# 1972 Census: Population—Expected and Actual

*by*

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## INTRODUCTION

The first bulletin on 1972 Population Census of Pakistan was released recently by the Census Organization. With these data an attempt has been made to arrive at some tentative conclusions on the following matters:—

*a*) The rate of growth during the intercensal period 1961 and 1972;
*b*) Underenumeration in 1972 census;
*c*) Impact of family planning programme on rate of population growth;
*d*) The rate of population growth in different provinces; and
*e*) Sex ratio.

The information released in the Census Bulletin is limited to total population down to district levels and for major cities, by sex. Details about age distribution and breakup by other characteristics will be released later. The conclusions drawn in this paper are tentative, subject to modification after details of the age-sex distribution and results of post enumeration quality check are known.

The 1972 census differed from the previous ones in a number of ways. First, the census was carried out only in West Pakistan. Second, because of the circumstances leading to the separation of East Pakistan, the census which was due to be held in early 1971 was actually conducted in 1972, eleven years and eight months after 1961 census, instead of ten years which has been the normal practice in the Indo-Pakistan sub-continent since 1881. Third, the 1972 census was based on a schedule of enumeration consisting of only six questions, the minimum number ever asked in the census taking history of the region. These questions covered the following information about each member of the household:—

*i*) Relationship with the head of the household;
*ii*) Sex;

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*iii*) Marital status;
*iv*) Age;
*v*) Religion; and
*vi*) Literacy.

This census was the third[1] since independence, the first and second having been taken in 1951 and 1961 respectively. A brief description of the dates of these censuses and the intercensal periods for each since the previous census, are given in Table I.

TABLE I

CENSUSES IN PAKISTAN AND INTERCENSAL PERIODS

| Census | Dates of enumeration | Intercensal period since the previous census |
|---|---|---|
| 1951 | February 9—28 | 10 years |
| 1961 | January 12—31 | 9 years and 11 months |
| 1972 | September 16—30 | 11 years and 8 months |

## INTERCENSAL RATES OF GROWTH

### Total Population Count and Growth

According to the provisional results provided in Census Bulletin No. 1, the population of West Pakistan in September, 1972 was enumerated to be 6,48,92,000, with the male and female breakup as 3,44,17,000 and 3,04,75,000 respectively. This shows an intercensal increase of 2,20,12,000 persons or 51.33 per cent over the 1961 enumerated population of 4,28,80,000. Compared to this the increase over 1951-61 intercensal period was 27.2 per cent. The population counts in the three censuses of Pakistan, intercensal percentage increases and the annual rates of growth are briefly described in Table II.

TABLE II

POPULATION SIZE AND GROWTH RATES

| Census | Population enumerated | Percentage intercensal increase | Per cent annual rate of growth |
|---|---|---|---|
| 1951 | 33,780,000 | 19.3 | 1.8 |
| 1961 | 42,978,000 | 27.2 | 2.4 |
| 1972 | 64,890,000 | 51.3 | 3.6 |

[1] The first census counts in the subcontinent's history were actually taken at different times from province to province starting in 1867 and completed in 1872. After wards all the censuses were taken at regular decenial intervals since 1881 onwards. The 1972 census of Pakistan completes the hundred years of census taking in the subcontinent.

The table shows that the per cent intercensal growth and the annual growth rate during the 1961-72 period are conspicuously higher than those for previous intercensal periods. The annual growth rate of 2.4 per cent during 1951-61 had been considered to be rather high. The annual rate of 3.6 per cent for 1961-72, therefore, was extremely high. The 1972 figure of 64.89 million and the visible rate of growth have aroused many genuine fears and are a challenge for demographers and planners.

In order to arrive at more realistic conclusions regarding the actual size of population and the rate of growth, the factors which need careful study are:

*a*) The relative accuracy of enumeration in the censuses;
*b*) Levels of fertility and mortality during the intercensal period; and
*c*) The age distribution effect.

