MONOGRAPHS IN THE ECONOMICS OF DEVELOPMENT

No. 13

The People of Karachi
Demographic Characteristics

SULTAN S. HASHMI

January 1965

PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS
Old Sind Assembly Building
Bunder Road, Karachi
(Pakistan)

Price Rs. 5.00

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The Institute carries out basic research studies on the economic problems of development in Pakistan and other Asian countries. It also provides training in economic analysis and research methodology for the professional members of its staff and for members of other organization concerned with development problems.

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KARACHI METROPOLITAN AREA

FORMER FEDERAL CAPITAL AREA

MAP OF CHUNKS

CODE	NAME	CODE	NAME	CODE	NAME
003	KEAMARI CITY	032	IDD GAH MAIDAN	055	ABBYSSINIA LINES
004	NAPIER MOLE ROAD	033	THATHAI COMPOUND	057	SLAUGHTER HOUSE
006	INTELLIGENCE SCHOOL	034	OLD TOWN	058	KHUDADAD COLONY
009	CITY RLY COLONY	035	KHADDA	059	QUAID-E AZAM MAZAR
010	NATIONAL RUBBER CO	036	BAGHDADI	062	JAHANGIR QTRS
013	PAKISTAN CHOWK	037	BHIMPURA	064	PAKISTAN QTRS
014	ARAMBAGH	030	URDU COLLEGE	066	JUNA DHOBI GHAT
015	ARTILLERY MAIDAN	039	RAMSWAMY	067	USMANABAD
016	KARACHI GYMKHANA	043	PATEL PARK	068	OLD HAJI CAMP
019	BATH ISLANDS	044	KGA GROUND	070	SHAHBEG LINES
021	OLD CLIFTON	045	JACOB LINES	071	NAWABAD
022	GHIZRI VILLAGE	046	JUT LINES	072	AGRA TAJ COLONY
026	FRERE HALL	047	FOWLER LINES	073	BEHAR COLONY
028	ST PATRICKS CHURCH	048	JINNAH HOSPITAL	074	RANGIWARA
029	JAHANGIR PARK	049	NAPIER BARRACKS	076	GUL MOHD LINES
031	PLAZA QTRS	054	CHANESAR GOTH	077	LYARI WELFARE CENTRE

CODE	NAME
078	SINGO LINES
079	CHAKIWARA POLICE LINES
080	BAKRA PIRI
081	REXER COLONY
082	OLD GOLIMAR
083	GOLIMAR
084	FIRDOUS HOUSING SOCIETY
085	ABU TALIB COLONY (Lalukhet)
086	SINDHI HOTEL (Lalukhet)
089	CLAYTON QTRS
091	FATIMA JINNAH COLONY

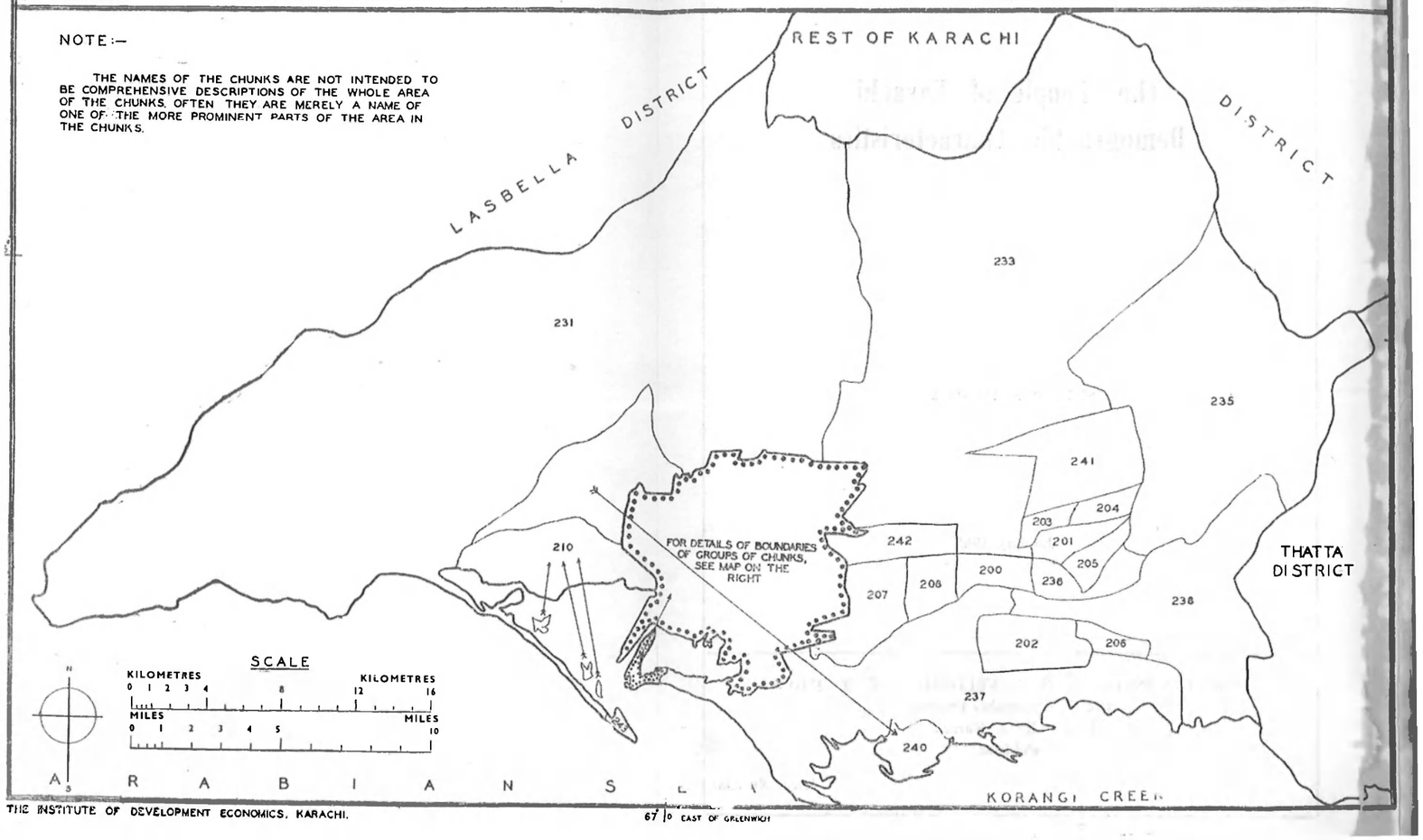
CODE	NAME
092	MUSLIMABAD
093	PECH SOCIETY
094	LIAQUAT ASHRAF COLONY
097	HOUSING SOCIETIES UNION
099	PIB COLONY
100	LIAQUAT BASTI
101	PIIF REFUGEE COLONY
104	LALUKHET POLICE STATION
105	LALUKHET MARKET
106	NAZIMABAD-2
107	NAZIMABAD-1

CODE	NAME
109	IQBAL COLONY
112	MUNICIPAL GARDENS
114	SHER SHAH GOTH
116	SHER SHAH COLONY
117	GRAMOPHONE CO (Site)
120	HYESONS CORP (Site)
124	BALDIA COLONY
129	BAWANY LABOUR QTRS (Site)
130	VALIKA TEXTILE (Site)
132	NAZIMABAD 3&5
133	NAZIMABAD-4
136	FC AREA
200	DRIGH COLONY
201	SAUDABAD COLONY
202	LANDHI COLONY
203	MODEL COLONY

CODE	NAME
204	KHOKHRAPAR
205	MALIR NOTIFIED AREA
206	LANDHI INDUSTRIAL AREA
207	GOTH NATHE KHAN
208	SADAAT COLONY
210	MAURIPUR VILLAGE
231	GABOPAT
233	GUJRO
235	KONKAR
236	THANO
237	IBRAHIM HYDARI
238	DEH LANDHI
240	KORANGI DESIGNATED AREA
241	MALIR CANTT
242	DRIGH DESIGNATED AREA
243	MANORA ISLAND

NOTE:—

THE NAMES OF THE CHUNKS ARE NOT INTENDED TO BE COMPREHENSIVE DESCRIPTIONS OF THE WHOLE AREA OF THE CHUNKS. OFTEN THEY ARE MERELY A NAME OF ONE OF THE MORE PROMINENT PARTS OF THE AREA IN THE CHUNKS.



