CHAPTER I
CHANGE IN SIZE AND GROWTH OF POPULATION

History of Census Taking

Nepal has a long history of census taking. The first population census of Nepal was taken in 1911 and this practice was continued roughly every ten years. However, there is some evidence to show that a population count in one form or another took place even before 1911. An enumeration covering adult males reportedly took place during the regime of Bhimsen Thapa (1806-1838). This was possibly done with a view to recruiting adult men into the army. The existence of a *Guthi* (Cooperative Society) indicates the practice of counting houses in Kathmandu Valley even before the Bhimsen Thapa period (1806-I838). However, these censuses were conducted for limited purposes and were also confined to small areas of the country. Even the scope of four censuses (1911, 1920, 1930 and 1941) which were conducted during the Rana Regime (1846-1950) was also limited. Although, these censuses used a short census schedule to collect information on the name of the head of the household, age of persons by sex, occupation, ability to work, number of livestock and means of transportation, the final results were presented in aggregates, i.e. head counts only.

The first scientific census taken in the modern sense of the term started with the 1952,154' census which was conducted in two parts of the country separated by two years in tine. The eastern part of the country with the exception of Mahottari district was covered in 1952. Mahottari district was counted along with the rest of the country in 1954.

Background of the Census Operation

A brief description of the census operation covering mainly the censuses of 1952/54, 1961,1971 and 1981 is presented below:

Prior to 1952/54 there was no separate Field Organization for conducting censuses. - The censuses prior to 1952/54 were conducted through administrative fiat authorizing the district administration to collect various types of information including population counts. The district administrators in turn seem to have relied mainly upon the land revenue agents for providing such information concerning all persons in a village or a group of villages under the jurisdiction of these agents.

a) 1952/54 Census

The need for a separate organization. for conducting censuses was realized only at the time of the first modern census. of 1952/54 and accordingly, a central office was set up to carry out the tasks of census taking. Under the Central Office separate field offices and sub-divisional offices were created for the purpose of conducting censuses. The field level officers were in charge of recruiting and training the enumerators. In 1952/54 village chiefs and revenue agents acted as. enumerators. Their work was supervised and thoroughly checked by trained workers (supervisors) employed by the census organization temporarily for this purpose.

b) 1961 Census

Village chiefs and land revenue collectors/agents were also involved in

the tasks of census taking in 1961. Village chiefs *(Mukhiyas)* and revenue agents *(Patwaris)* acted either as enumerators or assisted in the tasks of field supervisors. The supervisors were recruited from local people in each district and had been given theoretical and practical training at the same district headquarters. There was one supervisor on average for each census sub-zone. The tasks of a supervisor were closely scrutinized by a section officer deputed to each census zone. In 1961, 15,933 enumerators were involved in the tasks of census taking. The fifty-five administrative districts of the time were divided into 18 census zones and 102 sub-zones comprising 456 census areas and 28,400 villages. The village was the unit of enumeration in 1961 but the district was the smallest unit for which data was made available.

c) 1971 Census

With the introduction of the *Panchayat* System in 1962, the country was divided into 14 zones and 75 districts and 28,400 villages were regrouped into nearly 4,000 village Panchayats. The census of 1971, therefore, rearranged some of the districts and created 17 census zones and employed one zonal census officer in each zone for supervising and administering the census operation. He (the zonal officer) was assisted by one non-gazetted class I official and other subordinates. Seventeen training centers were established for training the supervisors and enumerators. The zonal officers and their assistants were recruited and trained at the center. There were about 12,000 enumerators and 500 supervisors who were involved in the actual enumeration. However, the level of education of the enumerators was very poor. The minimum educational qualifications required to be an enumerator were the ability to read and write only. The census schedule was pre-tested in two village Panchayats and one urban area. The 1971 census data was obtained at the ward level. Though the population count by sex at the ward level was published in separate booklets, the main census publications containing standard tables about various socio-economic cum-demographic characteristics of the population, were made available at district level only. For the first time in 1971 the census data was processed through computer and this practice was also continued in 1981.

d) 1981 Census

In 1981 attempts at improving the quality of the field work were made by increasing the ratio of supervisors to enumerators. The number of enumerators, supervisors and assistant supervisors was 15,000, 150 and 1,500 respectively. Though the ratio (enumerators to supervisors) still worked out to be I to 10 in 1981 it must be remembered that it was about 3 times higher than it was in 1971. However, the volume of work of a supervisor had also increased with the increase of population from 11.56 million in 1971 to 15.02 million in 1981. Each assistant supervisor was in charge of approximately two Panchayats and on an average looked after the work of 10 enumerators. Each enumerator covered not more than three wards depending upon the size of the population and the area of the ward. There were 2,935 Panchayats and 26,537 wards in 1981. In addition to this increase in the ratio of supervisors to enumerators the census work was so organized that for the first

time in the history of census taking each administrative district of the kingdom had a separate census office headed by an officer, known as a. District Census Officer. The district officer was assisted by one supervisor and the latter in turn was assisted by a score of assistant supervisors. The district officers and the supervisors were rigorously trained for about 2 months in various aspects of census taking at headquarters while the assistant supervisors were recruited locally and trained at the district headquarters by the district census officer and supervisor. The enumerators were recruited locally and trained at the district headquarters by assistant supervisors. However, the educational qualification of the enumerators remained consistently low, i.e. the ability to read and write only.

