

## **Inter-Provincial Migration in Pakistan 1971-1981\***

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### **INTRODUCTION**

The process of international and internal migration involving Pakistan is not a new phenomena as observed in many third world countries. Helbock (1975) studied life-time migrants in the 12 largest cities of Pakistan in 1961. He found that on average, about 15 percent of the residents of these cities had come originally from other districts, the highest rates in these cities showed 30 percent life-time migrants, while the lowest showed 5 percent indicating a wide variation in city growth rate. Irfan (1979) pointed out that internal migration is becoming increasingly long distance and rural urban in orientation in Pakistan. Many other scholars have made valuable contributions to the literature on migration. Details of such studies are found elsewhere [Farooqui and Rukanuddin (1987); Hussain, Afzal and Syed (1965); Ahmad and Abbasi (1981); Shah (1986); Naveed-i-Rahat (1981); Usami (1978); Selier and Nientied (1986); Van Pinxteren (1974)].

Most of the studies (cited above) on internal migration in Pakistan based on census data concentrated on volume and direction and some studies based on sample surveys devoted to patterns and causes of mobility in the country. Although all of these studies provide useful estimates, none of them gives a broad analysis of provincial level figures by age and sex characteristics of the migrants during the intercensal period, which could be used by the planners, policy-makers and administrators.

This paper aims to provide demographic estimates not available before. Therefore, the major objectives of this paper are:

- (1) To estimate the volume of net inter-provincial migration in Pakistan between 1971-1981 with the use of the census survival ratio method; and

\*Owing to unavoidable circumstances, the discussant's comments on this paper have not been received.

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- (2) to estimate selected demographic characteristics (age and sex) of the migrants.

### METHODOLOGY

Demographers are routinely using two broad ways of measuring internal migration, direct and indirect. Direct measurement of migration, i.e. counting the number of people crossing the boundary, is more accurate and desirable, but data of this type are available for only a limited number of developed societies, moreover such data are non-existent for Pakistan, therefore, due to nonavailability of data only an indirect method, the survival ratios method, using census data is considered in this study. Two main types of survival ratios, those from censuses and those from life tables, are often used. The life table survival ratio is calculated by following an hypothetical cohort from birth to death. The census survival ratio (method chosen for this study) represents the ratio of the numbers in the same cohorts at successive censuses.

The survival ratio method measures net migration by taking the difference between the natural population change and the net population change. To estimate the amount of net migration, the survival ratio obtained from the census figures, or the life table, is used in the following context.

The survival ratio, multiplied by the enumerated population at the beginning of the intercensal period, yields the expected population for the end of the intercensal period. The difference between the estimated (expected) population for the given period, and the actual population enumerated at that period, yields the estimated amount of migration.

Symbolically, the above procedure can be expressed as

$$M_t = P_t - (S * P_0)$$

where

- $M_t$  = The net migration between time  $t$  and time 0;  
 $P_t$  = the population at time  $t$ ;  
 $S$  = census survival ratio as it is applied to; and  
 $P_0$  = population at time 0.

Although using the survival ratios derived from two successive censuses furnish a simple means of estimating net migration, it should be noted that estimates will be accurate only to the extent that the following assumptions hold true:

- (1) The national population is closed for the period of consideration;
- (2) the specific mortality rates are the same for each unit as for the nation;
- (3) the ratio of the census population in the age and sex groups of the national population is the same for the same cohort in both censuses [Zachariah (1962)]; and
- (4) quality and coverage in both are the same.

The census survival ratio method for estimating intercensal net migration was chosen for several reasons. It is perhaps more reliable than the other indirect methods. Unlike the other indirect methods, it provides information for estimating internal migration by age and sex. Finally, it is the most appropriate method for the available data on Pakistan which will be employed for the analysis of this study.

### DATA USED AND ESTIMATES OF NET MIGRATION

As mentioned earlier, data used in this study come from the Population Censuses of Pakistan (1972) and (1981). These two censuses were not conducted on exactly the same date of each year. The census of 1981 was conducted from March 1st through March 15th, 1981 while the 1972 census was taken from September 16th through September 30th, 1972. Thus, the 1981 census in Pakistan was taken less than ten years (i.e. 8 years, 5 months and 15 days) after the 1972 census. Therefore, a little adjustment is required so that the population of any cohort will be exactly 10 years old in the later census while the number of people in the cohort is reduced by death and migration. Hence, to make the population of all cohorts exactly 10 years apart in age from one census to the other, the total population enumerated in the 1972 census was projected backward to March 1, 1971 for each province and the city of Islamabad using the formula

$$P_t = P_0 e^{rt}$$

where

- $P_t$  = The population at time  $t$ ;
- $P_0$  = the population at time 0;
- $e$  = exponential function;
- $r$  = growth rate between time  $t$  and 0; and
- $t$  = number of years between time  $t$  and 0.

