# CHAPTER XV

## ORGANIZATION, DESIGN AND QUALITY ASPECTS

## OF THE 1991 POPULATION CENSUS OF NEPAL

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## 1.     Introduction

The 1991 population census is the fifth scientifically conducted census of Nepal'. The Central Bureau of Statistics (CBS), His Majesty's Government of Nepal (HMG/N) conducted the 1991 census during the period from June 5-22, 1991. Field enumeration took a little over two weeks and data processing, although cumbersome and time-consuming in nature, did not take much time this time, due to computer technology. The CBS promptly published the preliminary tables of the census in September, 1991 which provided a provisional total population figure of 18,462,081. The final figure of the total population was 18,491,097. The present chapter deals with aspects related to census enumeration and coverage, besides the quality aspects of the 1991 census data.
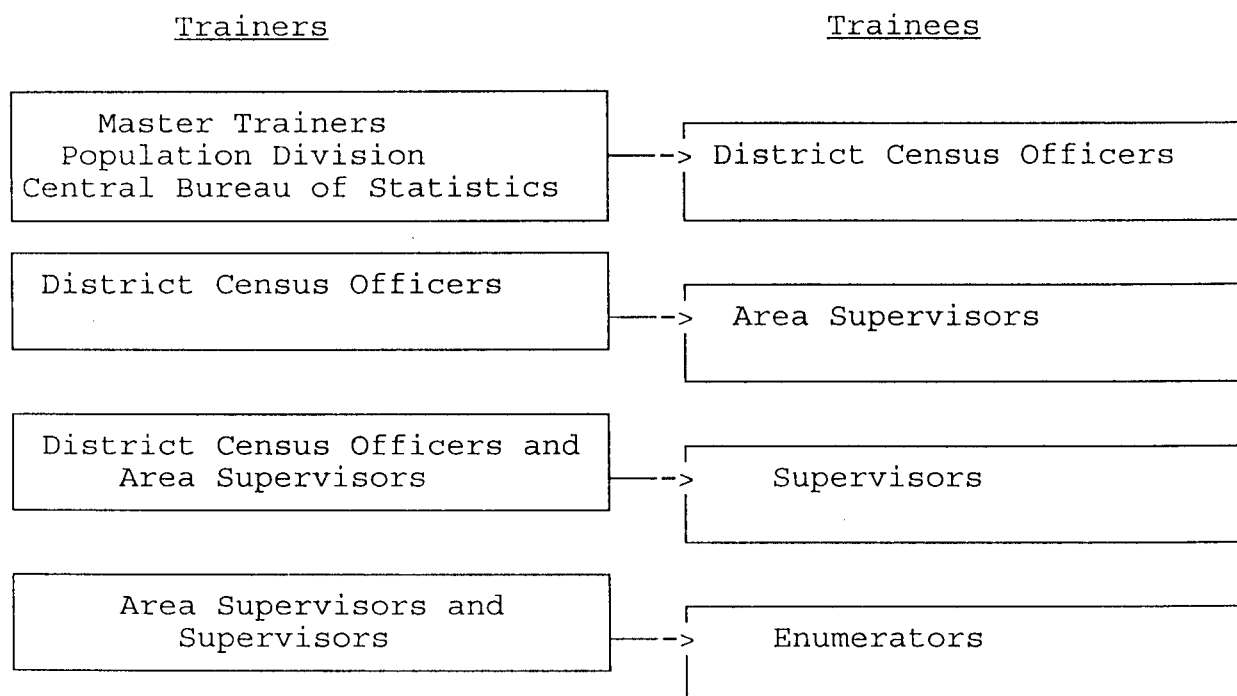
## 2.     Organization of the 1991 census

Census preparation and field work activities were apparently better in 1991 compared to 1981. In 1981 a Technical Group of Experts was formed but it did not, in practice, contribute significantly whereas for 1991 census, a Technical Committee was formed well in advance and met regularly for the improvement of census questionnaire and related activities.

In 1991 census, as in 1981, a gazetted class III officer was posted to each of Nepal's 75 districts. A rigorous training on various aspects of census field operation was given to them in Kathmandu before they left for their respective districts. Each district census officer established a district census office and divided each district into 2 or 3 census areas depending on the population size, except in Manang district which was treated as one area due to its small size. The 1991 census training programme was organized at different levels as shown in the following chart:

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'    The first population count took place in 1911 and since then census count was conducted at almost every ten years and it was the 1952/54 census which for the first time fulfilled the requirements of a scientific census (for details see Karki, 1985 ).

## Population Census Training Organization Chart, 1991

<u>Trainers</u>                                           <u>Trainees</u>

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┌──────────────────────────────┐        ┌──────────────────────────────┐
│      Master Trainers         │        │                              │
│    Population Division       │ ---->  │  District Census Officers    │
│ Central Bureau of Statistics │        │                              │
└──────────────────────────────┘        └──────────────────────────────┘

┌──────────────────────────────┐        ┌──────────────────────────────┐
│ District Census Officers     │ ---->  │     Area Supervisors         │
│                              │        │                              │
└──────────────────────────────┘        └──────────────────────────────┘

┌──────────────────────────────┐        ┌──────────────────────────────┐
│ District Census Officers and │ ---->  │       Supervisors            │
│      Area Supervisors        │        │                              │
└──────────────────────────────┘        └──────────────────────────────┘

┌──────────────────────────────┐        ┌──────────────────────────────┐
│    Area Supervisors and      │ ---->  │       Enumerators            │
│       Supervisors            │        │                              │
└──────────────────────────────┘        └──────────────────────────────┘
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The enumerator / supervisor ratio has been substantially improved over the years, as shown in Table 1.

Table 1: Population and census operation field staff by census year 1952/54-1991

| Census Year | Population (millions) | Number of Supervisors | Enumerators | Population Enumerator Ratio | Enumerator/ Supervisor Ratio |
|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) |
| 1952/54 | 8.26 | 200 | 17,000 | 486 | 85 |
| 1961 | 9.41 | 300 | 15,933 | 591 | 53 |
| 1971 | 11.56 | 500 | 12,000 | 963 | 24 |
| 1981 | 15.02 | 1,500 | 15,000 | 1,001 | 10 |
| 1991* | 18.49 | 4,000 | 20,000 | 925 | 5 |

Source: Karki, (1985); * Sharma, (CBS), Personal Communication.

The enumerators employed were largely school teachers from local areas and where teachers were not available persons who had completed a minimum of School Leaving Certificate (SLC) examinations were employed. In contrast to this, in 1981 the minimum educational qualification was just literacy although according to CBS, most of them had completed 8 years or more of schooling.

In 1981, persons with matriculation and above were employed as supervisors but in 1991 those who had education level of intermediate or above were employed. Also some Master's level students from the Departments of Population Studies and Statistics were employed.

The mode of payment to Field workers (enumerators) was different in 1991 compared to 1981. In the 1981 census each enumerator was pa[i]d Rs. 0.20 per record complete(] and there was no other monetary reward, while in 1991 the enumerators were given Fixed sum of money for the work.

In 1990, a pilot census was carried out in 4 districts (2 rural wards and 1 ward from Biratnagar town of Morang district, 3 rural wards each of Dolakha and Rolpa districts and 1 ward of Kathmandu city) to test the content and wording of the census questionnaire. Subsequently, the language was slightly modified but the items were kept intact.

## 2.1    Census Promotion

Census promotion activities were quite extensive in 1991. Various communication channels were utilized for this purpose. Almost all available media like radio, television, daily newspapers, cinema slides, posters, calendars, postage stamps etc., were used for information and education purposes. Additionally, audience-specific materials for different ethnic and religious groups were also developed.