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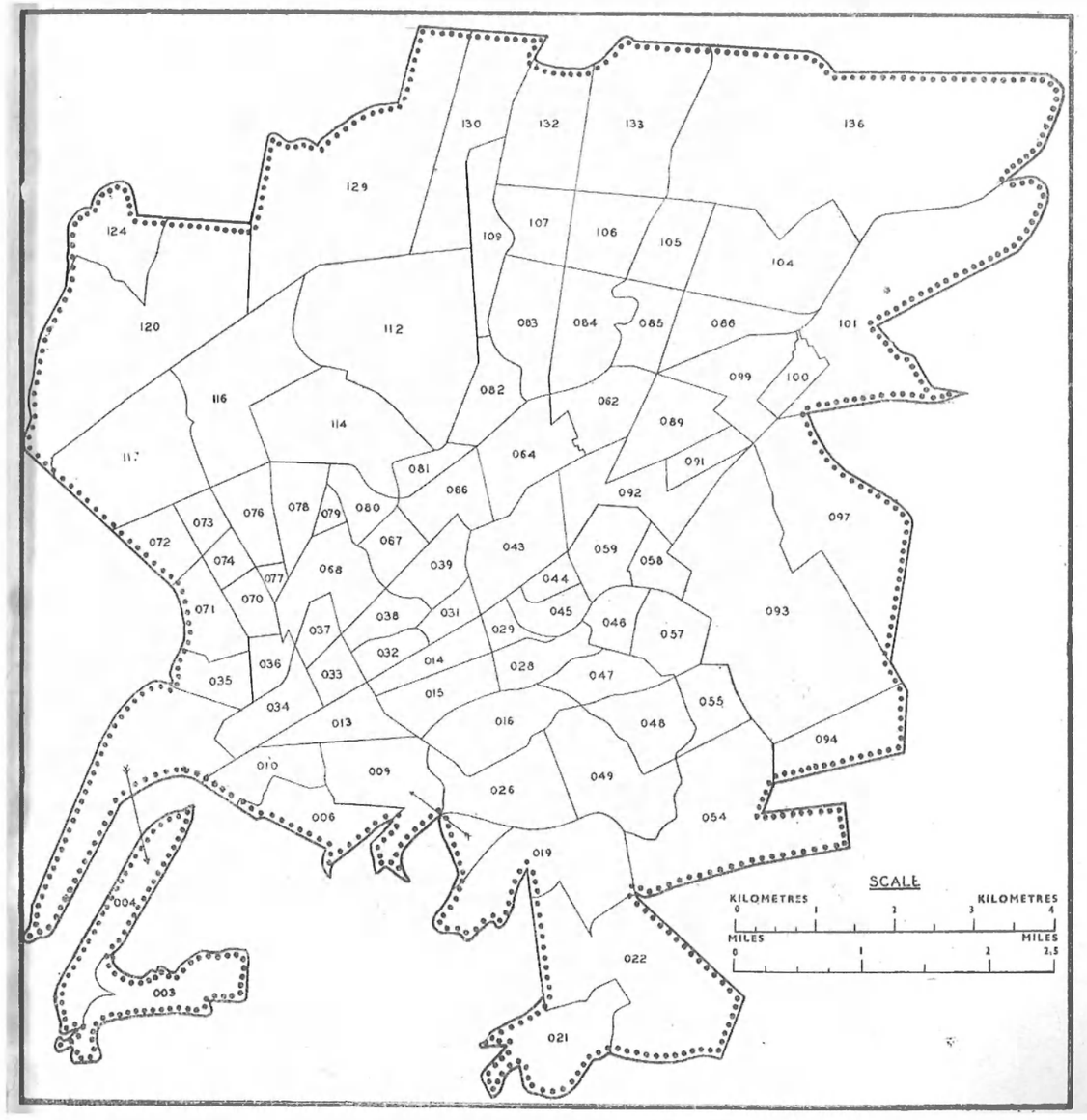
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PREFACE

In this monograph an attempt is made to present analysis of some data on the demographic characteristics of the population of Karachi, published in the former publication of this Institute, *Statistical Papers: No. 2. The People of Karachi:* This monograph is the first in the series of three monographs on Karachi. The other two on *The Social Characteristics,* and *Economic Characteristics* are under preparation in this Institute.

The author is greatly indebted for comments received on earlier drafts from Drs. Karol J. Krotki and Warren C. Robinson both Research Advisers and Dr. Bruce Glassburner, Senior Research Adviser, all of this Institute. He also appreciates the computational help of the staff members M/s Masihur Rehman Khan, Abdul Razzaque, Danial M. Farooq and A. D. Bhatti.

Mr. M. Zaman, Publications Officer of the Institute, technically edited the monograph, piloted it through the press, and supervised the proof-reading at all stages.

SULTAN S. HASHMI
Senior Research Demographer

Karachi, August 1964

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TABLE II.5

IMMIGRANTS AND IN-MIGRANTS[a]

Year of Arrival of Household in Karachi, 1947—1959

Year of migration	Total	Immigrants	In-migrants
1959 (first quarter) ...	9,025	2,981	6,141
b 1958	36,100	11,922	24,178
1957	36,100	11,922	24,178
b 1956	37,250	15,162	22,088
1955	37,250	15,162	22,088
b 1954	49,912	28,987	20,925
1953	49,912	28,987	20,925
b 1952	69,338	51,125	17,663
1951	69,338	51,125	17,663
1950	157,125	133,000	24,125
1949	119,475	102,650	16,825
1948	206,725	190,250	16,475
1947	531,650	502,675	28,975

Notes: a) *See* glossary for definition of terms. *Source :* [9, Tables 5.20 & 5.21].
b) Figures shown against each year are averages of the years parenthesized.

lining trend in the immigration (migration from other countries; literally from India). The decline from 133 thousand persons in 1950 to an average of 12 thousand persons in 1958 is very substantial. There is, of course, one limitation to this comparison that there is a built-in bias in these figures, inasmuch as the most recently arrived migrants did not yet have time to produce their children in Karachi while the earlier ones already had.

One thing which is most obvious from these data is that after 1953/54 the major part of the growth (roughly, more than 60 per cent) has been due to natural increase and not due to net migration. During the decade

1951-1961, in spite of a very large migration into Karachi, approximately more than 50 per cent of the growth appears to have been due to reproductive change (excess of births over deaths). It seems that fertility is the principal source of growth of urbanization even in a metropolis like Karachi in which there had been an unusual immigration. This may be contrary to what may seem a popular impression, but is not an unusual phenomenon. Urbanward migration is helping cities grow, but it is, nevertheless, true that more than 50 per cent (to be on the safe side) of the growth of most cities is caused by reproductive change. In 1950, the ratio of urban growth from reproductive change to net migration to cities in the United States was 7 to 3 [3].

The first post-independence census of Pakistan taken in 1951 reported a population figure of 75.852 million for the country, 7.863 million for the total urban area of West Pakistan and 1.126 million (includes 58 thousand rural population) for Karachi[1]. In other words, in 1951, 10 per cent of the total population of the country was living in urban areas, 77 per cent of the country's urban population was living in West Pakistan and a substantial proportion of 14 per cent of the urban population of Pakistan and 18 per cent of the urban population of West Pakistan was living in Karachi. In 1951 for the first time in the history of the area which is now Pakistan, the million mark was reached by a metropolis.

The comparison of the intercensal increase and annual rate of growth of Karachi with that of the Pakistan territory (Table II.4) shows that the population of Karachi has been growing consistently at much higher rate during all the decades from 1901 to 1961. The Pakistan population increased only by 7.9 per cent and 23.7 per cent during the decades 1941 to 1951 and 1951 to 1961, respectively, whereas the population of Karachi grew by 158.4 per cent and 80.5 per cent respectively. Three obvious explanations suggest themselves for the difference between the population increase in Karachi and the whole Pakistan territory:

---

[1] An urban area, as defined for the 1951 Census of Pakistan, "is an area with a minimum of five thousand population and all incorporated municipalities and towns managed by notified area committees even with less than five thousand population" [19, pp. 39-40].

i) The proportion of the urban population in the area which is now Pakistan has been increasing, which implies movement of rural population to urban areas;

ii) Karachi offered better economic opportunities as compared to many other urban areas of the country and therefore attracted many migrants from other parts of Pakistan;

iii) Many displaced persons who arrived from India as a result of Partition were attracted by the better opportunities of work offered in Karachi.