One other new feature of the 1981 census was that maps for all village Panchayats and ward level maps of the urban areas were prepared and used for the census operation. This eased the task of enumeration and supervision of census field work considerably. In this census also data was collected at ward level. However, details of the census data was published up to district level only. Some data was also made available at the Panchayat level. This included the total population and household counts only.

Each census operation was carried out in two stages. In the first stage, the supervisors were engaged to prepare a household list as comprehensively and accurately as possible and this was followed by the actual enumeration at the second stage by the enumerators. The coverage of the population census depends to a large extent on the accuracy of the household list. The household list was used as a guide by the enumerators. The household schedule prior to 1981 collected the following conventional information: the serial number of the household, the name of the head of the household, the number of family members by sex and the name of the village. However, the household schedule of 1981 collected additional information such as morbidity and mortality, internal and external migration and the principal occupation of the head of the household, etc. This information when cross classified with other socio-economic data, collected at the level of the individual, would provide a unique opportunity to measure socio-economic differentials on various aspects of life.

The Census Day

The Census Day (CD) i.e. the last day of census was the 28th May *(15thJestha)* for the census of 1952/54. But for each of the succeeding censuses this was the 22nd June (8th Asadh).

The Count: *DE JURE: DE FACTO*

The decennial censuses of the population of Nepal have been taken on a modified *DE JURE* basis since 1952/54. Every person was counted on the basis of his/her usual residence. The usual residence of a person means the place where he/she has been living at least for six months continuously. Visitors, i. e. those who have been living at a place for less than six months were counted in their usual place of residence rather than at their current place of residence. The inmates of prison, the students in a hostel and the armed forces in their barracks were counted as the residents of the places where they were found. Homeless people such as beggars, sages, hermits and vagrants, i. e. persons without any fixed household, were enumerated where they were found.

Nepali nationals living in foreign countries for six months and above were considered as

absentees. Members of foreign diplomatic missions located in Nepal were excluded from the enumeration. However, foreign nationals other than those working in diplomatic missions who had been staying in Nepal at least for six months were included in the enumeration. Foreign nationals visiting during the entire enumeration period were excluded.

Post-enumeration Quality Check

In order to assess the quality of data and particularly the coverage error of the censuses, a post-enumeration quality check survey is usually conducted soon after the census is over. Unfortunately, the population censuses of Nepal were not subject to a post enumeration quality check until 1981. Even this single post-enumeration survey ran into difficulties and its findings were suspect. The post-enumeration survey (PES) was conducted during the period 1-14 August 1981, i.e. one and half months after the census enumeration was over.

The PES sample was drawn from 10 strata of which 2 were urban and 8 rural[1]. The survey was carried out by the supervisors of the 1981 population census in the hope of attaining better coverage of the PES. Confining the analysis to one way matching only, i.e. matching the events found in the PES but not in the census, showed an under-count of 16.6 per cent for all rural strata and 19. 5 per cent for all urban areas. However, these estimates cannot be guaranteed for the following reasons: i) the unadjusted population of Nepal was 11.56 and 15.02 million in 1971 and 1981 respectively and the intercensal (1971-81) growth rate was 2.6 percent per annum. However, if adjustment is made for the tinder-enumeration as it was found in the PES, the population of Nepal would be - 18.05 million in 1981, which would lead to intercensal growth rate of 4.5 per cent per annum. These figures for 1981 appear abnormally high, unless there had been a corresponding gross under-enumeration in the 1971 census as well. Unfortunately. no independent estimate of under (over) enumeration was available for the 1971 census with the exception of the estimated 10 per cent under-count of children in the age group 0-4 (CBS, 1977)[2] Even when, this estimated under-count of children in 1971 is allowed for, the growth rate for the adjusted population during 1971-81 turns out to be 4.31 per cent which still looks very high; ii) the PES was commissioned at a time when the monsoon had already set in and this was likely to create formidable communication problems and

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1. The sample of the PES was drawn from 55 out of 75 districts of the country Twenty mountain districts were excluded from the purview of the PES. This was done in view of the difficulties it would entail to cover these districts during the rainy season when the road communications in those areas not only become much worse but also turn hazardous. The remaining 55 districts were divided into rural and urban areas. The urban area was further divided into 2 strata. Stratum 1 consisted of Kathmandu, Bhaktapur and Lalitpur town Panchayats and the remaining urban areas were classified under stratum 2. Two wards were selected at random from each of the town of stratum 1 and four wards were selected systematically with a random start from stratum 2. The rural area was divided into *8* strata on the basis of altitude, terrain and river systems. For the rural area two districts were chosen within each stratum, with probability proportional to size of population (for greater details see, Chakravarti, N. K. *Final Report of Post Censal Enumeration Survey of Nepal's 1981 Population Census.* United Nations Department of Technical Cooperation for Development and United Nations Fund for Population Activities, *1981* and Rele, *J. R. Report on a Mission to Nepal,7-8Tune 1951,* Population Division, ESCAP, *1983).*
2. Central Bureau of Statistics. *1977. The Analysis of the Population Statistics of Nepal, p.69.*

consequently, the coverage of the PES was likely to be affected adversely and iii) the PES had great difficulty in identifying properly the exact boundaries of a ward covered by the census. This was because the maps that were produced for the census were available up to Panchayats level only and no ward maps were prepared for rural areas.