In 1981, most mass media channels were used except TV which did not exist then. But in 1991, microphone announcement in local areas was also clone and local folk media were utilized which was not the case in 1991.

## 2.2    Questionnaire Design

Total enumeration in 1981 was preceded by household. listing. This was not the case in 1991. In the 1991 census, both household listing and actual census Field operation took place simultaneously. Nevertheless, the number of items included in the household list was as comprehensive as before, as may be seen from Table 2 for the last three censuses.

Table 2: Items Asked in Household Schedules in 1971, 1981 and Censuses 1991

| Topics investigated | 1971 | 1981 | 1991 |
|---|:---:|:---:|:---:|
| Name and caste of head of household | x | x | x |
| Number of family members by sex (any member away from home for more than 6 months was excluded) | x | x | x |
| Dwelling: own, rented or other answers | - | - | x |
| Number of absentee family members | x | x | x |
| Sex of absentees | - | x | x |
| Age of absentees | - | x | x |
| Destination of absentee members | - | x | x |
| Reason for leaving home | - | x | x |
| Number of years away from home | - | - | x |
| Number of deaths in the family during the last 12 months | x | x | x |
| Sex of the deceased | - | x | x |
| Age at death | - | x | x |
| Number of disabled persons in the family | x | x | - |
| Sex of disabled person | - | x | - |
| Age of disabled person | - | x | - |
| Male marriage during last year | x | - | - |
| Male divorces during last year | x | - | - |
| Number of transistor radios owned by family | - | x | x |
| Occupation (Agriculture, cottage industry, etc.) of family | - | x | - |
| Occupation of family other than agriculture | - | - | x |
| Family land ownership | - | - | x |
| Family cattle ownership | - |  | x |
| x    denotes inclusion of item and<br>-    denotes exclusion of item. | | | |

The individual (personal characteristics) questionnaire was also quite comprehensive in 1991 as in tile last three censuses. Table 3 compares the items asked of individuals in the last three censuses:

Table 3: List of Individual Characteristics Asked in 1971, 1981 and 1991 Censuses of Nepal

| Demographic / Social Characteristics: | 1971 | 1981 | 1991 |
|---|---|---|---|
| Name and caste of head of household | x | x | x |
| Relationship to head of household | x | x | x |
| Person number of mother | - | x | - |
| Sex | x | x | x |
| Age | x | x | x |
| Ethnicity / Caste | - | - | x |
| Language | x | x | x |
| Religion | x | x | x |
| Literacy | x | x | x |
| School enrolment | x | - | x |
| Specialized subjects (for those above S.L.C.) | - | x | x |
| Marital status | x | x | x |
| Children ever born alive | x | x | x |
| Children born in last 12 months | x | x | x |
| **Geographic characteristics:** | | | |
| Nationality / Citizenship | x | x | x |
| Place of birth | x | x | x |
| Duration of stay in the current place 'for those born outside the current district) | - | x | - |
| Duration of stay in the current place (for those born outside the country) | - | - | x |
| Reason for residence in the current district (for those born outside the current district) | - | x | - |
| Place of residence a year ago | - | - | x |
| **Type of activity:** Gainfully employed / not employed in the last 7 days | x | x | - |
| If unemployed, was the person looking / not looking for employment | - | x | - |
| Gainfully employed / not employed for at least 8 months during the last 12 months | - | x | - |
| Employment status in the last 12 months | - | - | x |
| Length of employment in the last12 months | - | - | x |
| Not working (because of being a student, disabled, doing only household chores, etc.) | x | x | x |

Table 3 (Contd..

|  | 1971 | 1981 | 1991 |
|---|---|---|---|
| **Employment status (Asked of those who were employed for at least 8 months last year) *** | | | |
| Main occupation | x | x | x |
| Main industry | - | x | x |
| Employer / employee / self-employed / partially employed | x | x | x |
| Place of employment / work | - | - | x |

Note:    Same as Table 2.
*          Asked of all those who were employed for any length of time in the past 12 months, in the 1991 census round.

The size of the 1991 questionnaire certainly looks manageable as it was in book-bound form. The book bound from was 14.5" long and 9.5" wide compared to the 1981 questionnaire which was 21" long and 15.5" wide.

## 2.3    Field Work and Coding

The field work in 1991 also took place in the month of June as in all other previous censuses. The enumeration approximately took 18 days to complete (June 5-22). In 1961 and 1981 too the field work took 18 days while in 1971 it took 15 days. The field supervisors checked each enumerator's work in his area for major inconsistencies. The completed schedules returned to the Headquarters from the field, were carefully edited which was followed by coding operation.

## 2.4    Computer Data Processing

The most unpleasant aspect of census operation is data processing. However, because of computer technology this can be done in a relatively short time now. Table 4 shows time taken for data processing in different censuses.

Table 4:         Time Spent in Data Processing in Different Censuses.

| Census year | Number of years | Type of processing |
|---|---|---|
| 1952/54 | 2.0 | Manual |
| 1961 | 4.5 | Manual |
| 1971 | 1.5 | Computer |
| 1981 | 3.5 | Computer |
| 1991 | 1.0 | Computer. |

In 1991, CBS was very prompt in producing preliminary results in less than 4 months, i.e., by August. 1991.

## 2.5    Post-Enumeration Survey

The Post Enumeration Survey (PES), designed to evaluate the 1991 census data quality with respect to completeness of coverage, was scheduled to be conducted in August, 1991. The actual revisiting of sampled areas for reconciliation of the differences was completed by April 1992, whereas the census took place on June 22, 1991. The details regarding the conduct of the survey and the procedures adopted in the estimation of census coverage are discussed elsewhere (Natarajan, 1993). A critical evaluation of the PES findings is presented in section 4.

## 3.    Quality of 1991 Census Data

The quality of the 1991 census data is evaluated in two steps. The first step deals with the evaluation of the quality of the census data on selected aspects such as age reporting, fertility, mortality, etc.. The second step examines the extent of coverage in the census enumeration.

## 3.1    Accuracy of Reported Ages

Just like in many developing societies, a large number of Nepalese do not know their precise date of birth, so that their ages have to be estimated by indirect means. Such estimates are clearly subject to substantial errors. A common and conspicuous form of these errors consists in choosing the nearest age ending in 0 or 5: for example persons aged 39 or 41 may report their age as 40. This type of "digit preference" can cause marked heaping of population at certain ages. The heaping is most conspicuous at ages ending in 0 or 5, but there is also a subsidiary heaping at ages ending in 2 and 8: the numbers at ages ending in 1,3,4,6,7 and 9 are correspondingly reduced.

Digit preference of this kind is, to a greater or lesser degree, world-wide. A summary index of the degree of heaping on the ages ending in 0 and 5, known and "Whipple's index" has been devised (UN, 1962) to measure the reliability of the reported age distribution. It is calculated by summing the population recorded with ages ending in 0 and 5 between the ages 23 and 62, and dividing the result by 20 per cent of the total population in this age range. The ratio so obtained is expressed as a percentage. Thus if there were no heaping on the 0's and 5's, the Whipple's index would be approximately 100; if the heaping were such that the entire population was reported at these ages, the index would be 500. Between these extremes, the following scale for estimating the reliability of the data has been suggested by the United Nations;

| Quality of the Data | Whipple's Index |
| --- | --- |
| Highly accurate | Less than 105 |
| Fairly accurate | 105-109.9 |
| Approximate | 110-124.9 |
| Rough | 125-174.9 |
| 'Very rough | 175 and over |

The Whipple's index calculated from Nepalese and selected Asian population data are given in Table 5 which suggest an unusually heavy degree of' heaping. Digit preference appears to be maximum in Bangladesh followed by Nepal and even in Sri-Lanka the quality of age reporting can only be classified as rough (Table 5).

