origin. Apparently many Hispanics also listed themselves as "other" rather than "white" on a separate question, resulting in what appeared to be a drop in the proportion of whites in the population and a thirteenfold increase in "others." The Census Bureau said that, except for blacks, it was not possible to compare figures on race with those from other censuses because of changes in census procedures.

The mail-back procedure used in the 1980 Census worked better than expected. More than 90 percent of the U.S. population received questionnaires in the mail a few days before Census Day; they were asked to fill in the forms and mail them back to the Census Bureau. About 87 percent of the households asked to follow this procedure did so voluntarily before census workers telephoned or made personal visits. That was about 7 percent more than the Bureau had counted on.

Census Director Barabba, who has now left the Bureau to direct market intelligence at the Eastman Kodak Company, said at the December presentation ceremony, "We can say without qualification that this has been by far the most accurate census ever taken, a census that comes as close as possible to reflecting the actual number of persons in this country." He added that the completeness of the count meant that the nation would not be better served by any kind of adjustment of the official figures. □

## PUBLICATIONS THAT COUNT

by Alice D. Harris

### Thirtieth Year of U.N. Demographic Yearbook

The *Demographic Yearbook 1978* is the thirtieth in a series of yearbooks containing comprehensive international demographic statistics published by the Statistical Office of the United Nations. Demographers, statisticians, researchers, and librarians all over the world regard the yearbook as the most authoritative source of population information. The current issue of the yearbook has been published in two volumes. The first contains the general tables presented annually; the second volume is a historical supplement issued to commemorate the thirtieth anniversary of the publication of the *Demographic Yearbook*.

This historical supplement presents time series on population size, age, sex, urban/rural residence, natality, mortality, and nuptiality as well as selected derived measures concerning these components of population change for a 30-year time period. The first issue, *Demographic Yearbook 1948*, included many of the same tables showing annual data from 1932 to 1947. Therefore, the present historical supplement, when used jointly with the 1948 Yearbook, can furnish a wealth of historical international demographic data.

Both volumes of the *Demographic Yearbook 1978* can be ordered from your local book dealer or from Publishing Service, United Nations, New York, NY 10017. U.N. Publication Sales numbers and prices are E/F. 79.XIII.1, US\$36.00 (cloth), \$30.00 (paper) for Volume 1; E/F. 79.XIII.8, US\$48.00 (cloth), \$42.00 (paper) for Volume 2, the historical supplement.

### AAAS Symposium on Fertility in Print

A symposium on fertility decline in the less developed countries, held during the 1978 meeting of the American Association for the Advancement of Science, has been published by Praeger as part of its Special Studies series. The papers from the symposium were revised and then edited for publication by Nick Eberstadt as *Fertility Decline in the Less Developed Countries* (New York: Praeger Publishers, 1981, ISBN 0-03-055271-0, US\$32.95). The theme of the papers included in the book is that fertility is declining steadily in countries with traditionally high fertility and has been doing so since the mid-1960s. Demographers and social scientists like Eberstadt, John Caldwell, William Petersen, Moni Nag, Maris Vinovskis, John Aird, and Susan Scrimshaw examine the fertility picture in several countries. The decline does not conform to the convenient demographic transition model, nor can it be laid to

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vigorous family planning program activities, so there must be other factors at work. William Petersen, in what promises to be a controversial chapter ("American Efforts to Reduce the Fertility of Less Developed Countries"), questions the efficacy and merit of United States efforts to reduce fertility through contraceptive distribution programs. He implies that education and socioeconomic development provide the key to fertility decline. Other authors deal with income and fertility, the value and costs of children, nutrition and fecundability, and infant mortality. Nick Eberstadt provides an introduction and overview of fertility decline, and W. Parker Mauldin presents statistical evidence for fertility decline between 1950 and 1975. The authors of the chapters are recognized scholars in the field, so the book should appeal to those interested in fertility decline. The book can be obtained through local booksellers or ordered from Praeger Publishers, 521 Fifth Avenue, New York, NY 10175.

### Textbook Prepared for 1980 Census

The U.S. Bureau of the Census, Department of Commerce, published a college textbook last year as part of a training program for college students in more than 40 colleges and universities around the country participating in the Experimental Student Intern Program (ESIP). The book, *Census '80: Continuing the Factfinder Tradition*, by Charles P. Kaplan, Thomas L. Van Valey, and associates, was developed to provide the students with an in-depth look at the U.S. census—its history, how it is taken and processed, and how the resulting data are used by both the public and the private sectors. The students who used the book earned academic credit as well as salaries when they helped take the decennial census in April 1980.

Although the book was originally developed for use in the ESIP program, it can be used effectively in other academic courses or as a sourcebook for the general reader wishing to learn about the census. The authors have eliminated unnecessary mathematics while maintaining accuracy and thoroughness throughout the book's four parts. They have made liberal use of attractive graphics, photographs, and reproductions of newspaper articles and census schedules. Bibliographies are included for further reading on individual topics. The book's first part describes the history and rationale for taking the census, the census organization, and such matters of public concern as privacy and confidentiality. Part II focuses on the concepts and principles fundamental to census data collection and tabulation. Census geography and the limitations of census data are covered in several chapters. Part III provides an overview of the 1980 Census. It describes the planning for the census and the field organization and data collection procedures. One chapter is devoted to the kinds of products and data user services that will be available to make the 1980 Census results available to everyone. Part IV is an overview of the uses of census data, primarily using case studies derived from the 1960 and 1970 Censuses. These four chapters were contributed by professors of urban and regional planning, business, geography,

and demography to show how the research community makes use of census results.