In addition to these coverage problems faced by the PES there were other methodological problems particularly those associated with the methodologies employed to estimate the coverage error. For example, the estimate of under-enumeration was defined as the ratio of events found in the post-enumeration but not in the census to total events found in the PES expressed in terms of a 100. *First,* this estimate is subject to vagaries of matching procedures. Matching is a difficult proposition in developing countries where information on several key items is either lacking or of limited accuracy. Under the circumstances the estimate of under-enumeration may be too high or too low depending on the degree of stringency one applies to matching procedures. *Second,* the estimate of under-enumeration was based on one-way matching only, i. e. PES records were matched with those of census records. It ignored the events which were found in the census but not in the PES. Rele (1983)[3] calculated these events (i. e. those events found in the census but not in the PES) for rural areas only and if these figures are taken into account one will find more people being enumerated in the census than in the PES in rural areas. The over-count in the census in comparison to the PES was estimated to be 5.7 per cent. This is in sharp contrast with the finding of an alarmingly high estimate of 16.6 per cent under-count obtained through one way matching (i. e. comparing the events found in the PES but not in the census to total events found in the PES). These figures. are not only confusing but also raise fundamental question as to the validity of the PES itself. "Under the circumstances the ability of the PES to provide a reliable estimate of the extent of under or over-enumeration in the census is highly doubtful (Rele, 1983)[4].

In the absence of any reliable direct estimate of the extent of under or over enumeration in the census, we have attempted to provide this estimate indirectly. However, this estimate of under/over-enumeration was confined to the age group of 0--4 years only for two major reasons: i) the scope of under enumeration of children in the census is likely to be higher than in any other age-group[5] and ii) secondly, from the census data, one can find not only the observed number of children in the 0-4 year age-group but also the expected number of children in the corresponding age-group. This would enable us to estimate under/over-count of children aged 0-4. The procedures adopted to estimate the expected number of children are as follows:

a) from the data on the number of children ever born and the number of births which occurred in the year preceding the 1981 census, we have derived adjusted age-specific fertility rates by the Brass Technique (Brass, 1975)6.

3. Rele, J. R. 1983. *Report on a Mission to Nepal 7-18* June 1983, Population Division, ESCAP.

4. *ibid,* p.5
5. Newly-born children are not usually considered as regular member of the household. According to Hindu culture a child is named on the 9th day after his/her birth. Before a child is named, he/she may not be considered as a regular member of the household. Moreover, parents are not certain about the chances of survival of their infants given the high infant mortality prevailing in the country. To ensure a greater chance of survival of children and particularly of infants, some parents may net discloser information about their infants in an interview "to drive out the `evil eyes'."
6. Brass, W. 1975. *Methods for Estimating Fertility and Mortality from Limited and Defective Data,* Chapel Hill, N. C. Carolina Population Center.

b) these age-specific rates were multiplied by the average number of women in the reproductive ages (15-49) for the period 1971-81 in order to obtain the expected average number of births. The *expected* average number of births was multiplied by five to estimate the number of births which occurred during the period 1976--81. The result was divided by sex ratio 106 for estimating male and female births. These figures were further adjusted for the attrition due to mortality. The survival rate from birth to age 4 were derived from the West Model Life Tables 14.4 and 13.7 for male and female children[7].

The data on the observed and expected number of children in the age-group 0-4 years and the estimates of under-enumeration in 1971 and 1981 are provided in Table 1.1.

The Table shows that the number of children aged 0--4 observed in the censuses of 1971 and 1981 falls short of the expected number by 10 per cent. However, this estimate of under-count varies by sex and its pattern changed over the intercensal period. In 1971 the estimate of the under-count of male children was higher than that of female children. This finding is contrary to one's expectation at least in view of the evidence obtained from other countries particularly neighboring countries. In the countries of the Indian

Table 1.1- Observed and expected number of children aged 0-4 and the estimates of under/over-enumeration of children

Children aged 0-4	1971*			1981		
	Observed (0)	Expected (E)	Estimate of under/over enumeration $\frac{0-E}{O} \times 100$	Observed (0)	Expected (E)	Estimate of under/over enumeration $\frac{0-E}{O} \times 100$
Total	1,634,110	1,795,133	9.85	2,314,505	2,555,733	10.42
Male	790,598	901,209	13.99	1,190,581	1,310,512	10.07
Female	843,512	893,924	5.97	1,123,924	1,245,221	10.79

*See Central Bureau of Statistics :1977. *The Analysis of the Population Statistics of Nepal,* page 69

7. The justification for the selection of these models is as follows:

The 1981 census provided information on the number of children ever born and the number of children surviving per woman. From this information we have estimated values of the proportion who died by age X(Xq_0) through the use of the Trussell Method (Trussell, 1975). And thereafter the Xq_o values for both sexes rather than by sex have been calculated since female deaths are under-enumerated to a greater extent than male deaths. The corresponding levels of mortality separately for male and female are estimated from the West Model Life Table, taking I_x values corresponding to these Xq_o values. The median of these estimated levels of mortality approximate to the true level of mortality, which in this is 13.7 for females and 14.4 for males. Similar methods/ procedures were adopted in 1971 to provide an estimate of under/over-enumeration of children aged 0-4. In 1971 the proportion of children who survived from birth to 4 years was derived from the West Model Life Table 7 and estimated the values of the proportion who died by employing the Brass instead of the Trussell technique and the same West Model Life Table was employed to estimate the survival ratios for male and female children. However, the estimates of the proportion who died derived either by the Brass or the Trussell Method do not vary considerably from each other (see United Nations. 1983. *Manual X: Indirect Techniques for Demographic Estimation,* Department of international Economic and Social Affairs: Population Studies, No. 81.)

sub-continent particularly Bangladesh, India and Pakistan, under-enumeration is reportedly higher for female than male children. And this pattern also emerged in Nepal in 1981. The estimates of under-enumeration of male and female children were 13.99 per cent and 5.97 per cent in 1971, while in 1981, the corresponding estimates for male and female children were 10.07 per cent and 10. 79 per cent respectively[8].