The comparison of the growth rates in Tables II.1 and II.4 shows that the pattern of population growth in both the city and metropolis during the period 1901 to 1961 was almost the same with the exception of the decade 1911-1921. Karachi city during this decade registered an annual growth rate of 3.6 per cent as compared to 2.7 per cent of the metropolis. It seems that the negative growth of the rural component of Karachi during this decade has dwarfed its overall growth rate while the city area was growing more rapidly as compared to the previous decade.

2.3.3 Population Growth, Karachi District, 1951 to 1961: Although the major focus of the present analysis is on Karachi, it is of interest to provide some information on the district of Karachi, the most recent administrative unit. The population of Karachi district as reported by the censuses has increased from 1.138 million in 1951 to 2.049 million in 1961 (including foreigners in both the cases) [14, pp. 26-27 and 59]. The population change during the decade was 80 per cent and the annual growth rate 6.0 per cent. The difference in the per-cent population change and annual rate of growth between Karachi and the district for the period 1951 to 1961 is negligible. This is because Karachi, in 1961, contained 99 per cent of the district's population and, therefore, dwarfs the rest of the district.

2.4 Population Density

The population density is an index obtained by dividing the total population by the area of given territory, yielding typically the number of persons per square kilometre. The population density figures for

the metropolis, city, and the district have also been presented per square kilometre. Karachi (or the former Federal Capital Area) was demarcated after 1947 and the problem of area changes for the decades prior to 1951 is difficult to solve. As regards the city, the area changes could not be ascertained. It should be noted that the area for the purpose of calculating density is the entire area within the boundaries of the metropolis, or city or district and not just the residential lot.

TABLE II.6

DENSITY PER SQUARE KILOMETRE

Karachi 1901—1961 and Karachi City 1843—1961

Year	Karachi		Karachi City	
	Persons per sq. km.	Per-cent change per sq. km.	Persons per sq. km.	Per-cent change per sq. km.
(1)	(2)	(3)	(4)	(5)
1961	966	10.4	3,215	79.4
1959	875	63.6	—	—
1951	535	158.5	1,792	176.1
1941	207	44.8	649	46.5
1931	143	23.3	443	21.7
1921	116	30.3	364	42.7
1911	89	36.9	255	30.1
1901	65	—	196	11.4
1891	—	—	176	41.9
1881	—	—	124	29.2
1872	—	—	96	300.0
1843	—	—	24	—

Source : Tables II.1 and II4..

Assuming (in the absence of information on area changes) the 1951 boundaries of Karachi as constant, the density of Karachi increased from 65 persons per square kilometre in 1901 to 535 persons per square kilometre in 1951 and to 966 persons per square kilometre in 1961. The highest increase of 158.5 per cent in the decade prior to 1951 is due to the phenomenal growth of population indicated in Table II.1. This density is not high because Karachi has vast tracts of land which are either unused or are rural. The densities shown in Table II.6 are mere averages, and are not true indicators of the population density of the inhabited parts of the metropolitan area. The growth of the population density of Karachi city presents a more accurate picture of the inhabited parts.

Population density for Karachi city is reported (Table II.6) for each census year beginning 1843. The city area of 596 square kilometres, as reported for 1961, is the same as reported for 1951 [15, pp. 14, 19 and III-3]. The area changes from decade to decade could not be ascertained and, therefore, the area has been assumed constant. This underestimates the true density in the earlier years which could otherwise be calculated if the area changes for each census year were known. Thus, the changes as presented in Table II.6 are the function of the growth of population and the constant area and are not the indicators of overpopulation or underpopulation.

The comparison of the metropolis and the city shows that the density of the city area was more than three times higher than that of the metropolis during all the decades since 1901. The density in the city area increased from 649 persons per square kilometre in 1941 to 1,792 in 1951 and 3,215 in 1961. These figures overestimate the true increase in density, insofar as the increase in density of the city is not a product of increasing population in the quest of the area inhabited, but also gain through addition of new areas which grew to urban in the course of time. The true increase in density is less alarming.

The district had a density of 326 persons per square kilometre in 1951. The 1961 reported figures show 583 persons per square kilometre, which makes Karachi the most dense district in West Pakistan and third most dense district in all Pakistan.

2.5 Karachi City in Relation to Other Urban Areas of Pakistan

The availability of the census data for other urban areas for the past censuses permits their comparison only with the city of Karachi.

TABLE II.7

KARACHI CITY AND OTHER URBAN AREAS OF PAKISTAN
POPULATION GROWTH, 1901—1961

Year	Population (in 000)				Geometric rate of annual growth[1]			
	Karachi city	Pak urban	W. Pak urban	Other cities[2]	Karachi city	Pak urban	W. Pak urban	Other cities[2]
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1961 ...	1,917	12,295	9,655	4,969	6.0	4.6	4.8	4.8
1951 ...	1,068	7,863	6,019	3,108	10.7	3.5	3.7	3.0
1941 ...	387	5,552	4,174	2,320	3.9	3.7	3.7	3.6
1931 ...	264	3,845	2,912	1,635	2.0	2.7	3.0	3.1
1921 ...	217	2,936	2,168	1,209	3.6	1.6	1.8	1.2
1911 ...	152	2,496	1,805	1,072	2.6	0.7	0.5	1.3
1901 ...	117	2,321	1,719	941	—	—	—	—

[1] Since previous data.

[2] Of 100 thousand and more population in 1961 excluding Karachi City.

Sources : Table II.1; [12, p. 3-8]; [8, p. 3-3]; [11, pp. 3-3 to 3-14]; [1, pp. 3-2 to 3-4]; [2, p. 3-2]; [14, pp. 14 and 16].

Table II.7 compares the population size and per-cent annual growth rate of Karachi city with Pakistan urban, West Pakistan urban and other cities with population 100 thousand-and-over. Fig. 2.1 further demonstrates this comparison on a logarithmic scale. It is noted that the city of Karachi has been growing at a faster rate as compared with the other urban areas of Pakistan except for the decade 1921-1931.

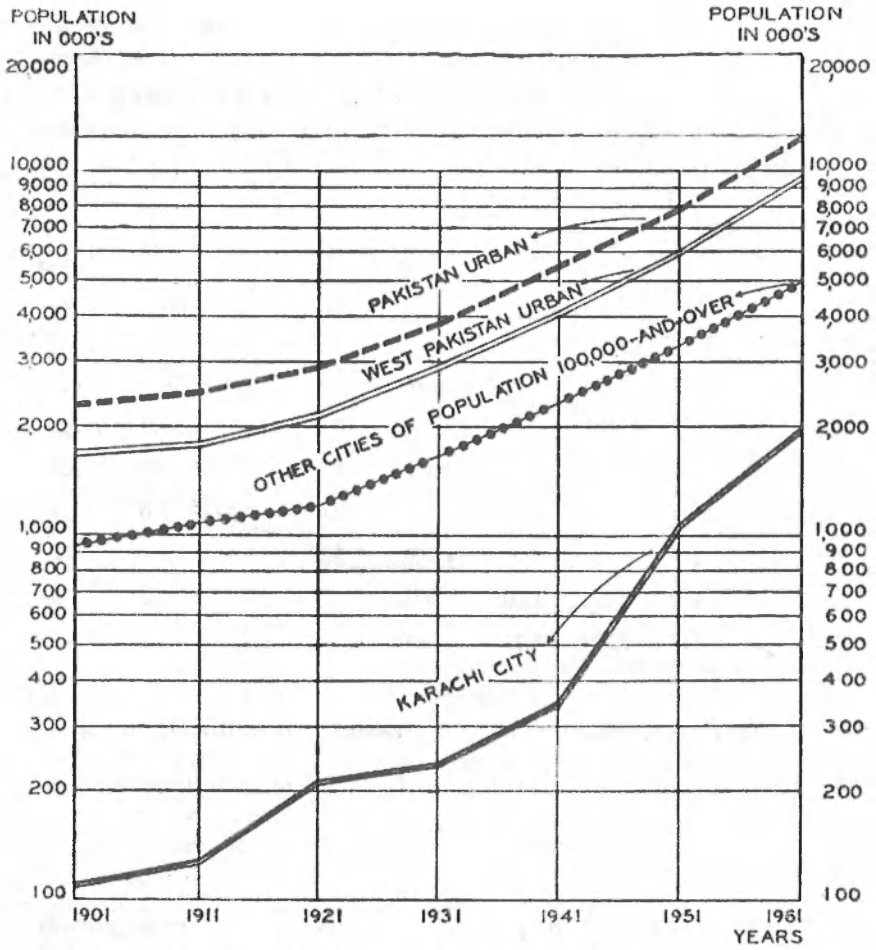

FIGURE: 2·1 GROWTH OF KARACHI CITY, PAKISTAN URBAN, WEST PAKISTAN URBAN AND OTHER CITIES OF 100,000-AND-OVER, 1901 TO 1961