**Comparison of Projected Estimates with Census Results**

The 1972 census count of 64.89 million for West Pakistan was not unexpected by demographers. Some of the projections prepared in Pakistan and abroad during the intercensal period 1961-72 pointed to almost the same figure as enumerated in the census. Table III compares the projected estimates of 1972 population prepared by three separate agencies under different assumptions, with the 1972 census enumerated population. It shows that the projections prepared by U.S. Bureau of Census [4] and Bean, Khan and Rukanuddin [3] under assumptions of (i) constant fertility—constant mortality, and (ii) constant fertility-declining mortality, are fairly close to the actual census count. The projections prepared by Planning Commission [9] however, fall short of the census figures. These projections were prepared on the assumption that there was substantial underenumeration in 1961 census. The estimates of underenumeration were based on detailed studies of the age-sex distribution of the census population. Krotki [8] estimated an underenumeration to the tune of 3,950,000 or 8.4 per cent. The Planning Commission estimate of underenumeration was about 3.22 million or 7.0 per cent and that of Bean, Khan and Rukanuddin 2.88 million or 6.2 per cent. U.S. Bureau of the Census estimated the underenumeration as 3.72 million or 7.5 per cent. Of all these, the estimates prepared by Bean, Khan and Rukanuddin show the least underenumeration. However, from Table III, it is observed that their projected estimates of 1972 population under the assumption of constant fertility and declining mortality are nearly the same as the estimates by U.S. Bureau of the Census under assumption of constant fertility and constant mortality, even though the former used a lower base population for 1961. Both these estimates, though higher in magnitude, are fairly close to 1972 census results. The proximity of census results to the projected estimates, which were prepared under the assumption of substantial underenumeration and on the basis of growth rates provided by Population Growth Estimation project, suggests clearly that there was a much better enumeration in the 1972 census as compared to the 1961 census. The 1972 census results, however, cannot be accepted as the exact measure of the population as even the best census suffers from a certain degree of underenumeration. Even in the U.S.A., some five million persons were omitted from the 1950 census enumeration [8]. An evidence of such

[3] For dates of preparation see Table III.

## TABLE III

### 1972 PROJECTED POPULATION AND CENSUS POPULATION

| Projected by | Assumptions involved | 1972 projected population (interpolated) as of September (in thousands) | | | Difference (in thousand) of projected and 1972 census population. | | |
|---|---|---|---|---|---|---|---|
| | | | | | (Male) 34417 | (Female) 30475 | (Total) 64892 |
| | | Male | Female | Total | Male | Female | Total |
| U.S. Bureau of Census (1965) | A. Constant fertility, constant mortality. | 33832 | 32699 | 66531 | — 585 | +2224 | +1639 |
| | B. Declining fertility, constant mortality. | 32259 | 31189 | 63448 | —2158 | +714 | —1444 |
| | C. Constant fertility, declining mortality. | 34251 | 33065 | 67316 | — 166 | +2590 | +2424 |
| | D. Declining fertility, declining mortality. | 32629 | 31511 | 64140 | —1788 | +1036 | — 752 |
| Lee L. Bean, M.R. Khan and A. Razzaq Rukanuddin (1968) | I. Constant fertility, declining mortality. | 35350 | 31232 | 66582 | +933 | +757 | +1690 |
| | II. Constant fertility upto 1970 and then declin ing, declining mortality. | 34160 | 31832 | 65992 | — 257 | +1357 | +1100 |
| | III. Declining fertility, declining mortality. | 33018 | 30693 | 63711 | —1399 | +218 | —1181 |
| Planning Commission (1964) | I. Constant fertility, constant mortality. | 32030 | 30799 | 62829 | —2387 | +324 | —2063 |
| | II. Declining fertility, declining mortality. | 32198 | 30961 | 63159 | —2219 | +486 | —1733 |

underenumeration in Pakistan is also provided by the conspicuous differentials in intercensal growth rates for different provinces in West Pakistan, though the results also suggest a degree of overenumeration in some areas which might have compensated, to some extent for the underenumeration effect.

In view of the factor of underenumeration, the projected estimates referred to above, which are higher than census results, can be considered to be closer to the actual population at the time of the 1972 census. How close these estimates are to the actual population, is a question which can better be answered when details of the age-sex distribution of population become available. Till such time, one can only draw tentative conclusions from the available data with the help of population projections referred to above.

## UNDERENUMERATION IN THE 1972 CENSUS

In order to arrive at some estimates of under-enumeration in 1972 census we shall consider population projections prepared by U.S. Bureau of Census and by Bean, Khan and Rukanuddin under the assumptions of (i) constant fertility—constant mortality and (ii) constant fertility—declining mortality only, since under other assumptions these projections fail to provide population estimates upto the level of 1972 census count of 64,892,000.