It appears from Table 5 that in Nepal the degree of age reporting is better in surveys than in censuses. Despite the doubling of supervisor / enumerator ratio in 1981 compared to 1971 the quality of the 1981 data did not improve, in fact it was worse than the 1971 data. Improving the ratio further in 1991, however, seems to have worked because the 1991 data appears to be the best of all the Censuses Of Nepal. It may be recalled that in 1991, not only the supervisor / enumerator ratio improved but also their quality in terms of educational qualification was far better. Table 5 also indicates that because of the better-trained enumerators and greater supervision while carrying out surveys, in contrast to censuses, the degree of age mis reporting has been considerably reduced. Another interesting feature of Table 5 is that age reporting is better among females in surveys while it is just the opposite in censuses. It may well be that because in censuses the head of the household who is usually the male, is the first person of contact and the main supplier of information, male age reporting is comparatively better. In the case of fertility survey data since females are the focus of attention their ages may have been better reported.

Table 5: Whipple's Index for Nepal and Some Asian countries

| Country | Year | Sex | Data Source | | Whipple's index |
|---|---|---|---|---|---|
| Nepal | 1971 | Male | Census, CBS | (1975) | 240.3 |
| Nepal | 1971 | Female | Census, CBS | (1975) | 253.0 |
| Nepal | 1981 | Male | Census, CBS | (1984) | 248.1 |
| Nepal | 1981 | Female | Census, CBS | (1984) | 254.9 |
| Nepal | 1991 | Male | Census, CBS | (1993)* | 195.6 |
| Nepal | 1991 | Female | Census, CBS | (1993)* | 209.0 |
| Nepal | 1976 | Male | Survey MOH | (1977) | 212.6 |
| Nepal | 1976 | Female | Survey MOH | (1977) | 195.3 |
| Nepal | 1991 | Male | Survey MOH | (1993)** | 180.3 |
| Nepal | 1991 | Female | Survey MOH | (1993)** | 160.9 |
| Bangladesh | 1974 | Male | Survey MOD | (1977) | 313.4 |
| Bangladesh | 1974 | Female | Survey MOD | (1977) | 318.9 |
| Sri Lanka | 1975 | Male | Survey Sri Lanka | (1978) | 149.3 |

Source: Karki (1985); * CBS (1993); ** MOH (1993).


Another method of measuring age heaping is through 'Myers' Blended Index' developed by Myers (Myers, R. J. 1940). This index has also been calculated for Nepal census and survey data as shown in Table 6. According to this index the absence of age heaping would result in index value of about zero. Table 6 shows virtually no improvement in age reporting between 1971 and 1981, rather this index shows worse situation in 1981 than in 1971 confirming the trend shown by the Whipple's index above. However, the situation looks much better in 1991.

Table 6: Myers's Index of Digit Preference for Nepal Censuses of 1971,1981 and 1991 and Survey Data of 1991.

| Year | Total | Male | Female |
|---|---|---|---|
| 1971 Census | 24.3 | 23.3 | 25.3 |
| 1981 Census | 24.7 | 23.8 | 25.6 |
| 1991 Census | 17.4 | 16.2 | 18.6 |
| 1991 Survey | 12.5 | 14.0 | 11.1 |

Source: CBS, 1975; CBS, 1984; CBS, 1993; MOH, 1993.

Yet another method of assessing the quality of data is the age-sex accuracy index (UNASAI) developed by UN (1952). According to this, census age-sex data can be described as "accurate", "inaccurate", or "highly inaccurate" depending on whether the UNASAI is under 20, 20 to 40, or over 40. This procedure was also applied to Nepal census data of 1971, 1981 and 1991 and survey data of 1991 and the results are given Table 7:

Table 7: United Nations Age-Sex Accuracy Index, for Nepal Censuses of 1971, 1981 and 1981 and Survey Data of 1991

| Census/Survey | | Index |
|---|---|---|
| 1971 | Census | 51.9 |
| 1981 | Census | 43.5 |
| 1991 | Census | 41.9 |
| 1991 | Survey | 40.4 |

Source: Same as Table 6.

Table 7 indicates that age reporting in 1991 may be rated as being on the borderline of 'inaccurate' and "highly inaccurate" in Nepal; it was worse in 1971 but has gradually improved in the successive censuses and surveys. Again the survey data show relatively less inaccuracy than the census data.

A general age-shifting in the case of adolescents, particularly females in the age group 15-19 compared with the 20-24 age group, was a prominent feature of Nepalese censuses until 1981; but by 1991 this seems to have improved as shown by Table 8. The proportion of population in the age group 20-24 is expected to be lower than the proportion in the age group 15-19.

Table 8: Per cent Female Population in Age Groups15-19 and 20-24, Nepal, 1961-1991.

| Age group | Census | | | | Survey | |
|---|---|---|---|---|---|---|
| | 1961 | 1971 | 1981 | 1991 | 1976 | 1991 |
| 15-19 | 8.41 | 8.71 | 8.63 | 9.86 | 9.80 | 9.90 |
| 20-24 | 8.89 | 8.78 | 9.54 | 9.25 | 9.61 | 8.70 |

Prior to 1991 only the survey data showed smaller proportions in the 20-24 age group compared with the 15-19 age group.

## 3.2    Quality of Fertility Data

Information on fertility of women is not easy to collect. In the case of Nepalese society it is even more difficult. "To obtain good quality fertility data in as large an operation as the census undertaking is difficult in Nepal. This is indicated by the quality of fertility data collected in the last three censuses of 1971, 1981 and 1991.

Table 9 shows the mean number of children ever born alive for women by age, obtained from censuses and surveys of Nepal. Since the data are life-time fertility the mean parity of 45-49 age group can be taken as a rough measure of total fertility rate. Accordingly, Nepal's fertility based on 1981 census data should be around 3.6 and based on survey data it comes to around 5.7 in 1976. Similarly in 1991, the mean parity for 45-49 age group was 4.4 based on census data while for the same year the corresponding figure was 5.9 based on survey data. The gap between the census and survey figures has declined from 37 per cent in 1981 to 25 per cent in 1991 (Table 9). Although fertility data collected in different censuses have successively improved in quality, CEB based on censuses are still too low.

Table 9: Mean Number of Children Ever Born Alive per Woman by Age,
Derived from Censuses and Surveys of Nepal

| Age Group | Census | | Survey | |
|---|---|---|---|---|
| | 1981 | 1991* | 1976 | 1991** |
| 15-19 | 0.240 | 0.158 | 0.188 | 0.148 |
| 19-24 | 1.015 | 1.121 | 1.316 | 1.280 |
| 25-29 | 1.968 | 2.316 | 2.848 | 2.721 |
| 30-34 | 2.796 | 3.248 | 4.051 | 3.912 |
| 35-39 | 3.309 | 3.929 | 5.069 | 4.860 |
| 40-44 | 3.569 | 4.314 | 5.473 | 5.455 |
| 45-49 | 3.582 | 4.388 | 5.660 | 5.880 |

Source: Karki (1985); * CBS (1993); ** MOH (1993).