This is done separately for males and females employing the observed growth rate of 0.024481 in Punjab, 0.032839 in Sindh, 0.037672 in NWFP, 0.067566 in Balochistan, and 0.041759 in Islamabad for males, and 0.030035 in Punjab, 0.037383 in Sindh, 0.038004 in NWFP, 0.069393 in Balochistan, and 0.046411 in Islamabad for females, between 1972 and 1981 censuses. A growth rate of 0.030139 was observed for males in Pakistan and 0.034644 for females in Pakistan between 1972 and 1981 censuses.

Thus, the male and female populations by age for March 1, 1971 are obtained by applying the percentage distribution observed in the 1972 census to the total estimated population of 1971 assuming that the proportionate age distribution of males and females remained unchanged between 1971 and 1972.

Table 1 shows the male and female population of Pakistan in each five-year age group, enumerated in the census of 1972 and 1981, and the estimated population of 1971. The total estimated and enumerated population of each province for 1971, 1981 is presented in Table 2. As can be seen from the table, the

census age distribution seems fairly accurate, except for some minor irregularities in age reporting, particularly for the ages 0-9 years and 60 years and above. Theoretically, population with an advancing age group should decrease, but the age groups mentioned above show an increase in population. This may be due to age misreporting and/or over enumeration.

Table 1

*Male and Female Population of Pakistan in Each Five-year Age Group, 1971, 1972 and 1981*

Age Group	Males			Females		
	Enumerated as of Sep. 16, 1972	Estimated for Mar. 1, 1971	Enumerated as of Mar. 1, 1981	Enumerated as of Sept. 16, 1972	Estimated for Mar. 1, 1971	Enumerated as of Mar. 1, 1981
00-04	4,725,325	4,510,781	6,200,434	4,688,162	4,444,330	6,373,470
05-09	5,316,861	5,075,460	6,811,487	4,814,625	4,564,216	6,330,850
10-14	4,384,059	4,185,010	5,856,744	3,451,121	3,271,628	4,946,304
15-19	2,909,927	2,777,808	4,192,513	2,423,195	2,297,164	3,570,574
20-24	2,350,945	2,244,205	3,269,776	2,211,540	2,096,517	2,957,980
25-29	2,450,404	2,339,148	2,891,427	2,196,040	2,081,824	2,587,731
30-34	2,056,573	1,963,198	2,388,124	1,903,303	1,804,312	2,229,204
35-39	1,790,693	1,709,390	2,120,580	1,539,054	1,459,008	2,076,657
40-44	1,645,256	1,570,556	1,937,256	1,417,332	1,343,616	1,927,768
45-49	1,283,493	1,225,219	1,610,303	1,044,292	989,978	1,465,779
50-54	1,318,614	1,258,745	1,637,892	994,174	942,467	1,327,725
55-59	641,572	612,443	859,488	542,682	514,457	751,369
60-64	1,041,546	994,257	1,299,090	730,718	692,713	917,301
65-69	401,508	383,278	555,314	312,422	296,173	431,498
70-74	524,067	500,273	677,869	379,646	359,901	483,556
75+	552,803	527,704	781,514	419,931	398,090	587,520
Total	33,393,646	31,877,474	43,089,811	29,068,237	27,556,393	38,965,286

\* Population of Federally Administered Tribal Area (FATA) is not included due to unavailability of data by age and sex for the census 1972 and 1981

Table 2

*Population of Pakistan by Province, 1971-1981*

Province	1971 (Estimated)	1981 (Enumerated)
Pakistan	59,433,867	82,055,097
Punjab	36,052,386	47,292,441
Sindh	13,405,259	19,028,666
NWFP	7,572,678	11,061,328
Balochistan	2,184,209	4,332,376
Islamabad	219,335	340,286

It is apparent from the table that there were some irregularities both in the 1972 and the 1981 census data. However, it is very difficult to isolate the nature and the extent of the errors and irregularities contained in each age and sex category in the 1972 and 1981 censuses. Therefore, it was decided not to make artificial adjustments to smooth our data for making migration estimates hoping that the nature of the errors included in each age and sex cohorts in both censuses will be similar and therefore, some error will cancel out in the process of migration estimates. This is to avoid the possibility of introducing greater errors by making unwanted corrections or artificial adjustments on the data.