Table III shows that the estimated 1972 population according to US. Bureau of Census with constant fertility—constant mortality assumption, was 66.5 million and under constant fertility—declining mortality, was 67.3 million. The estimate by Bean *et. al.*, under assumption constant fertility-declining mortality puts 1972 population as 66.6 million. A realistic estimate would be one worked out on the basis of a closer estimate of 1961 base population following logical trends in birth and death rates over the intercensal period, determined by the prevalent conditions in the country. Table IV gives the 1961 estimated base population and estimated crude birth and death rates under three alternative projections.

The table shows that in the projections by Bean *el. al.*, a lower base population, lower birth rates and lower death rates were assumed for 1961 as compared to the projections by the U.S. Bureau of Census. The resultant estimate of population for 1972 by Bean et. al., therefore, is an outcome of lower base population and steeper gradient in crude death rate with constant lower birth rate resulting in increasingly higher rate of natural increase over the intercensal period. There are fewer reasons to believe that the population in 1961 would be as low as the one assumed in these projections, particularly when others viz; Krotki, U.S. Bureau of Census, Planning Commission suggested greater underenumeration and thus larger population size. There is also no evidence to believe that the vital rates, particularly the crude death rate, were as low as was assumed in projection by Bean *et. al.* Similarly it is hard to accept that the overall general health of the population has improved so much as to bring down the death rate to 12.3 per thousand in 1972, though there is evidence that the mortality in Pakistan has in general been on the decrease. Therefore the estimate of base population and the rates of fertility and mortality under assumptions of (i) constant fertility—constant mortality and (ii) constant fertility—declining mortality in the projections by U.S. Bureau of Census seem to be more realistic for West Pakistan for the short run projections upto 1972.

We shall now briefly discuss the repercussions of these two alternatives.

## TABLE IV

### ESTIMATED BIRTH AND DEATH RATES IN 1961 AND 1972 UNDER DIFFERENT ASSUMPTIONS

| Projection | Estimated 1961 population | Assumption | Estimated rates per thousand for 1961 | | | Estimated rates per thousand for 1972 | | |
|---|---|---|---|---|---|---|---|---|
| | | | Crude birth rate | Crude death rate | Rate of natural increase | Crude birth rate | Crude death rate | Rate of natural increase. |
| U.S. Bureau of Census | 46,200,000 | I. Constant fertility, constant mortality. | 50 | 20 | 30 | 50 | 17.5 | 32.5 |
| | | II. Constant fertility, declining mortality. | 50 | 20 | 30 | 49.5 | 15.1 | 34.4 |
| Bean, Khan and Rukanuddin | 45,761,000 | I. Constant fertility, ~~constant~~ declining mortality. | 48.4 | 17.8 | 30.6 | 47.6 | 12.3 | 35.3 |

**Constant Fertility and Constant Mortality**

Table III shows that under these assumptions, the crude birth rate was estimated to be 50 per thousand and the death rate 20 per thousand in 1961. In 1972 these rates were estimated to be 50 and 17.5 respectively. These assumption refer to constant age-specific fertility and mortality and not crude birth and death rates which could have declined over the period. The estimated size of 1972 population as shown in Table III under the above assumptions was 66,531,000 as against enumerated census population of 64,892,000 indicating an underenumeration of 1,639,000 or 2.47 percent. This estimate implies an intercensal growth rate of 44 per cent instead of 51.33 per cent visible growth on the basis of actually enumerated 1961 and 1972 censuses. Similarly the average annual rate of natural increase works out to be 3.1 per cent as against 3.6 per cent on census basis. However, the rate of natural increase for the year 1972 under these assumptions is 3.25 percent (Table IV).

**Constant Fertility and Declining Mortality**

With crude birth rate and death rate for 1961 as 50 per thousand and 20 per thousand respectively, the estimated rates for 1972 were 49.5 and 15.5 respectively, giving a rate of natural increase as 34.0 per thousand or 3.4 percent as against 3 per cent in 1961. The estimated size of 1972 population under these assumptions was 67,316,000 indicating an underenumeration of 2,424,000 or 3.6 per cent in the actual 1972 census count of 64,892,000. These estimates suggest an intercensal growth rate of about 46 per cent as against 51.33 per cent given by census results. The average annual rate of natural increase on this basis comes to 3.2 per cent as against 3.6 per cent on census basis.