Population Size and Intercensal Growth Rate

Table 1.2 presents data on the enumerated population for the census years, 1952/54-81 and the annual growth rates. The enumerated population for the years 1971-81, is also provided in figure 1.1.

It may be observed that the population of Nepal did not grow at a uniform rate throughout the census years 1952/54-81. There have

Table 1.2-Population size and growth, Nepal, Census years 1952/54-1981

Year	Census day	Population	Exponential growth rate (%)	Geometric growth rate (%)	Linear growth rate (%)	Doubling time (in years)
1911	*15th Jestha					
	(28t1h May)	5,638,749	-	-	-	-
1920	*15th Bhadra		-	-	-	-
	(31 st August)	5,573,788	- 0.13	- 0.13	- 0.13	-
1930	*`Not available	5,532,574	- 0.07	- 0.07	- 0.07	-
1941	*15th Falgun					
	(lst March)	6,283,649	+ 1.16	+ 1.16	+ 1.16	60
1952/54	15th Jestha					
	(28th May)	8,2.56,625	+ 2.27	+ 2.30	+ 2.26	31
1961	8th Asadh					
	(22nd June)	9,412,996	+ 1. 64	+ 1.65	+ 1.64	42
1971	8th Asadh					
	(22nd June)	11,555,983	+ 2.05	+ 2.07	+ 2.04	34
1981	8th Asadh					
	(22nd June)	15,022,839	+ 2.62	+ 2.66	+ 2.61	26

Source: "Kansakar, V. B. S. Population Census of Nepal and the Problem of Data Analysis, Kathmandu: 1977. Center For Economic Development and Administration(CEDA), p. 8;

Central Bureau of Statistics, 1958- Population Census 1952/54 Table 2;

,, ,, ,, 1968- „ „ 1961, *Vol.* 111,Part 2, Table 2;
1975-- „ „ 1971, Vol. l, Table 6;

,, ,, ,, 1977- The Analysis of the Population Statistics of Nepal;

,, ,, ,, 1984- Population Census 1981, Vol. 11,Table 4.

8. However, these estimates of under/over-enumeration depend on the mortality level one assumes for calculating survival ratios for children from birth to 4 years. For example, if we use the West mortality levels 12.68 for male and 10.72 for female corresponding to infant mortality rates for male and female estimated for the intercensal period 1971-81 (see Chapter XI: Estimates of Fertility and Mortality), the estimates of under-enumeration of male and female children (0-4 years) would be reduced to only 6.09 and 4.18 per cent respectively in 1981.

been ups and downs in population growth until 1961. However, the population has been growing at a fast rate since 1961.

The population of Nepal declined by one per cent between 1911 and 1920. And this decline by 1 per cent was also observed between 1920 and 1930. The absolute decline in population size between 1911 and 1920, may be attributed to: a) the effect of a world wide influenza epidemic in 1918 which had