Improved reporting of CEB in 1991 could be attributed to, other things remaining the same, explicit and clear questions about children ever born alive, asked of women, which were:

- How many children has this woman borne who are now living with her? (response recorded by sex).
- How many children has she borne who are now living elsewhere (response recorded by sex).
- How many children has she borne who have died? (response recorded by sex).

Still the reported number of children ever born to women is lower than the true number, as shown by surveys. This could be because of some other errors commonly encountered in the collection of information on children ever born, which in the survey situation are handled better than in the case of a census. The reported completed family size of women aged 45-49 cannot be accepted as an index of "true" fertility level. Comparison of census and survey data does indicate that the bias is not confined to women above 45, it is also true of earlier ages (Table 9).

It is not only children ever born (life-time fertility) that is poorly reported in the Nepalese censuses but also the current fertility. Table 10 compares current fertility derived from the 1991 census with that obtained from the 1991 survey.

Table 10: Age-specific Fertility Rates per Women Derived from Births in the Past Year: 1991 survey and 1991 census

| Age-group | survey 1991* | 1991 census** |
|-----------|-------------|---------------|
| 15-19 | .098 | .031 |
| 20-24 | .280 | .108 |
| 25-29 | .245 | .108 |
| 30-34 | .187 | .086 |
| 35-39 | .129 | .063 |
| 40-44 | .060 | .034 |
| 45-49 | .019 | .014 |
| TFR | 5.09 | 2.22 |

* MOH (1993); ** CBS (1993)

Although, the current fertility data in Table 10 relate to the same year, they vary by a margin of more than 50 per cent. Clearly the census data are seriously under-reported. This extremely low reporting of births that occurred in the past year may be attributable to the following possible causes:

i) The question asked in the 1991 census to obtain information on current fertility was: "During the last 12 months how many children were borne alive by the woman" (live births were recorded by sex). This type of question is subject to substantial reference period error in the Nepalese society where the vast majority of women are illiterate and hardly remember the date of occurrence of a vital event. Also when a question is asked by limiting the reference period to 12 months only, many women are likely to deliberately displace the event in order to avoid all the problems of answering the question. This was found true of survey data in 1991 (MOH, 1993).

Perhaps more reliable data on `births last year' could have been obtained if the question was asked on most recent live birth. This was also what the Census Planning Meeting had recommended for the 1976/77 round of censuses of the Pacific region island countries (Groenewegen, 1979). In this way every ever-married woman would be compelled to report about her most recent live birth. For this, enumerators could be instructed to concentrate on the last births that occurred during the past 2 years.

ii)     In 1981, more births (25,875) were recorded as having occurred to women aged 50+ than to women aged 45-49 (14,078). In the case of 1991 census, birth data for women beyond age 50 was not tabulated, but it can not be ruled out that reporting of births by women 50+ did not take place. Since it is rare for a woman to be able to bear a child beyond age 50 it is possible that either the births were wrongly dated or the ages of the women had been misreported or both.

**3.3     Sex Ratio**

The sex ratio is usually expressed as the number of males per hundred females. It is usually calculated by taking the number of males in a population at a given time and dividing it by the number of females in the same population. The overall sex ratio in a population is entirely determined by

    a) The sex ratio at birth.
    b) Sex differences in mortality.
    c) Sex selective migration.
    d) Sex differential enumeration.

The sex ratio at birth is the number of male births per 100 female births. It is usually around 105, but does vary somewhat, among populations and sub-groups. For example in England and Wales in 1985 the sex ratio at birth was 105.4 and the ratio seems to have been slowly increasing for a long time. It was 103.5 in 1900 (Newell, 1988).

Sex differentials in mortality cause the sex ratio to vary across ages. Mortality of each sex is determined by occupational and biological factors. Men generally work at more hazardous, strenuous and stressful occupations while women are generally exposed to the special risks of childbearing, and some countries in South Asia still show higher death rates for females than males. The weight of biological forces is reflected in the higher mortality of male infants and fetuses. In advanced nations, however, the overall mortality is lower for women than men. Therefore, women, on the average, live longer than men. Thus the sex ratio tends to decline with age. In high mortality countries, on the other ]land, female mortality tends to be higher than male mortality, probably due to worse malnutrition among young females and the risks of maternity. Consequently the pattern of sex ratio by age in a developing country is very different from that of a developed society.

Sex selective migration also causes the sex ratio to vary across ages. For example, in the Northern Territory of Australia because of continued large male migration the sex ratio was high. The sex ratio for age group 20-39 years for the Northern Territory was found in the 1976 census to be 123 males per 100 females (Pollard, Yusuf and Pollard, 1981).

When census errors (omission, incorrect declaration of ages) differ between males and females, then the sex ratio at the various ages will be distorted. The Tunisian census of 1956 is, for example, found to have left out women population in huge numbers (Pressat, 1978), causing sex ratio at ages 60 and above rise beyond 127 males per 100 females.

## 3.4 Trend in Sex Ratio of Population

The sex ratio for the population of Nepal is shown in Table 11 from 1911 onwards. The urban/rural breakdown of sex ratios is given only from 1952/54 onwards because of the unavailability of urban data in the earlier population censuses. Even for 1952/54 the urban sex ratio is available only for the three towns of Kathmandu valley. The urban sex ratio is usually high because the urban centres absorb migrants from rural areas and also to some extent from outside the country. Since in the case of Nepal migration is male- selective, the urban sex ratios are above 100 in all the censuses (Table 11).

Table 1 l:      Sex Ratio of Population, Nepal 1911 - 1991

| Census Year | Urban | Rural | Nepal |
|---|---|---|---|
| 1911 | n.a. | n.a. | 104.28 |
| 1920 | n.a. | n.a. | 100.91 |
| 1931 | n.a. | n.a | n.a. |
| 1941 | n.a. | n.a. | 100.06 |
| 1952/54 | 104.12a | 96.64 | 96.80(100.62b) |
| 1961 | 112.41 | 96.52 | 97.28 |
| 1971 | 116.58 | 100.78 | 101.36 |
| 1981 | 115.24 | 104.36 | 105.02 |
| 1991c | 108.27 | 98.59 | 99.47 |

Source: Karki (January-March, 1992).
n.a.:      not available.
a)         Only for three towns of Kathmandu valley.
b)          Includes absentee population.
c)          (CBS, 1993).

NOTE: /No sex distribution of population was available in 1931 census.

In general the national sex ratios outside the range of 90 to 105 are to be viewed as extreme (Shryock, et al, 1976). Nepal's sex ratios from 1911 to 1991 are within the normal range, varying from a low of 96.80 in 1952/54 to a high of 105.02 in 1981. Although census taking was only a half-hearted exercise prior to 1952/54, the sex ratios of total counts in 1911, 1920 and 1941 do not appear abnormal (CBS, 1987). The sex ratio in 1952/54 was 96.80 based on the population present, whereas if the absentee population is also included, the sex ratio becomes 100.62 which is similar to the sex ratios shown by other censuses. Except for the population counts of 1911 and the census of 1981, Nepal's sex ratios seem to be around 100. Of all these ratios the 1981 sex ratio of 105.02 looks suspicious, firstly, it is slightly above the normal range and secondly it suddenly jumps from 101 in 1971 to 105 in 1981.