SOURCE: TABLE II·7

TABLE 11.8

THREE PRINCIPAL CITIES OF PAKISTAN

Population and Rank, 1901—1961

CITY	1961		1951		1941		1931		1921		1911		1901	
	Pop. (in 000)	rank	Pop. (in 000)	rank	Pop. (in 000)	rank	Pop. (in 000)	rank	Pop. (in 000)	rank	Pop. (in 000)	rank	Pop. (in 000)	rank
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Karachi	1,917	1	1,068	1	387	2	264	2	217	2	152	2	117	2
Lahore	1,297	2	849	2	672	1	430	1	282	1	229	1	203	1
Dacca	558	3	339	3	240	3	162	3	138	3	126	3	104	3

Sources: Table II.1; [11, p. 3-3]; [12, p. 3-8]; [15, p. 13].

The lower rate of growth probably reflects the share effects on Karachi of the economic depression which began in 1929 and that there was more noncooperation at the time of the 1931 Census on the part of the population of Karachi than there was in other towns.

Table II.8 lists the three largest cities of Pakistan in order of their present rank determined by the size of population. The census figures reveal that until 1941 Karachi was the second largest city of the area which is now Pakistan. Lahore during these years was first. In 1951 Karachi became the largest city of Pakistan. Dacca has, however, been maintaining its third position throughout. Together, these three largest cities of Pakistan, according to the 1961 Census, contain 30.7 per cent of the total urban population of the country. The city of Karachi alone contains 15.6 per cent of the urban population of the country and 19.9 per cent of the urban population of West Pakistan.

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CHAPTER 3

AGE AND SEX COMPOSITION

3.0

The errors in the reported single years have been discussed in Appendix B. They mainly consist of understatement and overstatement of ages. In addition, undere numeration and overenumeration also cause distortions in the age distribution. If the reported errors within each of the dichotomous group s of irregularities are of almost equal magnitude, the combination of the single years into appropriate quinquennial age groups will cancel out most of the deficiencies. If the deficiencies are of differing magnitude within the group contemplated then the mutual cancelling-out would decrease to the extent of the differences. The trick is, therefore, to select one's groups in such a way that the maximum amount of error cancels out.

3.1 Combination of the Single Years into Conventional Quinquennial Age Groups

The single-year age distribution has been combined into conventional quinquennial age groups (ending in zero and five) and their distribution is shown in Table III.1 and demonstrated further in Fig. 3.1. Before combining the data into the quinquennial age groups no attempt was made to remove the heaping and other deficiencies in the single-year age distribution either by smoothing formulas or by fitting a curve. Smoothing an age distribution of population of a metropolis like Karachi by various demographic techniques is not free from the risk of levelling off the real differences which otherwise do exist particularly in a population which is not closed to migration. Combination of reported single years into nonconventional quinquennial age groups (*i.e.*, those not ending in zero or five) has also been used in some cases as a way of cancelling out the irregularities in the age reporting as compared to the combination into conventional quinquennial age groups [7, pp. 46-47].

TABLE III.1

KARACHI: POPULATION AND PER-CENT DISTRIBUTION BY FIVE-YEAR AGE GROUPS AND SEX, 1959

(Both Sexes = 100 Per cent)

Five-year age group	Population			Per cent		
	Both sexes	Males	Females	Both sexes	Males	Femlaes
(1)	(2)	(3)	(4)	(5)	(6)	(7)
All ages ...	1,803,175	999,250	803,925	100.0	55.4	44.6
0 — 4 ...	271,025	136,275	134,750	15.0	7.6	7.5
5 — 9 ...	260,450	134,025	126,425	14.4	7.4	7.0
10 — 14 ...	206,350	110,950	95,400	11.4	6.1	5.3
15 — 19 ...	161,875	90,075	71,800	9.0	5.0	4.0
20 — 24 ...	185,950	106,775	79,175	10.3	5.9	4.4
25 — 29 ...	176,550	101,150	75,400	9.8	5.6	4.2
30 — 34 ...	139,225	85,050	54,175	7.7	4.7	3.0
35 — 39 ...	101,325	61,800	39,525	5.6	3.4	2.2
40 — 44 ...	83,150	50,000	33,150	4.6	2.8	1.8
45 — 49 ...	57,075	34,225	22,850	3.2	1.9	1.3
50 — 54 ...	58,525	32,625	25,900	3.2	1.8	1.4
55 — 59 ...	26,475	15,700	10,775	1.5	0.9	0.6
60 — 64 ...	38,350	21,425	16,925	2.1	1.2	0.9
65 & over ...	36,275	18,825	17,454	2.0	1.0	1.0

Source: [2, Table 1.01].

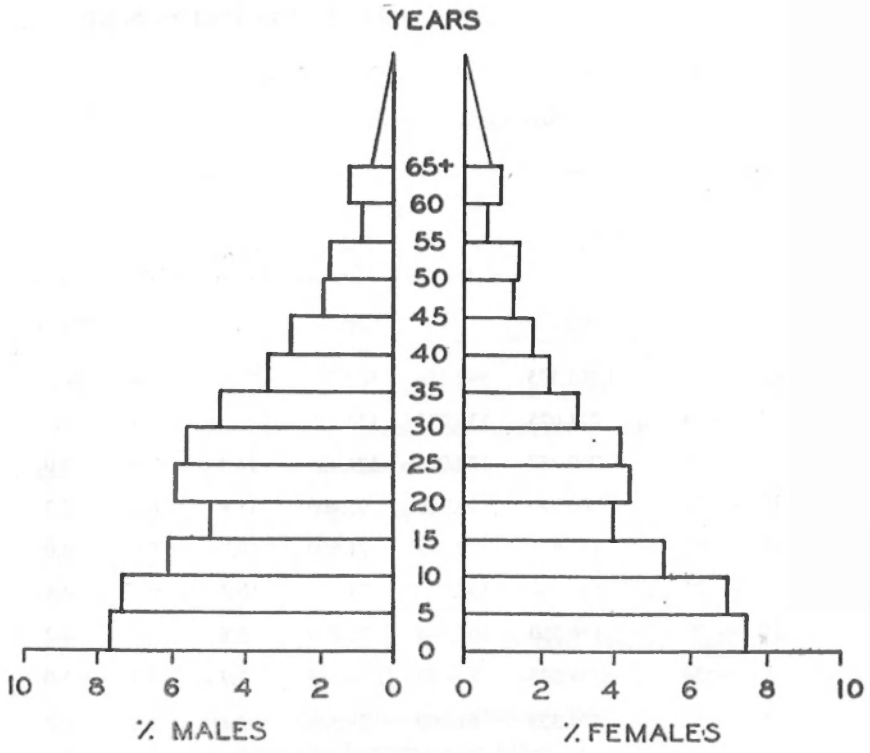

FIGURE: 3·1 PER-CENT DISTRIBUTION BY FIVE-YEAR AGE GROUPS AND SEX, KARACHI, 1959 (BOTH SEXES = 100 PER CENT)

SOURCE: TABLE III·1

This has been avoided in the present study for two reasons: *i*) combination into the nonconventional quinquennial age groups is not free from the risk of causing distortions in the size of consecutive age groups; and *ii*) combination of the reported age data into conventional quinquennial age groups enables comparison with the past as well as with the future censuses—which comparison is undertaken in the next section.

It has been shown in Appendix B that the errors in age reporting in 1959 are pronounced. Comparison of the Fig. B.1 in Appendix B with Fig. 3.1 shows how the heaping at ages ending with digits 0 and 5 disappears when single years are combined into quinquennial age groups. The per-cent age distribution (Table III.1 and Fig. 3.1) from age group 0-4 years to age group 45-49 years except for the age group 15-19 years shows a decreasing order in the successive age groups which is consistent with the expected pattern. The bars at age group 15-19 years in Fig. 3.1 are smaller than the bars at the succeeding two age groups. This can be expected of a metropolis like Karachi because of the gains by migration of working population of ages 20 to 29 years from other parts of Pakistan. It is well known that older people tend to misstate their ages more than the younger people. The bars for age groups beyond 45-49 years show that by grouping, the irregularities in the older ages of the population of Karachi are not removed as much as for the younger age groups under 50 years. Thus, the defects for the ages 50-years-and-over are still conspicuous.