### Calculation of Census Survival Ratios

To obtain the census survival ratios for this study, census data by age and sex from 1971 and 1981 were needed. Hence, utilising the census data shown in Table 1, the 10-year survival ratios for each five-year age group is calculated and the results are presented in Table 3. An example of the method used to calculate census survival ratios is:

$$\text{Survival Ratio} = \frac{\text{Males 20-24, Pakistan, 1981}}{\text{Males 10-14, Pakistan, 1971}}$$

This is a forward census survival ratio for Pakistan males aged 10-14 years in 1971 and 20-24 years in 1981. The numerator is a population at a given census and the denominator is the population ten years younger at the time of the previous census.

Table 3

*Probability of Surviving of Males and Females  
for Five-year Age Cohorts between 1971 and 1981*

Age in 1971	Male	Female
00-04	1.29838801	1.11294709
05-09	0.82603614	0.78229741
10-14	0.78130670	0.90413102
15-19	1.04090256	1.12648934
20-24	1.06412916	1.06328904
25-29	0.90656074	0.99751824
30-34	0.98678565	1.06842282
35-39	0.94203363	1.00464114
40-44	1.04287371	0.98817273
45-49	0.70149770	0.75897530
50-54	1.03205180	0.97329790
55-59	0.90671992	0.83874451
60-64	0.68178471	0.69806087
65+	0.55377227	0.55733277

It is obvious from Table 3 that survival ratios for each sex decreased with advancing age groups except for some variation in certain age groups, which was probably caused by the misreporting of ages and possible under or over reporting in the census. The ratios were above unity in five-year age groups for both sexes; i.e. for males aged 0-4, 15-19, 20-24, 40-44, 50-54 years, and for females aged 0-4, 15-19, 20-24, 30-34, 35-39 years. Theoretically, it is impossible for any age group to have a ratio above unity, but this phenomenon is frequently found in many countries because of inherent defects in the census data [Kim (1972), p. 6].

It must be noted that census survival ratio estimates include migrants aged 10 years and over at the second census. An estimate of migration under 10 years was obtained by the child-woman ratio technique, described in the section under estimates of net inter-provincial migration.

### ESTIMATES OF NET INTER-PROVINCIAL MIGRATION

Utilising the census survival ratios for Pakistan (presented in Table 3) and the enumerated male and female population in each province of Pakistan in 1971 and 1981, net inter-provincial migration for the period 1971 and 1981 was estimated and the results are summarised in Table 4. Net inter-provincial migration for each province by age and sex is presented in Table 5.

Table 4

*Estimates of Net Inter-provincial Migration for Males and Females  
by the Census Survival Ratio Method for Each Province of  
Pakistan, 1971-1981*

Province	Male	Female	Both Sexes
Punjab	-979,785	-448,252	-1,428,037
Sindh	+161,553	- 37,892	+ 123,661
NWFP	+220,531	+80,679	+ 301,211
Balochistan	+573,800	+387,541	+ 961,341
Islamabad	+ 23,900	+ 17,925	+ 41,824

"+" for in-migrants      "-" for out-migrants.

As can be seen from the tables, computations were made in terms of five-year age groups up to 65 years at the end of the intercensal period for each province for males and females separately. For example, the calculated survival ratios for Pakistan (Table 3) were multiplied by the estimated males and females aged 10-14 for each province in Pakistan in 1971. The result yielded estimates of the number of males and females aged 20-24 years who would have lived to be enumerated in 1981. The net migration is defined by the difference between this expected population and the population of 1981 actually enumerated. Symbolically, this can be expressed as follows:

Table 5

*Estimates of Net Inter-provincial Migration by Age for Males and Females by the Census Survival Ratio Method for Each Province of Pakistan, 1971-1981*