### 3.5    Sex Ratios by Broad Age **Groups and Regions**

Table 12 shows the trend in age-specific sex ratio of Nepal's population starting from the census of 1952/54 by ecological zones. For the whole country a steady increase in the proportion of the population under age 15 is apparent from 1952/54. The principal cause of the rise in proportion under age 15 was probably the decline of infant and child mortality. But the high sex ratio shown by the 1981 census for 0-14 age group can not be fully explained by the decline of young age mortality alone. The population of the 0-14 age group in 1981 comprises of children aged 0-9 (those born between 1971 and 1981) and those aged (0-14 (0-4 in 1971 or born in 1966-71). In 1971, male population aged 0-4 was 791,000 and by 1981 they became 10-14 years of age and it is not possible that the same number of males could have survived to become 10-14 in 1981. To our surprise the 1981 census shows about 920,000 male population aged 10-14. It shows something in the order of 200,000 boys over and above the expected number after allowing for mortality attrition. Who are these extra boys? They could be:

   a)      those left out in 1971 enumeration;

   b)      migrants from outside the country;
   c)      those who were over-enumerated by field workers in 1981 because monetary gains were
           high;
   d)      an outcome of the combination of all the above factors. The likely reason is the over-
           enumeration of boys in this age group because even if there was immigration their
           ages would normally be higher than 15.

Table 12 :-  Sex Ratio by Broad Age Groups and Ecological Zones, Nepal: 1952/54 - 1991.

| census year | 0-14 | 15-59 | 60+ | All Ages |
|---|---|---|---|---|
| Mountains/Hills | | | | |
| 1952/54 | 104 | 91 | 83 | 92 |
| 1961 | 103 | 89 | 89 | 94 |
| 1971 | 102 | 96 | 96 | 98 |
| 1981 | 107 | 99 | 110 | 103 |
| 1991a | 103 | 90 | 102 | 96 |
| Terai | | | | |
| 1952/54 | 105 | 100 | 74 | 100 |
| 1961 | 106 | 103 | 72 | 103 |
| 1971 | 106 | 109 | 86 | 106 |
| 1981 | 109 | 107 | 113 | 108 |
| 1991a | 107 | 101 | 104 | 104 |
| Nepal | | | | |
| 1952/54 | 104 | 94 | 80 | 97 |
| 1961 | 104 | 94 | R3 | 97 |
| 1971 | 104 | 101 | 92 | 101 |
| 1981 | 108 | 102 | 111 | 105 |
| 1991a | 105 | 95 | 103 | 99 |

Source: Karki (January - March, 1992); a) CBS (1993).

The female population of the same age group, however, does not indicate that type of anomaly. In 1966-71, the 0-4 year age group numbered about 844,000 and by the time they became 10- 14 by 1981 only about 788,000 girls survived. It may be that these figures are not absolutely correct but still They exhibit an expected pattern. It is therefore clear that the sex ratio of 108.11 in 1981 for 0-14 age group is out of range because it is inflated by more than the expected number of boy population. Similar problems are found for the Mountain/Hill and the Terai populations of the same age group but in (lie case of the Terai immigration can not be ruled out.

The sex ratios of population in the broad age groups for Nepal as a whole from 1952/54 to 1971 and in 1991 appear reasonable because they are at least in the expected direction in that they decrease with increasing age and are in the acceptable range (Table 12). But in 1981, the sex ratios for the whole country and also for the age groups under 15 and over 60 are too high. The high sex ratio can lie attributed to one or a combination of several factors such as:

    a)     outmigration of females;
    b)     return of male emigrants or those with high sex ratio families;

c)      heavy immigration of non-Nepalese males;
d)      gross under-enumeration of females;
e)      gross over-enumeration of males.

Under-enumeration of females in higher age groups is very unlikely. Emigration of females leaving their male counterparts in Nepal is not a possibility. Return of male migrants is a possibility but not to the extent of raising sex ratio to 1 11 for ages 60 and above.

Therefore the likely reason for high sex ratios in 1981 could be either:

a)      heavy immigration of males; or

b)      gross over-enumeration of males; or

c)      a combination of both of these factors.

Heavy immigration of males can only be a small possibility because in general those who migrate belong to the age group 15-59 and this is not supported by its relatively low sex ratio of 102. Because this ratio is the highest compared to all the other censuses some immigration of males can not be ruled out. Among the two regions the Terai exhibits higher sex ratio for the 15-59 age group and the ratio was higher in 1971 than in 1981 implying that the Terai was accommodating relatively more male migrants in 1971 than in 1981.

## 3.6     Trends in age-specific Sex Ratios

Table 13 presents sex ratios by five-year age groups for the census years 1952/54-1991 It is seen that the sex ratio in the age group 0-4 has remained consistently less than 100 in the first three censuses. This finding is contrary to most other populations because sex ratios in early ages are normally high but in the case of Nepal this may not be wrong for many studies on infant mortality have shown higher mortality for male infants than for female infants until as late as 1990s (Vaidyanathan and Gaige, 1973; Krotki and Thakur, 1971; Gubhaju, 1974; CBS, 1976 and 1978; Thapa and Retherford, 1982; and MOH, 1993).

Table 13: Sex Ratios by Five-year Age Groups, Nepa1 : 1952/54 – 1991

| Age Group | Census Year | | | | |
| --- | --- | --- | --- | --- | --- |
| | 1952/54 | 1961 | 1971 | 1981 | 1991* |
| 0- 4 | 98 | 98 | 94 | 106 | 103 |
| 5- 9 | 103 | 103 | 103 | 104 | 104 |
| 10-14 | 114 | 114 | 118 | 117 | 108 |
| 15-19 | 102 | 102 | 110 | 110 | 96 |
| 20-24 | 88 | 86 | 93 | 91 | 85 |
| 25-29 | 89 | 90 | 96 | 96 | 89 |
| 30-34 | 89 | 91 | 91 | 92 | 92 |
| 35-39 | 100 | 104 | 108 | 107 | 101 |
| 40-44 | 89 | 89 | 98 | 100 | 95 |
| 45-49 | 102 | 101 | 114 | 114 | 104 |
| 50-54 | 92 | 92 | 104 | 115 | 106 |
| 55-59 | 102 | 100 | 107 | 119 | 116 |
| All ages | 97 | 97 | 101 | 105 | 99 |

* CBS, 1993.

Sex ratio in the 10-14 age group is consistently high in all the censuses (Table 13). This looks like a typical feature of Nepal. It may be that girls 10-14 report themselves as being 15+ and those 15-19 report themselves as 20+. To some extent age shifting may explain the high sex ratio in age group 10-14 but in 1971 and in 1981 they are too high. High sex ratios are also seen in 15-19 age group in 1971 and 1981. In part this could be due to girls aged 15-19 reporting themselves as 20+ and thus inflating the sex ratio in 15-19 age group.

The sex ratio for the population between the ages 25 to 34 are low throughout. This is quite consistent with Nepal's long tradition of male out-migration. By and large, the age specific sex ratios of 1991 look more in line with other censuses except the 1981 census.

Sex ratios in old ages look too high especially in 1981. To some extent this could be due to sex differential mortality. Another possible reason could be the return of male migrants back home in old ages. Both these can contribute to high sex ratios in old ages but again the question is why only in 1981 these ratios are too high. If that is a common phenomenon, the sex ratios in 1981 census should not be far too high compared to other censuses. Immigration could be a contributory factor but generally only people of non-dependent age migrate. One is therefore left with the suspicion that males were over-enumerated in 1981.

## 3.7    Sex Ratio by Caste/Ethnic Group

The 1991 census provides information on caste/ethnic classification of Nepalese population by age and sex. Utilizing these data the sex ratios for cultural groups by broad age groups have been computed and shown in Table 14.