## IMPACT OF FAMILY PLANNING PROGRAMME ON FERTILITY

From the above discussion it emerges that the fertility level seems to have remained almost the same at the end of the intercensal period as was estimated at the time of 1961 census. The impact of the ambitious family planning programmes which have been in operation throughout this period seems, unfortunately, to be insignificant. One may argue that the substantial rise in population size is because of decline in mortality due to the more extensive use of modern life saving medicine. This is true to some extent, but the crucial factor is the extent to which mortality is estimated to have declined. In the absence of a reliable system of vital registration which could have provided a yearly record of birth and death rates there is no evidence that public health facilities or the availability of modern medicine have improved so much as to bring about a drastic drop in the mortality rate. Looking at the population projection model of U.S. Bureau of Census under assumption I (constant fertility—constant mortality) the census results suggest 1972 crude death rate as 17.5 per thousand and under assumption II as 15.1 per thousand, as compared to the initial rate of 20 per thousand for 1961. The crude birth rate under both these assumptions, however remained almost unchanged at the 1961 level of 50 per thousand. In the absence of evidence to the contrary, it seems that the objective of Family Planning Organization to bring the birth rate down from 50 to 40 per thousand by 1970, remains unachieved. One factor which could have nullified the impact which births prevented through the efforts of the family planning programme, might have made on the crude birth rate is the additional number of births during the intercensal period due to the entry of a

relatively larger cohort of females into the marriageable age, as predicted from the age distribution of the 1961 census [4]. It may therefore be considered as an achievement of the family planning programme that it has been able to prevent any further rise in crude birth rate which was expected in the absence of any fertility control measures. However, keeping in view the target set by the Family Planning Organization, the overall impact has been insignificant.

## PROVINCIAL GROWTH DIFFERENTIALS

A study of the provincial intercensal population growth during 1961-72 provided in Table V shows that percentage increases in Baluchistan and Sind are conspicuously higher than the Punjab and NWFP. The increase in Baluchistan is 78.04 per cent and Sind 66.9 percent, against Punjab (including federal territory of Islamabad) and NWFP (including centrally administered tribal areas) increase of 47 per cent and 44 per cent respectively.

In order to examine the reasons for such a differential the following factors need to be studied:—

*i*) Coverage in enumeration,
*ii*) Rates of natural increase,
*iii*) Net immigration from other provinces.

The coverage in the 1972 census has improved as compared to the previous censuses. The effect of such improvement shows that in each of the four provinces in Pakistan, growth rates during 1961-72 are much higher than during 1951-61. The relative increase of growth rates in 1961-72, over 1951-61, in Sind and Baluchistan are 32 per cent and 62.8 per cent as compared with 15.2 per cent and 23 percent for N.W.F.P. and Punjab provinces respectively. For Sind, without Karachi, it is observed from Table V that the intercensal increase during 1951-61 census was 24.6 per cent compared to 34.8 per cent for Sind including Karachi. The relative increase of growth rates comes to 38 per cent (from 24.6 per cent for 1951-61 to 62.6 per cent for 1961-72). Such an increase cannot be attributed only to improvements in coverage since the differences in these two provinces are abnormal compared to the other two provinces. Similarly there is no evidence to believe that birth rates in Baluchistan and Sind remained exceptionally high during the intercensal period 1961-72 as compared to the Punjab and N.W.F.P. There were no circumstances which would have resulted in an exceptional reduction in mortality due to control of such endemic disease as malaria etc. It is unlikely that a higher rate of natural increase due to an increase in the birth rate or a drop in the death rate would have contributed to the relative differences in growth rates. One can leave a margin for net immigration from other provinces. But we have seen that without Karachi, which has mainly attracted migrants, the relative increase in growth rates of Sind in 1961-72 over 1951-61 is greater [1,2]. From Table V it is observed that percentage increase in Sind without Karachi during the previous intercensal period was 24.6 which was comparable with the Punjab and N.W.F.P. figures of 24 percent and 28.7 per cent respectively.

A study of divisional or district intercensal growth rates in each province provided in Census Bulletin No. 1 shows that in NWFP the percentage increase in most cases is between 40 and 50. In case of Sind and Baluchistan, however, the district or divisional growth lies consistantly between near sixty

and over eighty per cent with only a few exceptions like Larkana, Khairpur, Tharparker and Sanghar Districts in Sind with growth rates less than sixty per cent The division and district growth differentials are therefore consistant with corresponding differentials in provincial growth. The abnormal increase in the growth rates of Sind and Baluchistan cannot be fully explained by net immigration and better enumeration in 1972 census. It is, therefore, very likely that there was either some double counting or over enumeration (or a combination of the two) in both provinces.