Age Group	Punjab	Sindh	NWFP	Balochistan	Islamabad
Male	-979,785	+161,553	+220,531	+573,800	+23,900
00-04	- 29,018	+ 8,241	+ 2,634	+ 17,163	+ 981
05-09	-145,513	+ 41,873	+ 30,968	+ 69,806	+ 2,865
10-14	-267,999	- 19,808	+103,628	+182,240	+ 1,939
15-19	- 56,716	- 9,694	- 1 0,685	+ 72,701	+ 4,394
20-24	-160,999	+134,879	- 16,219	+ 37,158	+ 5,180
25-29	-170,341	+101,763	+ 17,172	+ 48,701	+ 2,705
30-34	- 80,764	- 2,560	+ 45,294	+ 36,971	+ 1,059
35-39	- 46,998	+ 16,071	- 3,067	+ 32,424	+ 1,570
40-44	- 25,103	- 11,316	+ 8,301	+ 26,588	+ 1,530
45-49	- 9,490	- 20,398	+ 17,604	+ 11,590	+ 694
50-54	+ 9,258	- 36,371	+ 15,940	+ 10,552	+ 621
55-59	- 12,180	- 201	+ 6,522	+ 5,399	+ 461
60-64	- 6,319	- 10,667	+ 3,961	+ 13,031	- 5
65+	+ 22,396	- 30,259	- 1,521	+ 9,477	- 94
Female	-448,252	- 37,892	+ 80,679	+387,541	+17,925
00-04	- 29,828	+ 8,471	+ 2,707	+ 17,642	+ 1,008
05-09	-135,245	+ 38,919	+28,783	+ 64,880	+ 2,663
10-14	+ 46,984	- 148,786	+25,602	+ 74,045	+ 2,155
15-19	+ 89,337	- 48,557	- 46,739	+ 2,780	+ 3,178
20-24	-107,878	+105,719	-21,485	+21,567	+ 2,077
25-29	-161,128	+ 70,486	+35,415	+53,113	+ 2,114
30-34	- 50,098	- 26,022	+33,334	+41,896	+ 891
35-39	- 41,246	+ 9,135	- 2,341	+33,219	+ 1,234
40-44	- 24,261	- 15,110	+17,782	+20,680	+ 908
45-49	- 19,518	- 6,248	+12,603	+12,927	+ 237
50-54	- 10,961	- 18,512	+13,033	+15,727	+ 712
55-59	- 16,711	+ 3,067	+ 3,011	+10,581	+ 52
60-64	- 763	- 1,916	5,394	+ 7,695	+ 378
65+	+13,064	- 8,538	-15,632	+10,788	+ 319

"-" for out-migrants "+" for in-migrants.

$${}_tM_0 = P_t - (S * P_0)$$

where

${}_tM_0$  = The estimates of net migration between 1971 (0) and 1981 ( $t$ ) for Pakistan;

$P_t$  = population aged  $X$  in 1981;

$S$  = census survival ratio as it is applied to; and

$P_0$  = population aged  $X-10$  in 1971.

However, the census survival ratios method cannot give estimates of net migration for persons born during the intercensal interval. Lee *et al.* (1957) developed an approximate method for using area-specific child-woman ratios to estimate net migration of children below the age of 10. The ratios of children aged 0-4 years, to women 15-49 years, and of children aged 5-9 years, to women 20-54 years in 1981 were obtained for males and females separately. These ratios were multiplied by the estimated number of migrant women in each province aged 15-49 years and 20-54 years. With the underlying assumptions of an even flow of migration during this decade and constant fertility ratios from year to year within this decade, a quarter of the children aged 0-4 years and three quarters of those aged 5-9 years were assumed to represent the net migration of children aged below 10 years. This method can be expressed as follows:

$$\text{Net } M_{0-4} = 1/4 \text{ CWR}_{0-4} * M(f) 15-49$$

$$\text{Net } M_{5-9} = 3/4 \text{ CWR}_{5-9} * M(f) 20-54$$

where

Net  $M_{0-4}$  and Net  $M_{5-9}$  are estimates of net migration for the age groups 0-4 and 5-9.

$\text{CWR}_{0-4}$  and  $\text{CWR}_{5-9}$  \*\* are the ratios of children aged 0-4, to women aged 15-49, and of children aged 5-9, to women aged 20-54.

$M(f) 15-49$  and  $M(f) 20-54$  are the estimates of net migration for females aged 15-49 and 20-54.

\*\*The Child-woman ratio is calculated by children 0-4 to total females, of ages 15-49 and children 5-9 to total females, of ages 20-54.

## ANALYSIS OF THE RESULTS

### Volume and Pattern of Net Inter-provincial Migration

The results of net migration estimates for all provinces for 1971-1981 by the census survival ratio method are summarised in Table 4. It is apparent from the



table that there is considerable variation in the volume of net migration estimates for all provinces. The table also shows that three provinces Sindh, NWFP, Balochistan, and Islamabad city gained population, while one province, Punjab, lost population through internal migration during the period of 1971-1981. Punjab, the most populous province, lost 1,428,037 persons during the same period.