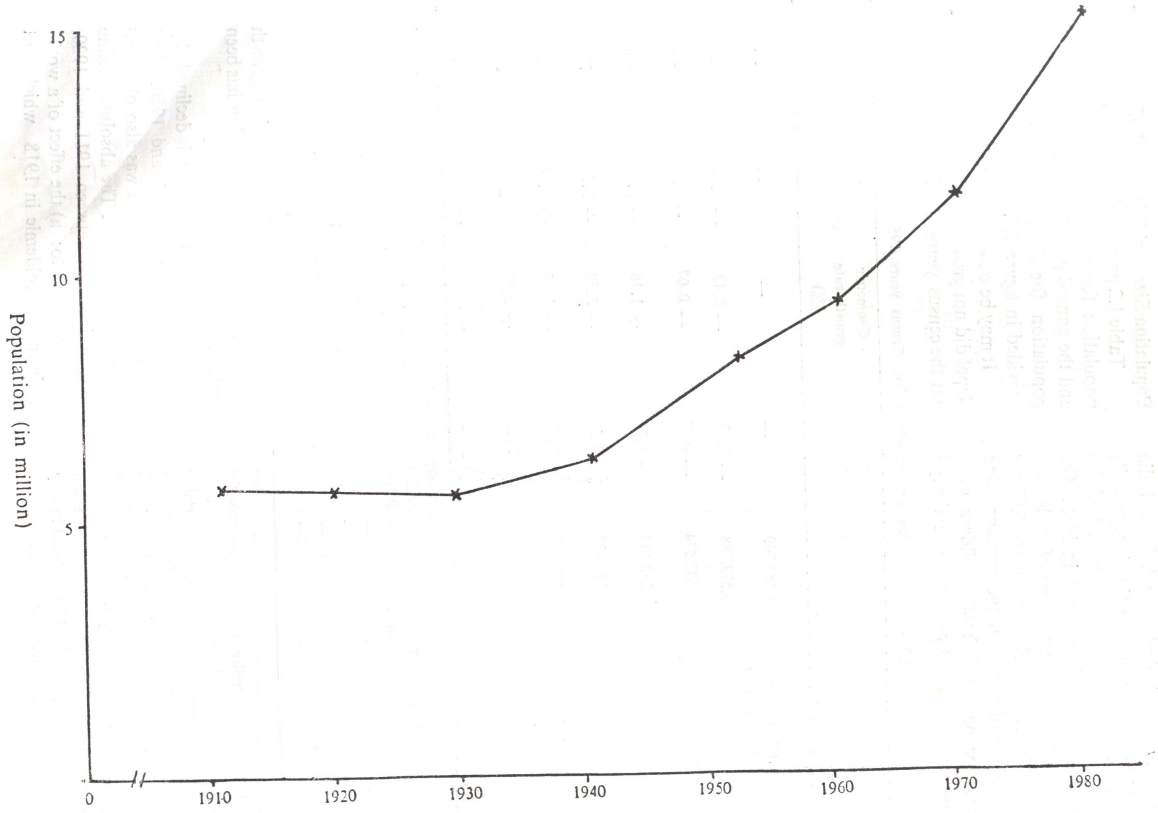

Figure 1.1 Year and Size of Population, Nepal (1911 – 1981)

also passed through Nepal and took the lives of a large number of the population; b) the heavy casualties suffered by Nepalese men serving with the Allied forces during the First World War, and c) the under-enumeration in the 1920 census. It is argued that the enumeration in the 1920 census may not have been complete as it was primarily concerned with ascertaining the number of slaves in the country[9].

The quality of the 1930 census in terms of coverage was possibly no better than that of the 1920 census. Moreover, the fear of being conscripted into the army for possible war against Tibet in 1929 may have also caused some under-reporting particularly on the part of adult men in 1930.

The population registered a modest increase at the rate of 1 per cent per annum during the intercensal period 1930-41. However, this modest growth was followed by a high rate of growth during the intercensal period 1941-1952/54. Various reasons could be adduced to explain this rapid increase in population between 1941 and 1952/54. Some of these explanations are as follows: i) the improvement in the management of census taking; ii) the return of men serving with foreign armies after the Second World War and iii) better coverage. Prior to 1952/54, there was no separate census organization. The censuses prior to 1952/54 were conducted through an administrative fiat issued by the central government asking the district administration to provide statistics on various aspects of community life including those for a population count. Census taking prior to 1952/54 was merely a half hearted exercise on the part of the government. But scientific census taking started only with the 1952/54 census when separate organization was set up for conducting censuses. And the enumerators and supervisors were given training in carrying out the tasks of census taking. All these activities could have resulted in the better coverage of the 1952/54 census compared to those (of other censuses conducted prior to 1952/54.

Prior to the 1952/54 census the overall coverage of the censuses was poor due not only to the lack of good physical communications from one part of the country to the other but also due to the non-cooperation of the people particularly on the part of adult men. Adult men were afraid of being enumerated in the census to avoid possible conscription in the army. This could have led to an under-count of men particularly young adult men in the censuses taken during the earlier period. However , this apprehension ceased to exist with the introduction of the modern and scientific census of 1952/54 when people were told fully about the real purpose and usefulness of a census. And this could have led to an overall improvement in the census coverage particularly of adult men, in the 1952/54 census. Moreover it should be borne also in mind that the census of 1952/54 was conducted in two phases covering approximately one half of the country in 1952 and the remaining part in 1954. This could lead to the over counting of some people due to the long time gap between the two enumerations and the possibility of the movement of a sizeable proportion of those already counted from their areas to places where enumeration was going on. All these factors could together produce a higher rate of growth during the intercensal period 1941-1952/54.

The population of Nepal grew at the rate of only 1.64 per cent per annum between 1952/54 and 1961. This figure was lower than what one would expect. A partial explanation to this decline could be attributed to the

9. United Nations. 1980. *Population of Nepal,* Country Monograph Series No. 6, Bangkok: Economic and Social Commission for Asia and the Pacific, 1980, *p.* 13.

over-counting of the population in 1952/54. However, the population of Nepal has been increasing at a rapid rate since 1961. Between 1961 and 1971 the population or Nepal grew at a rate of 2.05 per cent per annum. This was followed by an unprecedented rate of growth of 2.62 per cent per annum during the intercensal period 1971-81[10]. This dramatic increase in the rate of population growth was mostly due to the rapid fall in the mortality rate without any corresponding decline in fertility which remained constant at a very high level. The estimated crude death rates (number of deaths per thousand population) of Nepal were 27 and 21 during 1952/54-61 and 1961-71 respectively. This declined to only l4 during 1971-81. This dramatic decline in crude death rate over the years was not followed by a decline in the crude birth rate which remained consistently high. The estimated crude birth rate(number of births per thousand population) has been confined within the range of 40-42 during the last twenty-eight years from 1952/54 to 1981 (see Chapter *X1. : Estimates of Fertility and Mortality)* . Similarly, no significant time trend in the total fertility rate (TFR) was observed either. In other words, the TFR remained stable at a high level of over 6 children per woman (see Chapter XI : *Estimates of Fertility and Mortality* and Chapter XV : *Population Projections).*

The effect of the decline in mortality is also reflected in the age-sex structure of the population. The benefit of a decline in the mortality rate is likely to accrue to young children particularly infants followed by the aged because they are usually exposed to higher risks of death. The proportion of children aged 0-4 in the total population increased from 13.22 per cent in 1952/54 to 15.41 per cent in 1981[11].