Table 14: Sex Ratios by Broad  Age Groups for Caste/Ethnic Groups, Nepal : 1991

| Caste/ Ethnic Group | 0-14 | 15-64 | 65+ | All Ages |
|---|---|---|---|---|
| Terai. | | | | |
| Communities | 109 | 104 | 109 | 106 |
| Yadav, Ahir | 116 | 108 | 112 | 111 |
| Kayastha | 101 | 102 | 100 | 101 |
| Kumhar | 112 | 101 | 105 | 105 |
| Bania | 111 | 111 | 112 | 111 |
| Dhobi | 113 | 103 | 101 | 107 |
| Sudhi, Kalwa | 113 | 109 | 107 | 111 |
| Kurmi | 112 | 107 | 107 | 109 |
| Brahman(T) | 112 | 111 | 113 | 111 |
| Rajput | 109 | 11.5 | 122 | 113 |
| Tharu | 102 | 100 | 112 | 101 |
| Teli | 114 | 107 | 116 | 110 |
| Kuswha | 110 | 105 | 117 | 108 |
| Muslim | 109 | 104 | 113 | 106 |
| Haluwai | 113 | 107 | 114 | 110 |
| Mallah | 113 | 103 | 99 | 107 |
| Rajbanshi | 100 | 100 | 138 | 100 |
| Dhimal | 105 | 101 | 115 | 103 |
| Gangain | 109 | 102 | 127 | 105 |
| Maewadi | 106 | 124 | 99 | 116 |
| Bengali | 107 | 113 | 132 | 111 |
| Dhanuk | 115 | 104 | 99 | 108 |
| Shikh | 102 | 91 | 86 | 95 |
| Dhushad | 113 | 101 | 94 | 106 |
| Chamar | 110 | 101 | 93 | 104 |
| Khatway | 113 | 100 | 93 | 105 |
| Musahar | 106 | 99 | 85 | 102 |
| Kewat | 110 | 102 | 104 | 105 |
| Rajbhar | 109 | 103 | 101 | 105 |
| Kanu | 114 | 107 | 114 | 110 |
| Others(T) | 110 | 105 | 108 | 107 |

Table 14 (Contd...)

| Caste/ Ethnic Group | Age Group | | | |
|---|---|---|---|---|
| | 0-14 | 15-64 | 65+ | All Ages |
| Hill/Mountain | | | | |
| Communities | <u>103</u> | <u>91</u> | <u>103</u> | <u>97</u> |
| Brahman(H) | 103 | 94 | 93 | 98 |
| Chhetri | 102 | 90 | 105 | 96 |
| Thakuri | 103 | 90 | 109 | 96 |
| Sanyasi | 103 | 93 | 107 | 98 |
| Newar | 103 | 97 | 103 | 99 |
| Limbu | 102 | 90 | 96 | 96 |
| Rai | 102 | 93 | 106 | 97 |
| Gurung | 104 | 84 | 100 | 92 |
| Thakali | 100 | 91 | 89 | 94 |
| Tamang | 104 | 97 | 100 | 100 |
| Magar | 103 | 87 | 107 | 94 |
| Danuwar | 96 | 91 | 95 | 93 |
| Jirel | 99 | 90 | 100 | 94 |
| Majhi | 101 | 94 | 109 | 98 |
| Sunuwar | 106 | 92 | 103 | 98 |
| Gaine | 100 | 90 | 109 | 95 |
| Chepang | 105 | 104 | 139 | 105 |
| Kumal | 103 | 88 | 135 | 96 |
| Churoute | 122 | 99 | 104 | 108 |
| Bote | 112 | 96 | 145 | 104 |
| Lepcha | 165 | 147 | 139 | 153 |
| Raute | 44 | 29 | 36 | 36 |
| Darai | 105 | 95 | 125 | 100 |
| Raji | 118 | 99 | 176 | 107 |
| Thami | 104 | 93 | 87 | 97 |
| Damai | 102 | 87 | 120 | 94 |
| Kami | 104 | 89 | 119 | 96 |
| Sarki | 104 | 86 | 127 | 95 |
| Wadi | 97 | 87 | 129 | 92 |
| Other(H) | 102 | 91 | 115 | 96 |
| Sherpa | 103 | 97 | 92 | 99 |
| Bhote | 103 | 88 | 95 | 94 |
| Others(M) | 110 | 102 | 159 | 107 |
| Foreigners | 98 | 142 | 165 | 129 |
| Not Stated | 119 | 117 | 94 | 117 |
| **All** | **105** | **95** | **105** | **99** |

Source:        CBS, 1993.

The overall sex ratios show high values for the Terai communities implying probably higher female mortality than male mortality. Early-age sex ratios are high and old age sex ratios are also high which reinforce the contention that female mortality is consistently higher among all ages. But it could also be that the Terai communities are affected by immigrants particularly in age groups above 15 thereby contributing to high sex ratios. Among other major groups Brahmins(H) show decreasing sex ratio with age which may mean that probably male mortality is higher than that of females. But Chhetris and Magars, etc.. show overall low sex ratios whereas the sex ratios in old ages are high. Among the members of these groups many males outmigrate for employment elsewhere. Traditionally the people who join the army in foreign countries and at home belong to these two cultural groups. Raute, Damai and Wadi groups exhibit very low sex ratios throughout all ages and so do the Danwar/Jirel groups. The low caste groups are seen having very high sex ratio in old ages. All these findings open up new research areas with regard to male and female populations of different cultural groups. It would be interesting to know what happens to the male folks in these populations, why they are too few compared to their female counterparts.

Examination of sex ratios by caste/ethnic groups confirms the hypothesis that male migration is common primarily among specific caste/ethnic groups. The analysis also opens up new research areas as to why in certain caste/ethnic groups sex ratios are too low throughout all ages. It also shows that some cultural groups may he enjoying high female life expectancy than others. Therefore, it calls for demographic research focusing on specific socio-cultural groups.

## 3.8    Quality of Nuptiality Data

Marriage, separation, divorce, widowhood and remarriage are collectively called 'Nuptiality'. Their importance arises partly from their relationship with the age at which sexual relations begin and end, and partly with the formation and dissolution of Families and households. If the main focus of interest is fertility patterns, then the interest in Nuptiality will mainly relate to when a woman first becomes exposed to the risk of childbearing, and thus with her age at first marriage. Alternatively, if the interest is in the formation and break-up of families, then separation, divorce, widowhood and remarriage are likely to be of equal interest as marriage, and males in this respect are as important as females.

Marriage is a much more complex culturally and socially defined event as opposed to birth and death as they are biologically identifiable events. However, in many societies it is a well-defined, religious and/or legal ceremony. Consequently, it is possible to collect data on marriage using a system of registration, just like births and deaths. This does not work, however, in many parts of the world. In the Caribbean and many parts of Latin America what are known as consensual, common law, or visiting unions are very common. These are more or less stable unions which are recognized by society, sometimes in much the same way as a marriage, but which involve no legal or religious ceremony. In parts of South and East Asia, marriage is more a process than a single event, involving several stages and ceremonies, sometimes spread out over a long period. In some highly developed, Western societies, particularly Sweden and Denmark, legal/religious marriages have somewhat fallen out of fashion. In order, therefore, to collect data on Nuptiality one has to take into consideration the prevailing cultural and social norms.

Just as one obtains information on marriage and divorce from registration (flow data), one can also collect data using censuses and surveys on the current marital status characteristics of the population (stock data). It is also possible to use censuses and surveys to retrospectively collect flow data by asking respondents to report their dates of marriage and divorce.