Table III.2 shows the distribution of population by migrant status and Table III.3 its percentage distribution. Table III.3 reveals that slightly less than one-third of the total population of in-migrants is concentrated in ages 20-29 years. It further shows that the age distribution of immigrants from India conforms more to a typical pattern than the age distribution of the natives or of the in-migrants. This indicates that the migrants from India have settled down and that the movement from India to Karachi has greatly reduced in volume. This latter statement is consistent with the results achieved in Table II.5 in Chapter 2. The immigrants from India have probably moved as a more

TABLE III.2

KARACHI: POPULATION, MIGRANT STATUS AND SEX, FIVE-YEAR AGE GROUPS, 1959

Five-year age group	MIGRANT STATUS										
	Natives			In-migrants			Immigrants				No information
							India			Other countries	
	Both sexes	Males	Females	Both sexes	Males	Female	Both sexes	Males	Females		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
All ages ...	300,125	153,025	147,100	316,400	206,150	110,250	1160,550	620,700	539,850	13,300	12,550
0 — 4 ...	44,900	21,700	23,200	43,000	22,100	20,900	181,150	91,375	89,775	1,800	175
5 — 9 ...	47,800	23,450	24,350	34,925	18,325	16,600	176,075	91,425	84,650	1,550	100
10 — 14 ...	35,825	18,775	17,050	25,775	15,175	10,600	143,200	75,725	67,475	1,200	350
15 — 19 ...	23,450	12,450	11,000	28,925	19,175	9,750	107,025	56,550	50,475	675	1,800
20 — 24 ...	25,075	11,825	13,250	49,650	35,500	14,150	106,400	55,125	51,275	925	3,900
25 — 29 ...	24,800	12,300	12,500	45,200	32,400	12,800	102,400	53,125	49,275	1,400	2,750
30 — 34 ...	20,900	11,200	9,700	30,250	21,675	8,575	85,250	50,025	35,225	1,300	1,525
35 — 39 ...	15,700	8,500	7,200	19,925	14,200	5,725	63,450	37,675	25,775	1,475	775
40 — 44 ...	15,000	7,800	7,200	13,625	10,225	3,400	53,125	31,000	22,125	1,000	400
45 — 49 ...	10,350	5,200	5,150	8,675	6,425	2,250	37,000	21,825	15,175	925	125
50 — 54 ...	12,650	6,800	5,850	7,375	5,200	2,175	37,475	19,825	17,650	650	400
55 — 59 ...	5,800	3,550	2,250	2,750	2,000	750	17,800	10,050	7,750	75	50
60 — 64 ...	8,825	5,075	3,750	3,875	2,300	1,575	25,275	13,850	11,425	275	100
65 and over ...	9,050	4,400	4,650	2,450	1,405	1,000	24,925	13,125	11,800	50	100

Source: [2, Table 1.01] and original tabulation.

TABLE III.3

KARACHI: PER-CENT DISTRIBUTION, MIGRANT STATUS AND SEX FIVE-YEAR AGE GROUPS, 1959 (Both sexes=100 per cent)

Five-year age group	MIGRANT STATUS										
	Natives			In-migrants			Immigrants				No information both sexes
							India			Other countries both sexes	
	Both sexes	Males	Females	Both sexes	Males	Females	Both sexes	Males	Females		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
All ages ...	100.0	51.0	49.0	100.0	65.2	34.8	100.0	53.5	46.5	100.0	100.0
0 — 4 ...	15.0	7.2	7.7	13.6	7.0	6.6	15.6	7.9	7.7	13.5	1.4
5 — 9 ...	15.9	7.8	8.1	11.0	5.8	5.2	15.2	7.9	7.3	11.7	0.8
10 — 14 ...	11.9	6.3	5.7	8.1	4.8	3·3	12.3	6.5	5.8	9.0	2.8
15 — 19 ...	7.8	4.1	3.7	9.2	6.1	3.1	9.2	4.9	4.3	5.1	14.3
20 — 24 ...	8.4	3.9	4.4	15.7	11.2	4.5	9.2	4.7	4.4	7.0	31.1
25 — 29 ...	8.3	4.1	4.2	14.3	10.2	4.0	8.8	4.6	4.2	10.5	21.9
30 — 34 ...	7.0	3.7	3.2	9.6	6.9	2.7	7.3	4.3	3.0	9.8	12.2
35 — 39 ...	5.2	2.8	2.4	6.3	4.5	1.8	5.5	3.2	2.2	11.0	6.2
40 — 44 ...	5.0	2.6	2.4	4.3	3.2	1.1	4.6	2.7	1.9	7.5	3.2
45 — 49 ...	3.4	1.7	1.7	2.7	2.0	0.7	3.2	1.9	1.3	7.0	1.0
50 — 54 ...	4.2	2.3	1.9	2.3	1.6	0.7	3.2	1.7	1.5	4.9	3.2
55 — 59 ...	1.9	1.2	0.7	0.9	0.6	0.2	1.5	0.9	0.7	0.6	0.4
60 — 64 ...	2.9	1.7	1.2	1.2	0.7	0.5	2.2	1.2	1.0	2.1	0.8
65 and over ...	3.0	1.5	1.5	0.8	0.5	0.3	2.1	1.1	1.0	0.4	0.8

Source: Table III.2.

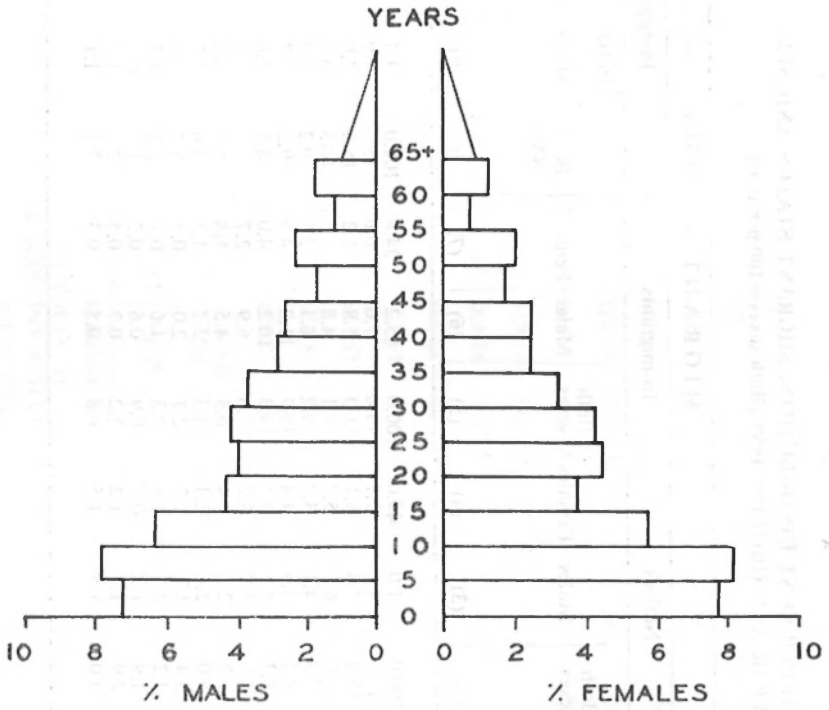

FIGURE : 3·2 PER-CENT DISTRIBUTION OF NATIVES BY FIVE-YEAR AGE GROUPS AND SEX, KARACHI, 1959 (BOTH SEXES=100 PER CENT)