The proportion of infants (aged less than 1 year) in the total population increased from 2.52 per cent in 1971 to 2.69 per cent in 1981. The increase in the proportion of infants and children (from birth to 4 years) in the total population was observed for both males and females not only at the national level (Tables 1.4 and 1.5), but also at the regional level (see Table 1.6) . The increase in the proportion of

Table 1.3-Adjusted* population and intercensal growth rate, Nepal, Census years 1961-81

Census Year	Population			Annual rate of growth (exponential)		
	Male	Female	Total	Male	Female	Total
1961	4,807,651**	4,801,819**	9,609,470	-	-	-
1971	5,936,814	5,789,193	11,726,007	0.0211	0.0187	0.0199
				(0.0226)	(0.0183)	(0.0205)
1981	7,815,267	7,448,800	15,264,067	0.0275	0.0252	0.0264
				(0.0279)	(0.0244)	(0.0262)

* Adjusted for under-enumeration of children aged 0-4.

** Adjusted by reverse-survival method (See Central Bureau of Statistics, *The Analysis of the Population Statistics of* Nepal, 1977).

Note: The figure in parenthesis refers to growth rates based on unadjusted population.

10. The pattern of growth rates observed between 1961-71 and 1971-81 remained almost unchanged even when adjustment was made for the under enumeration of children aged 0-4 (see Table 1.3).

11 If the observed data is smoothed for distortions the proportion of children aged 0-4, constitutes 16 per cent of the total population in 1981.

infants and children may be attributed to the reduction in infant and child mortality over the years.

An examination of the age-sex structure also shows a modest increase in the proportion of those aged 65 years and above in the total population over the census years 1952/54 -81. And this increase was observed not only for the country as a whole (see Table 1.5) but also at the regional level (see Table 1.6). The old dependency ratio has increased from 8.9 in 1952/54 to 10.8 in 1981 (see Table 1.7). The increase in the proportion of aged people may result from the reduction in mortality at higher ages over the years.

It shows that persistent high fertility accompanied by declining mortality due to the eradication of malariat[12] and other epidemics and the expansion of health facilities and services resulted in high rates of population growth.

Table 1.4-Percentage distribution of children (from birth to 4 years) by single year age and sex, Nepal, Census years 1971-1981

Age	Male		Female	
	1971	1981	1971	1981
0 (birth)	2.48	2.70	2.55	2.67
1 Year	2.26	3.42	2.39	3.06
2 „	2.87	3.21	3.17	3.30
3 „	3.12	3.06	3.56	3.24
4 „	2.86	3.08	3.03	3.07
Total population	5,817,203	7,695,336	5,738,780	7,327,503

Source: Central Bureau of Statistics, 1975- Population Census 1971, Vol. 1, Table 6;
Central Bureau of Statistics, 1984- Population Census 1981, Vol. II, Table 4.

Table 1.5-Percentage distribution of children (aged 0-4) and aged (65 years and above) by sex, Nepal, Census years 1952/54-81

Age-group	Male				Female			
Years	1952/54	1961	1971	1981	1952/54	1961	1971	1981
0-4	13.33	14.24	13.59	15.47	13.12	14.18	14.70	15.34
65 and above	2.48	2.85	2.97	3.36	2.86	2.90	3.16	3.14

Source: Central Bureau of Statistics, 1958 - Population Census 1952/54, Table 2;
Central Bureau of Statistics, 1968 - Population Census 1961, Vol. III, Part II Table 2;
Central Bureau of Statistics, 1975 - Population Census 1971, Vol. 1, Table 6;
Central Bureau of Statistics, 1984 - Population Census 1981, Vol. II, Table 4.

12. Malaria which for a long time had been the chief cause of morbidity and mortality affecting nearly one half of the population and 45 per cent of the land area up to an altitude of 4,000 ft., had been completely eradicated by the end of the 1960s. Small pox was controlled by a nation wide small-pox eradication programme. Cholera no longer assumed epidemic proportions (United Nations, 1980: *Population of Nepal,* Country Monograph Series No. 6, Bangkok: United Nations: Economic and Social commission for Asia and the Pacifics p. 14).

Table 1.6-Percentage distribution of children (0-4 years) and the aged (65 years and above) by sex and ecological zones, Nepal, Census years 1971-1981

Ecological Zones	Year	Children (0-4 years)		Aged (65 years and above)	
		Male	Female	Male	Female
Mountain	1971	12.78	13.72	3.21	2.88
	1981	15.04	14.78	3.59	3.05
Hill	1971	13.71	14.22	3.33	3.31
	1981	15.86	14.85	3.70	3.39
Terai	1971	13.64	15.66	2.42	3.04
	1981	15.15	16.00	2.98	2.88
Total	1971	13.59	14.70	2.97	3.16
	1981	15.47	15.34	3.36	3.14

Source: Central Bureau of Statistics, 1975 - Population Census 1971, Vol. 1, Table 6;
Central Bureau of Statistics, 1984 - Population Census 1981, Vol. II, Table 5.