Balochistan remained the most attractive province for the migrants, receiving 961,341 persons more than twice the number of all in-migrants in the provinces of Sindh (123,661 persons), NWFP (301,211 persons), and Islamabad (41,824 persons) combined. The net migration estimates show that NWFP is the second in rank in gaining the population followed by Sindh. It is interesting to note that the province of Punjab sent out 1.4 million migrants (net) which is equal to total in-migrants (net), to all other provinces.

Table 4 also indicates that in almost all provinces there were large numbers of female migrants; i.e. more than half of the male migrants. There were 972,289 female migrants as compared to 1,959,569 male migrants who changed their province of residence between 1971 to 1981.

### **Characteristics of Migrants**

Limitations of the data do not permit the analysis of characteristics other than the sex and age composition of migrants. Table 5 provides estimates of net inter-provincial migration for age and sex for each province of Pakistan, 1971 to 1981. These estimates reveal that every province has different age and sex patterns for in- and out-migration; e.g. the highest in-migration for males is found in those aged 20-24 years in Sindh and Islamabad, aged 10-14 years in NWFP and Balochistan, and aged 50-54 years in Punjab. The highest in-migration occurs in the two age groups 10-14 years and 20-24 years in almost all provinces with the exception of Punjab, which shows heavy out-migration in these age groups. These patterns confirm the conclusion that more movement occurs in young ages.

It is interesting to note that migration patterns for males in all age groups 50 years and above, in all provinces except Balochistan, are the reverse of the other age groups with only slight variation. This may be due to a social phenomenon in Pakistan: after retirement, males often want to spend the rest of their lives in their place of origin.

The highest in-migration for females is found in those aged 15-19 years in Punjab and Islamabad, aged 20-24 years in Sindh, aged 25-29 years in NWFP, and aged 10-14 years in Balochistan. In the case of females, it is possible that marriage is the main reason for migration with only a small percentage of movement in search of education and job opportunities. This variation in ages in different provinces reflects their marriage patterns and the ages at which females get married.

Patterns of out-migration are also found to be different, for males and females of all ages in all provinces. In regard to male out-migration, Punjab shows heavier out-migration in the age category 10-14 years, followed by ages 25-29 years

and 20–24 years. Sindh indicates out-migration in ages 50–54 years and 65 years and above. NWFP experienced very minor out-migration in the 20–24, and the 15–19 years age groups. There is very insignificant out-migration after age 60. Balochistan is the only province that had no out-migration during the period 1971 to 1981 in Pakistan.

Females experienced no out-migration in the provinces of Balochistan and Islamabad. Sindh and NWFP report the highest female out-migration in ages 10–14 years and 15–19 years, respectively. The pattern of female out-migration in Punjab is totally different from all other provinces; females aged 20 years and above all show out-migration with the exception of those aged 65 years and above.

It is interesting to note that in the province of Punjab, very small numbers of male in-migrants are in the older ages; e.g. 50–54 years and 65 years and above, but there is considerable in-migration of females aged 10–19 years. This pattern of movement for males could be for economic reasons. It can also be concluded that in this province limited job opportunities for the young adults push them to other areas. The migration of females could also be for economic reasons but most probably this movement occurs due to marriage. The majority of female in-migrants aged 10–19 years also coincides with the fact that Punjab is the centre for females' schools and colleges, which would tend to attract a majority of females from the surrounding areas.

The analysis of net migration estimates presented above confirms the fact that migration is age selective and that it mostly occurs to areas where more job opportunities and other facilities are available. It also seems that whether through in-migration or out-migration, young adults are more mobile. The large number of young migrants, particularly of out-migrants in Punjab, and in-migrants in all other provinces especially Balochistan and Islamabad, obviously affected the socio-economic structure of these areas. This factor is significant, since the composition of the labour force is directly affected by the migrants. The results of this study also illuminate the fact that there was higher net in-migration in the older age groups among the migrants of Punjab, but that there was also net out-migration among older ages in the migrants of Sindh, NWFP, and Islamabad. This phenomena suggests that people tend to return to their place of origin at the end of the life cycle. It seems that the increased volume of out-migration in Punjab and in-migration in Balochistan and Islamabad should be considered by planners and policy-makers, while making policies for development programmes for the country.

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