The United Nations, in their recommendations for the 1980 round of censuses, suggested that the minimum categories of marital status recorded should be:

1.  Single (i.e.. never married),
2.  Married,
3.  Widowed, not remarried,
4.  Divorced, not remarried,
5.  Remarried.

The frequency of marriage is emphasized because it has important implications for fertility study. In the context of child-bearing, what is really wanted is not actually age at marriage but the age at which sexual relations begin, because that is when couples become `exposed to the risk' of childbearing. In most societies, age at marriage is a reasonable measure of this, but in some it is not - sexual relations may instead begin either some time before or after marriage.

In Nepal the institution of marriage is very strong; it is early and universal. All surveys and census data of Nepal support this. Table 15 shows trends in marital status from 1961 to 1991 by sex and age.

Table 15: Per cent Distribution of Marital Status, by Age and Sex, Nepal, Census 1961-1991.

| Age Group | 1961 | 1971 | 1981 | 1991 |
|---|---|---|---|---|
| | | Married | | |
| Male | | | | |
| 6-9 | 2.97 | 1.20 | | |
| 10-14 | 10.59 | 6.23 | 14.03 | 4.06 |
| 15-19 | 35.86 | 26.62 | 25.09 | 19.13 |
| 20-24 | 69.62 | 65.59 | 57.82 | 60.29 |
| 25-29 | 85.27 | 85.65 | 78.80 | 85.51 |
| 30-34 | 90.42 | 91.50 | 85.76 | 92.80 |
| 35-39 | 91.83 | 93.31 | 88.97 | 94.75 |
| 40-44 | 91.05 | 92.93 | 89.09 | 94.35 |
| 45-49 | 89.50 | 92.44 | 89.16 | 93.49 |
| 50-54 | 86.95 | 90.51 | 88.36 | 91.15 |
| 55-59 | 84.13 | 88.54 | 87.18 | 89.18 |
| 60+ | 73.17 | 78.95 | 80.82 | 79.32 |
| Female | | | | |
| 6-9 | 5.29 | 2.33 | | |
| 10-14 | 24.64 | 13.36 | 13.36 | 7.21 |
| 15-19 | 71.42 | 60.19 | 50.05 | 45.50 |
| 20-24 | 91.57 | 91.07 | 85.93 | 85.09 |
| 25-29 | 93.71 | 95.42 | 93.21 | 94.13 |
| 30-34 | 91.83 | 94.99 | 94.78 | 95.13 |
| 35-39 | 86.65 | 91.95 | 93.81 | 93.89 |
| 40-44 | 78.32 | 86.64 | 91.12 | 90.85 |
| 45-49 | 68.59 | 80.57 | 87.80 | 86.33 |
| 50-54 | 59.15 | 70.82 | 81.74 | 78.23 |
| 55-59 | 50.78 | 66.62 | 79.06 | 72.26 |
| 60+ | 32.13 | 44.38 | 61.04 | 49.17 |

Table 15        (Contd..)

| Age Group | 1961 | 1971 | 1981 | 1991 |
|---|---|---|---|---|
| | | Never Married | | |
| **Male** | | | | |
| 6-9 | 97.01 | 98.78 | | |
| 10-14 | 89.30 | 93.71 | 85.11 | 95.76 |
| 15-19 | 63.33 | 73.02 | 74.13 | 79.44 |
| 20-24 | 26.35 | 33.11 | 40.85 | 38.07 |
| 25-29 | 10.21 | 12.26 | 19.52 | 12.66 |
| 30-34 | 4.72 | 5.69 | 12.36 | 5.15 |
| 35-39 | 2.71 | 3.25 | 8.93 | 2.75 |
| 40-44 | 2.06 | 2.31 | 8.03 | 2.11 |
| 45-49 | 1.60 | 1.60 | 7.36 | 1.64 |
| 50-54 | 1.47 | 1.43 | 6.88 | 1.55 |
| 55-59 | 1.26 | 1.22 | 7.04 | 1.38 |
| 60+ | 0.98 | 1.07 | 7.83 | 1.29 |
| **Female** | | | | |
| 6-9 | 94.67 | 97.65 | | |
| 10-14 | 75.14 | 86.56 | 85.73 | 92.36 |
| 15-19 | 25.68 | 39.33 | 49.17 | 52.72 |
| 20-24 | 5.33 | 7.86 | 13.06 | 12.76 |
| 25-29 | 1.91 | 2.59 | 5.35 | 3.66 |
| 30-34 | 1.04 | 1.40 | 3.07 | 1.92 |
| 35-39 | 0.77 | 1.08 | 2.63 | 1.30 |
| 40-44 | 0.68 | 0.92 | 2.52 | 1.09 |
| 45-49 | 0.58 | 0.77 | 2.93 | 0.90 |
| 50-54 | 0.55 | 0.71 | 3.56 | 0.93 |
| 55-59 | 0.51 | 0.68 | 4.20 | 0.89 |
| 60+ | 0.45 | 0.62 | 6.24 | 0.89 |

Table 15 (Contd..)

| Age Group | 1961 | 1971 | 1981 | 1991 |
|---|---|---|---|---|
| | | Widowed | | |
| **Male** | | | | |
| 6-9 | 0.01 | 0.01 | | |
| 10-14 | 0.08 | 0.04 | 0.68 | 0.05 |
| 15-19 | 0.57 | 0.24 | 0.55 | 0.13 |
| 20-24 | 1.53 | 0.90 | 0.82 | 0.38 |
| 25-29 | 2.45 | 1.59 | 1.09 | 0.68 |
| 30-34 | 3.25 | 2.35 | 1.35 | 1.03 |
| 35-39 | 4.11 | 3.05 | 1.67 | 1.59 |
| 40-44 | 5.68 | 4.40 | 2.48 | 2.67 |
| 45-49 | 7.72 | 5.67 | 3.11 | 4.04 |
| 50-54 | 10.41 | 7.79 | 4.39 | 6.43 |
| 55-59 | 13.51 | 9.99 | 5.44 | 8.57 |
| 60+ | 24.5 | 19.68 | 10.92 | 18.24 |
| **Female** | | | | |
| 6-9 | 0.04 | 0.02 | | |
| 10-14 | 0.18 | 0.06 | 0.70 | 0.06 |
| 15-19 | 0.80 | 0.30 | 0.49 | 0.16 |
| 20-24 | 1.62 | 0.73 | 0.62 | 0.40 |
| 25-29 | 3.24 | 1.64 | 1.03 | 0.89 |
| 30-34 | 6.14 | 3.28 | 1.73 | 1.76 |
| 35-39 | 11.56 | 6.62 | 3.10 | 3.62 |
| 40-44 | 19.88 | 12.10 | 5.82 | 6.74 |
| 45-49 | 29.57 | 18.30 | 8.74 | 11.35 |
| 50-54 | 38.99 | 28.13 | 14.08 | 18.93 |
| 55-59 | 47.24 | 32.39 | 16.20 | 24.85 |
| 60+ | 65.73 | 54.65 | 32.07 | 47.54 |

Table 15: (Contd..