Table 1.7 Some characteristics of population

Year	% of children to total population $\frac{P_{o-14}}{P_0 \infty} X100$	Children dependency ratio $\frac{PO-14}{P_{15-59}} \times 100$	Old dependency ratio $\frac{P_{60-\infty}}{P_{15-59}} *100$	Total dependency ratio $\frac{P_{0-14}+P_{60-\infty}}{P_{15-59}} *100$	Masculinity ratio (in %) $\frac{\text{Male pop}^n}{\text{Total pop}^n} \times 100$	Median Age		
						Male	Female	Total
1952/54	38.24	68.4	8.9	77.3	49.2	20.1	21.9	21.1
1961	39.87	73.0	10.1	83.1	49.3	19.9	21.7	20.9
1971	40.45	75.0	10.4	85.4	50.3	19.8	20.7	20.3
1981	41.35	78.1	10.8	88.8	51.2	19.5	20.3	19.9

Source: Same as are those in Table No. 1.2

Effect of International Migration on the Growth Rate

The effect of net international migration (difference between the number of immigrants and emigrants) on the growth of Nepal's population, which cannot be ignored, is however, difficult to ascertain. The 1961 census reported that 328,470 Nepalese were absent from Nepal for at least six months of the year. The census also reported that there was an immigration of 337,620 foreign born persons into the country during the same period resulting in a net in-migration of 9,150 persons. The 1971 census recorded 337,446 foreign born persons residing in the country but did not collect any information on persons who had left Nepal. According to the 1974-75 Demographic Sample Survey the number of emigrants and immigrants were 43,000 and 34,000 respectively, resulting in a net loss of 9,000 persons. The number of emigrants in 1976 is estimated at 73,000 person and the number of immigrants 44,000, the net loss being, 29,000 persons[13]. The trend of net loss of population continues to remain

13. *ibid.,* p. 15.

unabated. The number of immigrants (i.e. foreign born population residing in the country) and emigrants (Nepalese who were away from Nepal for at least six months of the year) recorded by the 1981 population census was 234,039 and 402,977 resulting in a net exodus of 168,938 people. The data on immigration and emigration provided by the census is not considered very reliable. However, no other alternative national estimate of net international migration is available. As a result, reliable estimates of the net international migration are not possible. And this was perhaps the reason why in all current and future national estimates of population, the effect of net international migration on population growth is either considered negligible or ignored.

Regional/Inter-regional Comparison

The enumerated population of all[14] the SAARC (South Asian Association for Regional Cooperation) countries, according to the censuses taken in 1981, are provided in Table 1.8. Among the SAARC countries Nepal occupies fourth position in terms of population size. The population of Nepal as of June 1981 was reckoned to be 15.02 million which was about 96 and 12 times the population of Maldives and Bhutan respectively and almost approximated to the population of Sri Lanka. On the other hand, the 1981 population of India and Bangladesh was about 47 and 6 times respectively greater than the population of Nepal. The rank-order of Nepal among the SAARC countries in terms of numbers as observed in 1981 is also likely to continue in the near future[15].

When we compare Nepal to the countries of the ESCAP region which did a census around 1980, we find it occupying 11th position in terms of numbers[16]. The population of China, the largest in the ESCAP region, is about 69 times larger than the population of Nepal. The Cook Islands had the lowest population size in the region, followed by Guam, Vanuatu and Brunei. The 1981 population of Nepal was about 846, 141, 134 and 78 times greater than the population of Cook Islands, Guam, Vanuatu and Brunei respectively and close to the

Table 1.8-Population of Countries in the SAARC (South Asian Association for Regional Cooperation) Region, 1981

Country	Census Year	Enumerated Population
Bangladesh	06-III-1981	87,052,024
Bhutan	Mid-1981 *	1,307,000
India	01-III-1981	685,184, 692
Maldives	01-VII-1981**	157,003
Nepal	22-VI-1981	15,022,839
Pakistan	01-III-1981	83,782,075
Sri Lanka	01-III-1981	14,848,364

* United Nations:1985. *World Population Prospects: Estimates and Projections as Assessed in* 1982, *Population Studies* No. 86, New York.

** Official estimates provided by the Government of Maldives, see, details in foot note* of this table.

Source: United Nations: 1982. *Demographic Year Book.*

14. The only exceptions are Bhutan and Maldives. The population of Bhutan and Maldives are estimated and refer to mid 1981.

15. See, United Nations: *Demographic Year Book* 1982 and *World Population Prospects: Estimates and Projections as Assessed in* 1982, *Population Studies* No. 86, New York, 1985.

16. United Nations: 1985, *World Population Prospects: Estimates and Projections as Assessed in* 1982, Population Studies No. 86, New York.

population of Australia (14.57 million) and Sri Lanka (14.85 million).

The medium series estimates of the total population for 156 countries as of mid 1985 show that Nepal with an estimated population of 16.48 million, ranked fifteenth among the Asian countries and thirteenth among countries constituting the ESCAP region[17].

Implications of a High Population Growth

The high rate of population growth will lead to the doubling of population in a short time, increasing the dependency and man land ratio and also intensifying the problem of density.