Although this book is a product of the U.S. census, it could serve as a model for other census organizations. The preparation of similar books in other countries would serve not only to train students for census taking but to inform the general public who may wonder why so much counting goes on year after year!

Copies of the book, *Census '80*, are available for US\$7.50 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. A companion volume of student projects and exercises is being prepared. College instructors in the U.S. can also get the College Curriculum Support Project updates, which are issued three times a year to highlight census-related resources available for classroom use. To be placed on the mailing list for *CCSP Update*, write to Les Solomon, College Curriculum Support Service, Data User Services Division, Bureau of the Census, Washington, D.C. 20233.

### Vanuatu Releases Results of 1979 Census

Vanuatu, formerly New Hebrides Condominium, has just released *Results from Manual Processing* of the 1979 Census of Population. The census, originally scheduled to be taken in 1977, was postponed for two years because the two governments, France and Great Britain, could not decide on census objectives. It was decided to coordinate the taking of the census with the preparation of the electoral rolls for the general election being held in the fall of 1979. Combining the two objectives proved to be unpopular with the population and led to some refusal to cooperate with census enumerators. J.J. Wagner of the National Statistics and Economic Studies Institute, the first census coordinator, was responsible for conducting the census. After the election, however, the Bureau of Statistics took a more active role in census activities and asked Gilles Roger, a Paris demographer, to direct operations. The results of manual processing are accompanied by a methodological note by Roger, which is necessary for interpretation. Results are shown in three basic tables: population by administrative districts, by urban areas, and by islands and civil registration districts. The tables are accompanied by maps. The last chapter presents comparative data for the 1967 Census, the 1972 Urban Census, and the 1979 Census. In 1967 the de facto population was 77,988; by 1979 it had increased by 44 percent to a total of 112,304, an annual rate of increase of 3.19 percent. Nothing beyond simple population counts is given; tables for age, sex, and other demographic characteristics will appear in the final results yet to be published.

While still the Condominium of New Hebrides, the Government published an outsize volume, *Provisional Results of the General Population Census, 15-16 January 1979*. I am indebted to G.A. Kalkoa, Minister of Public Administration, for supplying a copy of this publication, which was issued in August 1979. This volume resembles an atlas and shows population figures for each geographical unit as part of the map of each district. It provides a complete list of the inhabited places in Vanuatu, a grouping of these places into village areas (each with an estimate of resident population), and an easy geographical reference for each of the villages on simple base

maps. Because the list of inhabited places on the islands is in constant evolution, the resulting publication was no small feat.

On some islands, enumerators encountered problems when trying to count the people. Many were afraid of being taxed or of political consequences if they answered the questions, and some said that answering census questions was not the custom. Others said that their chiefs had told them not to answer. Several strategies were employed to overcome these difficulties. In some cases abridged censuses were negotiated with the local people. In others indirect methods were resorted to—that is, a third party or written records were used as a source of information. Only 2,675 persons (2.4 percent of the resident population) refused to be counted, nearly all of whom lived in Tanna in the Southern District of Vanuatu.

An interesting feature of this census was the attempt to count both the de facto and the de jure populations. Each person was classified as a resident present in the household, a resident absent from the household, or a visitor to the household. This made it possible to compile both de jure totals (all residents, whether absent or present) and de facto totals (anyone present in a household on Census Night, whether a usual resident or not). An attempt was made to match visitors' questionnaires with absent residents' questionnaires to verify that every visitor had also been enumerated as an absent resident at his usual place of residence and vice versa. The tables show both de facto and de jure totals.

Vanuatu has a fairly short census history. The first general census was taken by Norma McArthur in 1967. A census of Greater Vila had been taken in 1965, and an urban census of Greater Vila and Luganville was carried out in 1972. Both the publications described above are written in French and English. I do not have price information, but interested readers may write to the Census Office, Bureau of Statistics, Port Vila, Republic of Vanuatu, South Pacific. □

**THE ASIAN AND PACIFIC CENSUS FORUM** is a quarterly publication of the East-West Population Institute, supported by a contract between the Institute and the Office of Population, Agency for International Development. It is available without charge to governmental agencies, private institutions, and interested individuals. News items and comments are welcomed and should be addressed to: Census Forum Managing Editor, East-West Population Institute, 1777 East-West Road, Honolulu, Hawaii 96848.

**THE EAST-WEST CENTER** is a national educational institution established in Hawaii by the U.S. Congress in 1960 to promote better relations and understanding between the United States and the nations of Asia and the Pacific through cooperative study, training, and research. Each year more than 1,500 men and women from many nations and cultures work together in problem-oriented institutes or on "open" grants as they seek solutions to problems of mutual consequence to East and West. For each Center participant from the United States, two participants are sought from the Asian and Pacific area. The U.S. Congress provides basic funding for programs and a variety of awards; and the Center is administered by a public, nonprofit corporation with an international Board of Governors.

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