SOURCE : TABLE III·3

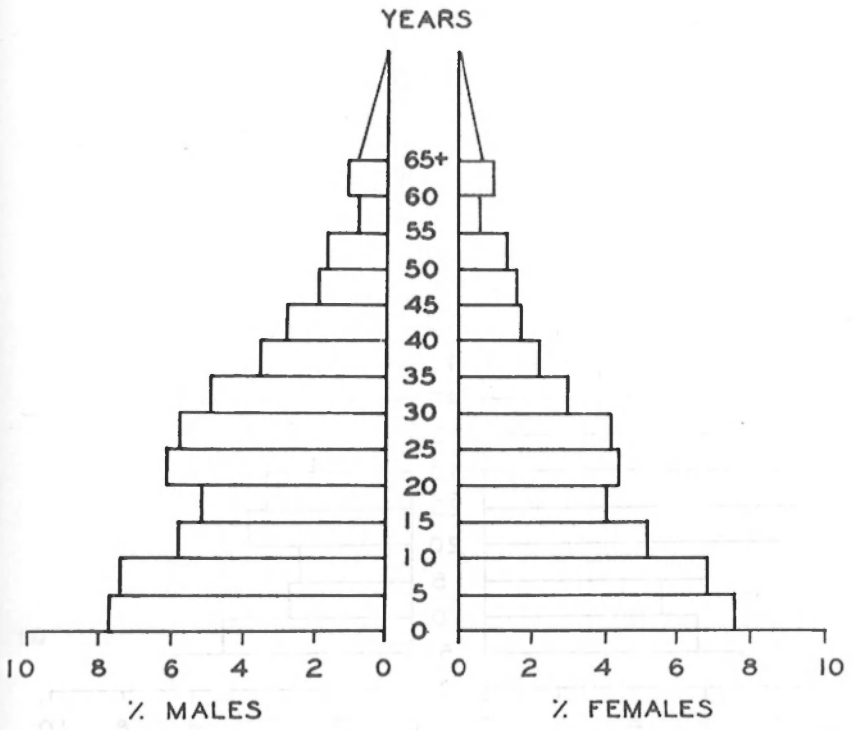

FIGURE: 3·3 PER-CENT DISTRIBUTION OF MIGRANTS BY FIVE-YEAR AGE GROUPS AND SEX, KARACHI, 1959 (BOTH SEXES = 100 PER CENT)

SOURCE: TABLE III·3

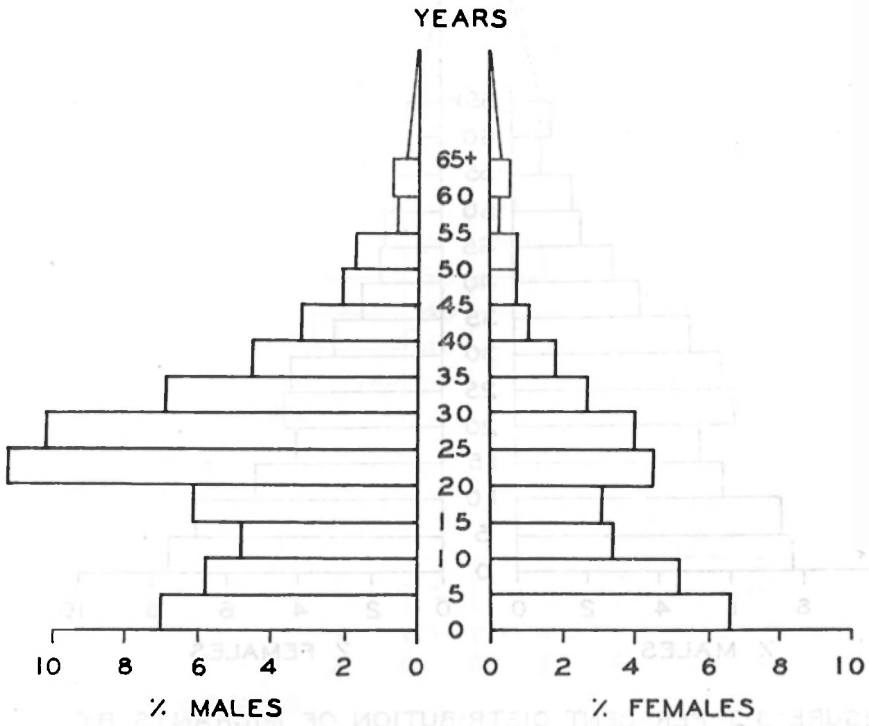

FIGURE: 3·4 PER-CENT DISTRIBUTION OF IN-MIGRANTS BY FIVE-YEAR AGE GROUPS AND SEX, KARACHI, 1959 (BOTH SEXES = 100 PER CENT)

SOURCE: TABLE III·3

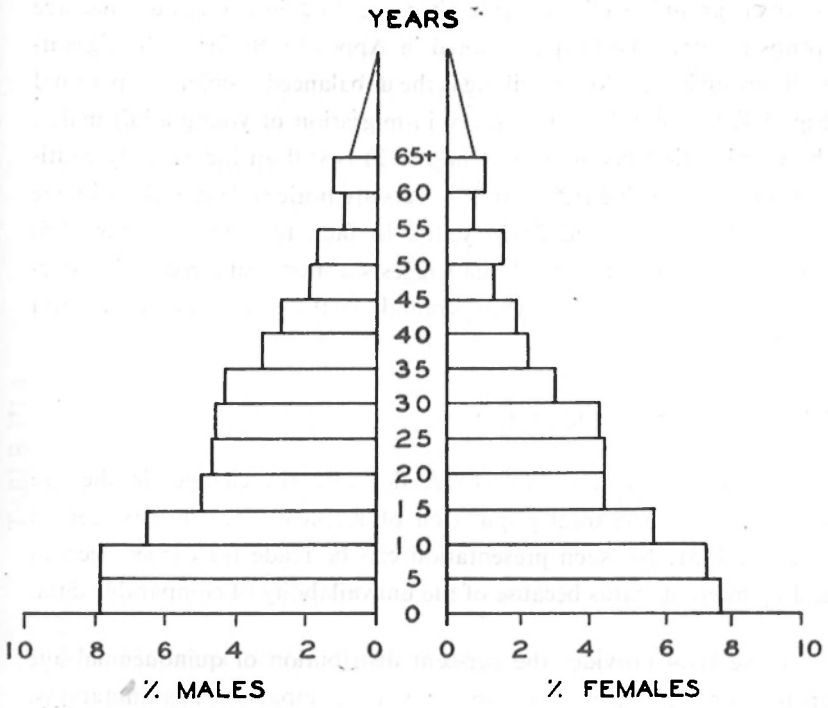

FIGURE : 3·5 PER-CENT DISTRIBUTION OF IMMIGRANTS-INDIA BY FIVE-YEAR AGE GROUPS AND SEX, KARACHI,1959 (BOTH SEXES=100 PER CENT)

SOURCE : TABLE III·3

CHAPTER 1

ILLUSTRATION OF THE PROBLEM AND THE NATURE OF THE SURVEY

1.0 Introduction

The present study presents a brief account of the demographic characteristics of the people of Karachi, mainly based on analysis of the sample survey data as of April 1, 1959. The data, thus obtained, have already been tabulated and published separately in a Statistical Paper [1] and summarily described in Section 1.3. The sample, on the average, covered about 3¾th per cent of the population of Karachi. The demographic data derived from the survey provide more detailed information than the decennial censuses of Pakistan and give information on births, deaths and migration which the censuses do not provide directly. Before this analysis of demographic data is presented, it is appropriate to:

(1) describe the area of Karachi covered in the survey,
(2) explain the problem and purpose of present study,
(3) summarize the procedure of data collection and processing,
(4) discuss some limitations of the data,
(5) provide a brief sketch of the historical developments, size and growth of the population of Karachi prior to the survey date.

This chapter deals with items (1) to (4). Item (5) is dealt with in Chapter 2, its major source of information being the census material. The remaining chapters of this study undertake analysis of such demographic characteristics as age and sex distribution, marital status, fertility and mortality, based on the sample survey data. Comparison with the 1951 and 1961 census information is undertaken to the extent of availability of data.

1.1 Description of the Area Covered

Geographically Karachi is situated on the south-east coast of West Pakistan, on the shore of the Arabian Sea approximately 67°E longitudinally and 25°N latitudinally. It provides an airport conveniently

located to serve Europe, Africa and Asia. It is also a busy seaport. It is situated between the two districts of Thatta, to the east, and Lasbella, to the west. On the north-west, this area is fringed by hills and the river Hub, and on the south and south-west by sea and swamps. To the east, north-east and south-east, there are vast tracts of open land where the main expansion takes place, although swamps in the south and south-west are also being reclaimed for urban development.