Doubling-time

The higher the growth rate of population, the lower the time required for doubling the population. It took nearly 60 years (1911-1971) for the population of Nepal to move from 5.64 million in 1911 to 11.56 million in 1971. But at the current (1971-1981) rate of growth (2.62 per cent), the population of Nepal will be doubled every 26 years. If this high rate of population growth continues to remain unchecked the process of the economic development of the country is likely to be hampered, keeping other factors constant. For example, the higher the growth rate of population, the higher the number of people at the younger ages and this will have the effect of increasing the dependency ratio and lowering the median age of the population. Indications of this trend ate already there to see.

Dependency ratio

The dependency ratio, defined as the ratio of the population in the 0-14 age group and those 60 years and above to the population in the productive age group, i.e. 15-59 years, of Nepal has increased from 77.3 in 1952/54 to 88.8 in 1981 (see Table 1.7). The increasing number of young people over the years has also depressed the median age of the population from 21.1 in 1952/54 to 19.9 in 1981 (see Table 1.7). This evidence shows that the burden of adults (i.e. productive persons) to support the young and old (i.e. unproductive persons) has increased considerably over the years. And this is likely to affect adversely the quality of life and overall productivity of society, at least in the short term, if other factors remain constant. For example, additional funds/resources will be required to provide health and educational facilities to the growing number of children. This would impinge upon the development budget of the government and retard the process of immediate developmental activities of the country.

Man-land ratio/density of population

One of the consequences of rapid population growth on the limited land available is the deterioration of the manland ratio and the rapid increase in the density of population. Nepal has one of the small surface areas consisting only of 147,181 square kilometers. Although the density of the population when measured in terms of a square kilometer of land is not a major problem in Nepal, yet it is increasing over the years from 56 persons per square kilometre in 1952/ 54 to 102 in 1981. This is still one of the lowest in the world. However, it should be borne in mind that nearly two-thirds of the land of Nepal consists of mountains and hills and, therefore, not available for cultivation. In view of this situation, it would be more appropriate to measure density in terms of cultivable land to appreciate truly the burden of population growth on the limited land mass. When

17. United Nations. 1985. *ibid.*

density is measured in terms of population per hectare of cultivable land the picture looks gloomy and the situation is the reverse of what it was when density was measured in terms of population per square kilometre of land. There were only 3 persons per hectare of cultivable land in 1952/54 and this has increased to 6 in 1981, i. e. it has doubled during the period of the last twenty-eight years 1952/54-81 (see Table 1.9). It shows that an increasing number of people is being supported per hectare of land each year. If this trend of a high rate of population growth continues, land may no longer remain the sole viable support base for the people of Nepal. Moreover, per capita availability of food may also decline with the decline in per capita availability of land.

The density of population varies across the regions of the country and also the rank order of the regions in terms of density changes depending on the measure of density one employs (see Table 1.9). For example, when density is measured in terms of population per square kilometre of land it is found to be highest in the Terai, followed by the Hill and Mountain. This is because the land area of the Terai is lower than that of other zones of the country. However, the Terai has a higher proportion of cultivable land than other zones of the country. And when density is measured in terms of population per hectare of cultivable land, it turns out to be the highest in the Mountain, followed by the Hill and Terai. The greater scarcity of cultivable land in the mountain and Hill compared to the Terai, may explain the huge exodus of people from the former to the latter (see Chapter *VII: Internal Migration).*

Table 1.9--Area and population density by ecological zones, Nepal, Census years 1952/54-1981

Content	Unit	Mountain	Hill	Mountain & Hill	Terai	Total
Area (total)	Sq. Km.	51,817	61,345	113,162	34,019	147,181
Cultivated land	Hectare	122,587	939,704	1,062,291	1,401,426	2,463,717
Population density with respect to						
Total Land						
1952/54	People/Sq. Km.	-	-	47	85	56
1961	"	-	-	53	101	64
1971	"	22	99	64	128	79
1981	"	25	117	75	193	102
Cultivated land						
1952/54	People/Sq. Km.	-	-	5.0	2.1	3.4
1961	"	-	-	5.6	2.4	3.8
1971	"	9.3	6.5	6.8	3.1	4.7
1981	"	10.6	7.6	8.0	4.7	6.1
District	Number	16	39	55	20	75

Source: Central Bureau of Statistics: 1981. National Sample Census of Agriculture and same as are those in Table 1.2

Prospects for Future Growth

The rapid decline in the mortality rate without a corresponding decline in fertility, which has remained consistently high over the years, has further added to the proportion of people at younger ages particularly in the age-group 0-14. This has also been reflected in the age distribution of the population. The proportion of young people (0-14 years) in the total population increased from 38 per cent in 1952/54 to 41 per cent in 1981 (see Table 1.7). And this has further pulled down the median age of the population from 21 years in 1952/54 to 20 years in 1981 (see Table 1.7). These attributes of a young population imply higher potential growth.

A higher proportion of young people in the total population means that each year the number of young people who become parents is greater than the number of parents who are out of their reproductive years. In other words potential parents are more numerous than those producing children at present. Furthermore the most important feature of the increase in the young population is that the first additions to the ranks of potential mother will precisely be those age groups which are normally the most fertile. Thus given the present pattern of family formation and levels of fertility, the population of Nepal is bound to increase rapidly in the future (see Chapter XV: Population Projections).