## DIFFERENTIAL IN SEX RATIO

Table V shows that censuses of 1951 and 1961 provided high sex ratios (masculanity ratio) for West Pakistan which indicated that (i) more females were underenumerated than males, and (ii) a high mortality of females, resulting in lesser proportion of females. The sex ratio of West Pakistan in 1972 comes to 1068 (males per thousand females) as compared to 1163 for 1951 and 1153 for 1961, indicating that there was much better coverage of females this time. A lower sex ratio is also indicative of a decline in maternal mortality as well as female infant mortality during the intercensal period. Looking at sex ratio, of each province of West Pakistan, the decline is more marked in Sind and Baluchistan where it has come down to 1151 and 1124 as compared to the 1961 sex ratio of 1300 and 1214 respectively. NWFP also shows some decline from the sex ratio of 1092 for 1961 to 1088 for 1972. In Punjab it has gone up slightly from 1123 for 1961 to 1125 for 1972. While for Sind and Baluchistan the sex ratio is indicative of a better coverage of females, for Punjab and NWFP it is also indicative of female emigration. The sex ratio in Karachi has declined from 1317 in 1961 to 1235 in 1972, probably showing that some early male migrants have also taken their families to Karachi. It is also indicative of better female enumeration as has been the case for other areas.

## CONCLUSIONS

An attempt has been made in this paper to evaluate the 1972 population count in Pakistan on the basis of previous projected estimates of demographers under different assumptions. One set of these projections, which was prepared by the U.S. Bureau of Census in 1965 under the assumptions of constant fertility—constant mortality and constant fertility—declining mortality, after allowing for the under enumeration of 7.5 per cent in 1961 count, closely corresponds to the 1972 census count. Thus the 1972 census figures have caused no surprise.

The 1972 census count when compared with 1961 census gives an annual compound rate of growth of 3.6 per cent. The above projections suggest an underenumeration of 2.47 per cent to 3.6 percent in 1972 census count. A comparison of corrected population figures, after allowing for the underenumeration of 1961 and 1972, give a compound rate of growth of 3.1 and 3.2 per cent under the above projections. These projections also suggest that the crude birth rate which was 50 per thousand in 1961 remained unchanged during the intercensal period 1961-1972. This leads to the conclusion that the family planning programme has not been able to achieve its objective of reducing the crude birth rate from 50 per thousand to 40 per thousand by 1970. The programme has,

TABLE V

PROVINCE WISE POPULATION SEX RATIO AND INTERCENSAL INCREASE

| Area | Population in thousands (sex ratio as males per thousand females in parenthesis) | | | Percentage increase during | |
|---|---|---|---|---|---|
| | 1951 | 1961 | 1972 | 1951—61 | 1961—72 |
| Pakistan | 33740 (1153) | 42880 (1068) | 64892 (1068) | 27.2 | 51.3 |
| NWFP (including tribal area) | 5888 (1117) | 7578 (1092) | 10909 (1081) | 28.7 | 43.9 |
| Punjab (including Islamabad) | 20476 (1150) | 25582 (1123) | 37609 (1135) | 24.0 | 47.0 |
| Sind | 6209 (1249) | 8367 (1300) | 13965 (1151) | 34.8 | 66.9 |
| Baluchistan | 1167 (1214) | 1353 (1214) | 2409 (1124) | 15.2 | 78.0 |
| Sind less Karachi | 5076 (1228) | 6323 (1294) | 10496 (1125) | 24.6 | 62.6 |
| Karachi | 1133 (1343) | 2044 (1317) | 3469 (1235) | 80.4 | 81.3 |

Source: [6, Table I, Pp. II-36-38; 7 and 5]

however, been successful in preventing an increase in the crude birth rate which would have otherwise taken place because of the entry of a relatively large cohort of females into the marriageable age during the intercensal period.

The census results show that the rate of population growth in the provinces of Sind and Baluchistan has been conspicuously higher than in NWFP and Punjab. The analysis of census figures points to the possibility of double counting and/or overenumeration in the provinces of Sind and Baluchistan.

The study of sex ratio shows that in 1972 there were 1068 males per thousand females as compared to 1163 and 1153 for 1951 and 1961 censuses respectively. This indicates better female enumeration in 1972 census and also a decline in female infant and maternal mortality.

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