The area of 2,102 square kilometers which was covered in this survey comprises the former Federal Capital Area of Karachi, excluding some 37 thousand nonhousehold population (population living in institutions and in open places). It is shown on map on pages (*ii*) and (*iii*). This area could appropriately be termed as the metropolitan area or as Greater Karachi, but for simplicity the use of "Karachi" or the metropolis is preferred in this volume to denote the surveyed area[1]. It must not be confused with the concept of Karachi as used in the 1961 Census or as commonly accepted by the general public.

When the capital was moved to Rawalpindi in October 1959, Karachi was redesignated from Federal Capital Area to Federal Territory. When in December 1960, the adjacent Lasbella district and some 37 villages of Thatta district were added to it, the total area of the Federal Territory or the former Federal Capital Area increased from 2,102 to 21,747 square kilometers. On July 1, 1961, the Federal Territory was merged into West Pakistan and consequently Karachi became the 12th *Division* of the province, consisting of two districts, Karachi and Lasbella.

The present *Karachi district* is composed of the 1959 Federal Capital Area *plus* the 37 villages of Thatta district with an area of 3,515 square kilometers. In other words, the area covered in this survey is the present Karachi district *minus* the 37 villages. It includes the Municipal Corporation, Cantonment Board and rural *taluka*, the last being the name o the third-layer administrative unit, after divisions and districts used in the areas formerly belonging to the old Sind Province.

[1]In the earlier draft of this monograph "KMA-Karachi metropolitan area" instead of Karachi or the metropolis was used. In some prior publications, references have been made to the unpublished monograph. In these references, wherever KMA instead of Karachi or the metropolis has been used, the former should be considered equivalent to the latter.

The incorporated city is smaller than the actual urban aggregate which, besides the continuous urban area, consists of noncontiguous urban territories. Since the partition of the Indo-Pakistan subcontinent on August 14, 1947, a greater share of the rapid population, industrial, commercial and new residential growth has taken place in areas adjacent to the city (outside the municipal boundaries) rather than in the city proper. For this reason, it was decided to cover a larger (more inclusive) area so as to include the whole urban aggregate in a single unit which would define the total demographic, economic and social reality.

1.2 Explanation of the Problem and Purpose of Research on Karachi

Karachi is the largest urban population agglomeration and the most developed industrial area of Pakistan. In the present survey, it is estimated that as of April 1, 1959 it had a household population of 1.803 million; but if an allowance for the nonhousehold population were made, the estimated figure increases to 1.840 million. The population figure for the former Federal Capital Area was not published in the 1961 Census, but an informal enquiry from the Census Commissioner's office revealed that as of February 1, 1961 the population of this area was 2.032 million.

Fig. 1.1 shows that more than four-fifths of its population are migrants (also includes children of migrants born in Karachi: *see* glossary) from various parts of India and Pakistan. A major proportion of migrants came from India after the partition of Indo-Pakistan subcontinent on August 14, 1947. Karachi is still growing rapidly and in-migration (migration from other parts of Pakistan) is an important component of its growth. The influx of migrants, as experienced by great cities or metropolises elsewhere, is creating diverse demographic, economic and social problems.

The still-developing Karachi is a complex aggregate of heterogeneous communities. These communities, though tending to show diversities in demographic, economic and social characteristics, yet by the virtue of an overall structural complementarity function are parts of the larger metropolitan community of Karachi. There are, thus, problems which can be viewed for Karachi as a whole. An effective

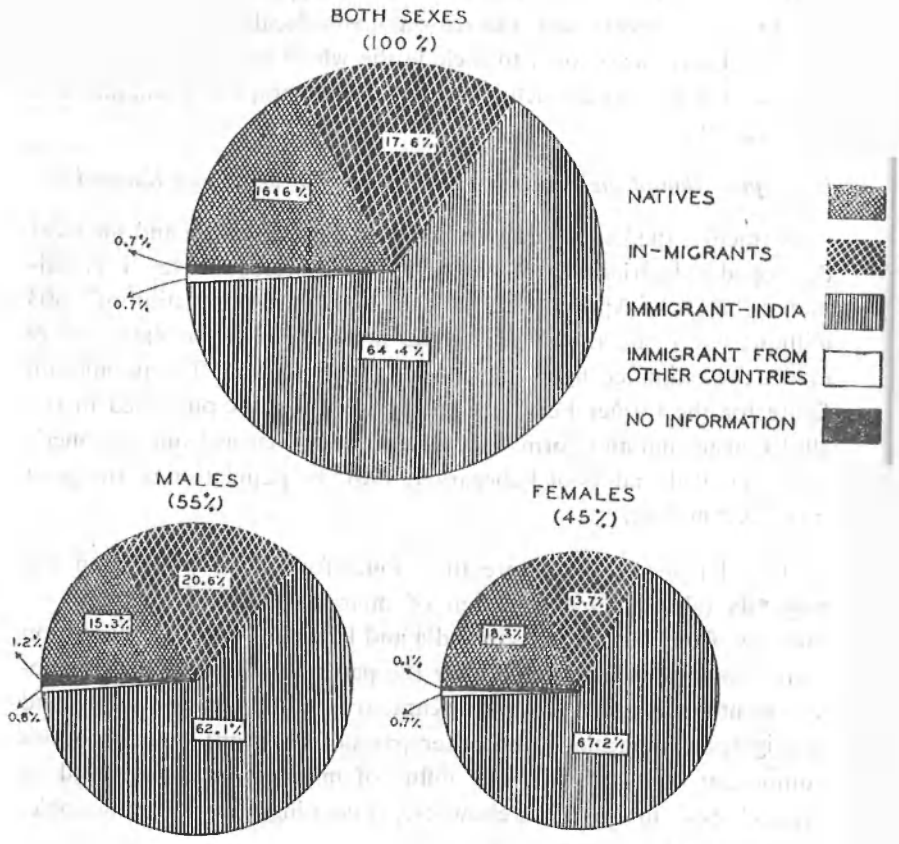

FIGURE: 1·1 PER-CENT DISTRIBUTION BY MIGRANT STATUS AND SEX, KARACHI, 1959

SOURCE: [1, TABLE 1·20]

solution of the problems requires a knowledge of the demographic, economic and social characteristics of the population at the aggregate level as well as for the divisions. The present study and the two studies [5] which will follow in this series attempt to fill this need. Some of the demographic problems being faced by researchers, planners and administrators of both private and governmental agencies are outlined below.

Increasing interest is shown by the social scientists and social agencies in rapid changes in the size, organization and distribution of population in an industrial metropolitan area such as Karachi.

The social scientists, social workers, health and medical officials including family planners, town planners and administrative and other action agencies are interested in understanding the age and sex composition, marital status, birth rates and death rates in terms of migrant status and economic and social characteristics of the population for various administrative and social service purposes.

What are the demographic conditions presently existing in Karachi and what are the casual factors at work? The present study attempts to answer this question, at least partly, by analysing the sex and age distribution, marital status, fertility and mortality in relation to social and economic characteristics.

The objects of this study, in broad terms, are manifold: *i*) to discover what has happened, and on this basis to foretell what is likely to happen, in Karachi; *ii*) to permit a meaningful comparison of the population of Karachi with the populations of other large metropolitan areas of Pakistan, as well as of other countries of the world; *iii*) to develop some hypotheses about the demographic structures of modern metropolitan areas of developing countries (although Karachi has many unique characteristics, some results may apply to major Asian metropolitan areas and cities generally); *vi*) to contribute to the fund of knowledge about the metropolitan areas in general and also in terms of their areal subdivision in order to help the professional planners in laying out a more intelligent and more explicit course of action which will ultimately be more conducive to the solution of problems.

1.3 Data Collection and Processing

The Planning and execution of the survey involved several steps such as designing a schedule, designing a sample and the collection and coding of data, punching of coded data onto punch cards, mechanical verification of punched data, listing of punched data, manual verification of the listed data, tabulation of data on IBM counting-sorter, ESM 101, and compilation and presentation of the tabulated data. A brief description of these steps is given in the *Statistical Paper* [1, Section 0.3]. Here only a brief mention is made about the schedule (Appendix A)[2] and the sample.

The purpose of the schedule was to collect information on demographic, economic and social characteristics of the population of Karachi. One schedule was used for each household—the household being the unit of enquiry. Although a wide range of information was collected through this schedule, it must be borne in mind that the schedule was not specifically designed for the series of studies contemplated. The choice of variables for tabulation and analysis was made after the data had been collected and was, therefore, restricted to topics for which data were either directly available, or could be derived indirectly[3]. However, data collected through items 1 to 7 of the schedule have been used intensively. Additional information like family income, family type, family classification, family size, principal earners in household, interval between children under 12 years, difference between ages of husband and wife, *etc.*, was indirectly derived from the schedules. Thus, enough useful information was collected to justify a *Statistical Paper* and a series of studies on Karachi.