| Age Group | 1961 | 1971 | 1981 | 1991 |
|---|---|---|---|---|
| Male | | Divorced / Separated | | |
| 10-14 | 0.02 | 0.02 | 0.17 | 0.06 |
| 15-19 | 0.23 | 0.13 | 0.23 | 0.20 |
| 20-24 | 0.63 | 0.40 | 0.52 | 0.59 |
| 25-29 | 0.69 | 0.50 | 0.60 | 0.70 |
| 30-34 | 0.61 | 0.46 | 0.52 | 0.65 |
| 35-39 | 0.47 | 0.39 | 0.43 | 0.63 |
| 40-44 | 0.4 | 0.35 | 0.41 | 0.62 |
| 45-49 | 0.41 | 0.29 | 0.37 | 0.59 |
| 50-54 | 0.38 | 0.26 | 0.36 | 0.62 |
| 55-59 | 0.35 | 0.25 | 0.34 | 0.59 |
| 60+ | 0.39 | 0.30 | 0.43 | 0.56 |
| **Female** | | | | |
| 10-14 | 0.03 | 0.02 | 0.21 | 0.08 |
| 15-19 | 0.29 | 0.18 | 0.29 | 0.34 |
| 20-24 | 0.45 | 0.33 | 0.39 | 0.64 |
| 25-29 | 0.45 | 0.35 | 0.42 | 0.72 |
| 30-34 | 0.43 | 0.33 | 0.42 | 0.78 |
| 35-39 | 0.46 | 0.35 | 0.45 | 0.91 |
| 40-44 | 0.46 | 0.35 | 0.54 | 1.07 |
| 45-49 | 0.42 | 0.35 | 0.53 | 1.16 |
| 50-54 | 0.38 | 0.34 | 0.62 | 1.37 |
| 55-59 | 0.41 | 0.31 | 0.55 | 1.32 |
| 60+ | 0.24 | 0.36 | 0.65 | 1.05 |

The Nuptiality data presented in Table 15, in general, show expected trend but examination by census years do indicate some anomalies as well. Among the married males, the 10-14 age group shows swings over census years which is not expected. Among the males the proportion married reaches peak for age group 35-39 except in 1981 where the peak is found one age group higher. Among the females 25-29 was the age group which showed highest proportion married in 1961 and 1971 and this shifted to 30-34 in 1981 and 1991.

The never married proportions appear reasonable except for 1981 because these are too high in older ages for both males and females and much too high among the males.

The widowhood data for 1961 and 1971 indicate expected trend but in 1981 they look suspicious. The proportion widowed is lower in 1981 than in 1991 both for males and females and much more so for males. The divorce/separated proportions are very small and the institution of marriage is very strong in the Nepalese society.

## 3.9    Quality of Mortality Data

Like the 1981 census, the 1991 census also sought to collect information on deaths to members of the households occurring during the 12 months preceding the census. The distribution of the reported deaths by sex and age clearly shows serious under-reporting. The total number of deaths which were recorded as having occurred during the twelve months preceding the 1981 census was 80,258 and that of 1991 census was 98,502, giving a crude death rate (CDR) of only 5.34 in 1981 and 5.33 in 1991.

However, given the distribution of the deaths by age, together with the corresponding distribution of the living population, it is possible, using an analytical technique (Brass, 1975), to obtain adjustment factors which will enable the data to be corrected for under-reporting. '(`he application of this technique to the deaths in the 12 months before the census showed completeness of death reporting of 63 per cent for males and 33.7 per cent for females in 1981 and the corresponding proportions for 1991 were 55.5 per cent and 50.9 per cent (Karki and Agrawal, Mimeo, January, 1994). The under-reporting implied by these figures still look too low because the corrected CDRs turn out to be I 1.1 and 10.0 for 1981 and 1991 respectively. Other studies, for example, MOD (1977) has shown that collecting deaths data for the last 24 months instead of the last 12 months alone, has been found to give better results because this allows catching events occurring at the border line of 12 and 13 months.

## 4.    Completeness of Coverage in 1991 Census Enumeration

The Post-Enumeration Survey (PES) following the 1991 population census estimated an overall undercount of about 1 1 per cent in the 1991 census (Natarjan, 1993). This estimate was not accepted for a number of reasons. The delayed implementation of PES, the problems encountered in matching the PES

and census records, case by case, and the inadequate coverage of PES sample etc. all seem to have contributed to the high estimated under-enumeration of 11 per cent. Thus the results of the PES were not considered the best way to measure the extent of under-enumeration in the 1991 census.

In the absence of a reliable direct estimate of the census coverage, recourse had to be taken to indirect estimation. Karki (1992) estimated total populations in 1981 and 1991 based on re-examination of demographic parameters since 1971. The enumerated population of 1981 was 2.3 per cent greater than the estimated population whereas the enumerated population of 199i was 2.2 per cent lower than tile estimated population. A number of factors were listed as possible reasons for the higher than estimated number in 1981 census and the lower than estimated number in 1991 census. In both instªnces there was a greater share of males than females.

Undercounting is a common feature in census-undertakings although the magnitude i:, greater in developing countries than in developed countries. The U.S. Bureau of the Census estimated a net under count of 1.4 per cent in 1980; the corresponding figures for 1970, 1960 and 1950 being 2.9, 3.3 and4.4 per cent respectively (Robey Briant, 1989). Completeness of coverage in census enumeration of Japan is considered one of the highest in the world, but even there, the census under -ᶜount estimated at 0.35 per cent in 1985 (Miura, 1988).

In India census undercount was estimated at 6 per cent for the 1951 census (Coale and Hoover, 1958) while for the 1971 census the undercount was 6 per cent as estimated by ORG while the Government itself estimated it at 1.7 per cent (ORG, 1962). Krotki and Thakur ( 1971) estimated a minimum undercount of 4.6 per cent for the 1961 census of Nepal. Karki's (Karki, 1992) estimate of' net minimum undercount is 2.2 per cent for the 1991 census. Other indirect estimates place the undercount in 1991 census of Nepal at about 4 per cent (CBS, 1994).

## 5.    Conclusion

Although the 1991 census of population found better than the previous censuses, particularly the 1981 census, the evaluation of some of the aspects of the 1991 census clearly shows that a lot has to be done to improve the quality of census data of Nepal.

Nepal's stage *of* socio-economic development also in part accounts for problems related to quality in census operation. The problems of census taking in Nepal has long been recognized (CBS,1977) but perhaps are still not widely appreciated. These problems relate mainly to the dispersal of the population over numerous hills, valleys and low lands and Nepal's mountains and hills comprise about 83 per cent of the total land area (CBS,1982).

Problems *of* transportation and communication between the capital city and the rest *of* the country can be difficult in the extreme. Despite fairly fast construction of roads in the recent past (now 59 district Headquarters are linked by roads) most *of* Nepal is still not easily accessible. In the 1981 census, the bulk *of* census materials like questionnaire, stationery, enumerator's manual etc.., were transported on human backs. This was still so in 1991 but to a lesser extent. The problems of transportation, communications and logistics that arise due to the physical features of the country are likely to persist well into the future. Additionally, because *of* the low level of education, people do not see very well the need for and use of, census data for social and economic planning.

Certainly a lot of effort was made in 1991 to educate the public about the importance of population census. For this, mostly mass media were utilized. For the next historical census of 2001 the aim should be at not only the quantity *of* media materials but also at their distribution and use at the grassroots. For this, some months prior to the total count mass census canvassing can be launched; in that the public can be informed *of* the importance of census taking.

The manpower in 1991 census round was much better in terms of both quality and quantity as the census enumerator/supervisor ratio was improved and also the educational qualifications of both enumerators and supervisors were much higher in 1991 than in 1981. This manpower mix should be maintained but at the same time more females should be encouraged to join in the future.

Efforts must be made to make "post-enumeration survey" successful because it is tile main source of information that can be used to evaluate the census count. This should be well organized on time, well manpowered and administered immediately after the total enumeration.

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