The universe from which the sample was drawn was the total population of the former Federal Capital Area excluding the non-household population. In other words, persons living in hotels, hospitals, jails, prisons, and in open places were not covered.

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[2] The schedule was constructed by the Central Statistical Office of the Government of Pakistan with the assistance of ICA (now AID) experts.

[3] Enough usefull data were derived indirectly from the schedule. For details *see* [1, Subsection 0.3.1].

The universe was arbitrarily divided into 162 manageable sub-areas called chunks for which maps were drawn. (There were 60 chunks from which no segments were selected under the sampling technique employed. For presentation purposes, these 60 chunks were merged into the remaining 102 chunks). In each chunk, dwellings were blocked off and divided into segments. Two sampling fractions, 1/25 and 1/75, were used for the random selection of segments. For selection at 1/75th, one segment was selected at random from groups of three segments already selected at 1/25th. The fraction of 1/75th was applied in chunks which had highly homogeneous population. An attempt was made to divide each chunk into a number of segments which would be a multiple of 25, but it was not possible to follow this rule rigidly. In case chunks could not be divided into a number (of segments) which was multiple of 25 or the number was less than 25, they were grouped together in order to provide a multiple of 25. The sample as designed for the survey is essentially a simple random sample of clusters (segments) of households which are enumerated completely [1, Section 0.5].

In all, 301 (280 at a sampling fraction of 1/25th and 21 at a sampling fraction of 1/75th) segments or sampling units were randomly selected out of a total of 8,575 segments of chunks. In the selected segments, all the households were completely enumerated. Attempts to keep the segments of the same size between chunks was not of much success as the chunks sometimes appeared to be either too large or too small. These sampling units were completely enumerated and the data were obtained for the following number of households:—

Total number of households ...	16,373
Family-type households	13,311
Partnership households	907
Single-person households	2,155

1.4 Limitations of the Data

For population analysis, demographers have traditionally been accustomed to using two sources of information: *i*) decennial censuses; and *ii*) vital registration-records. A third source, sample survey (such as the

present Karachi survey), can also provide reliable data and is coming into more prominent use. The schedules of the sample survey are the major source of information for the present study. The decennial census material has also been used to the limit of available information in the census reports.

Errors in data collected whether by a sample or by a complete count do arise at all stages during the fieldwork, processing, compiling and at all other stages until the results are presented. Sample survey data are also subject, in addition, to errors of sampling. Some details of the limitations of the data on age, fertility and mortality are discussed at the beginning of chapters dealing with these topics.

There is one basic source of difference between the survey and the census figures. The survey data exclude some 37 thousand of non-household population. Furthermore, the survey data were collected at two different periods with a time lapse of about 21 months inbetween [1, Section 0.3]. Although adjustments have been made to compensate for the growth of population which had occurred in the area covered by the second phase of the survey, some bias may have crept in due to change in the demographic, economic and social characteristics during this period.

No specific *a priori* comments regarding the quality of the census data for Karachi can be made. In general, errors in census data are due to underreporting, overreporting and mis-statements. Evaluation of the quality of census data justifies a separate study in itself. In the case of Karachi as well as in other parts of Indo-Pakistan subcontinent, it is generally believed that due to political reasons there were attempts to boycott the 1931 Census, and to overreport in the 1941 Census [4, p. 26]. How far these attempts had affected the enumeration of Karachi is not known. In 1951, the Census Commissioner believed that:

> The work met with a certain amount of apathy and frustration in the organizational stages in many of the large towns and there is in my mind a grave doubt as to whether such cities as Dacca, Lahore, Rawalpindi, Multan and *especially Karachi* were 100 per cent emmerated [4, p. 2].

The italicising of "especially Karachi" is done by the author of this study. The numerical extent of underenumeration in large towns in 1951 is not specified.

In 1961, the quality of the census data was subjected to a post-enumeration quality check immediately after the main count. In this check, the main census procedure (including the same schedule) was repeated in one out of every 500 enumeration blocks and, thus, it did not constitute an independent post-enumeration check on the reliability of the census data [2, p. 377]. The results of this check are yet awaited. However, it is speculated that there was no overenumeration in 1961 [3, p. 4].

The increasing proportion of the urban population and the higher rate of growth of urban than of rural population in the developing countries deserve careful consideration. Until recently, the theories and generalizations on urbanization have been formulated in the light of studies undertaken in the developed Western societies. The progressive urbanization in the developing nations is taking place under different conditions from those of developed nations and may lead to demographic, economic and social implications which are at variance with the generalizations which have so far been formulated.

The level of fertility in the Western countries in the context of technological advancement, urbanization and economic and social development was lower than the present level of fertility of developing countries. On the other hand, the Western countries were less densely populated and decline in their mortality level was slower than those of the developing countries today. The urbanization in the developing countries is taking place without a significant trend toward regulating the size of families. Under these conditions, the developing nations should not expect the effects of progressive urbanizations similar to those of West as the urban populations of the developing countries are quite dissimilar in their composition from those of the West. Thus, there is paramount need for comprehensive studies of the metropolises of developing countries. The present monograph attempts to observe the differences in the demographic variables among various socio-economic groups of Karachi and hopefully provides some understand-

ing of the phenomenon of rapid growth of population which is taking place in this metropolis. The studies that will follow in this series will attempt to fulfil the remaining needs. The data from the survey make it possible to draw up a quantitative picture of main features of the recent demographic, economic and social conditions in a Pakistani metropolis.

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CHAPTER 2

HISTORICAL GLIMPSE, SIZE, AND GROWTH OF POPULATION

2.1 Historical Glimpse

The former Sind Province is of great interest to historians, archaeologists and anthropologists, because it possesses traces of one of the world's oldest civilizations. The excavations at Mohenjo Daro are an example of the old Indus (Sind) Valley civilization which flourished as far back as 3000 B.C. [16, p. 358].

Karachi, which is a part of the former province of Sind, on the other hand, has a brief history. It may not command interest from purely an historical viewpoint, although some historians claim its existence as a small agglomeration dating as far back as 325 B.C. [13, p. 1-4], but its development and progress particularly since the middle of the nineteenth century are of great interest from demographic and socio-economic points of view.

In early eighteenth century when Kalhoras were ruling the area, Karachi was already a trade centre [16, p. 360] and by the middle of the century, it had developed into a centre of administration as well [6, p. xi].

The prominent British navigator, Lieutenant John Porter, who came to Karachi in 1774 described it as a town ". . . fortified by a slight mud wall and flanked with round towers". A businessman, Nathan Crow, who visited the country of Sind in 1779 described Karachi as ". . . the only sea-port town of the country with 10 thousand population". Another visitor, H. Rottinger, who came in 1809, suggested a figure of thirteen thousand for its population [17]. In 1843, when the Sind area, including Karachi, was annexed to the British Empire, Karachi had an estimated population of fourteen thousand [19, p. 82].

The use of words "town" and "seaport" by these visitors in the later part of the eighteenth century, their mention of the trading activi-

ties and the mentioned size of its population in 1843 suggest that Karachi was already more or less an urban agglomeration before it was taken over by the Britishers. It was during the time of Sir Charles Napier, the first Governor of Sind (1843-1847), that Karachi began to develop more rapidly. He shifted the capital of Sind from Hyderabad to Karachi and made ambitious plans for the development of the new capital [17, pp. 32-33]. In 1847, the province of Sind, including Karachi, was merged into the Bombay presidency and remained as such till 1936 when it was again separated.

After the partition of the Indo-Pakistan subcontinent in 1947, Karachi became the Federal Capital of Pakistan. When in 1959 the Capital was shifted to Rawalpindi, Karachi became a part of the province of West Pakistan. It now houses divisional and district headquarters of the provincial government. It also enjoys the status of being the most industrialised area of Pakistan and a very important seaport as well as airport of Asia.

2.2 Current Population Size of Karachi

In terms of population size Karachi is the largest metropolis of Pakistan. In 1955 it was the twenty-second most populous of the metropolitan areas of Asia. It was then smaller than Istanbul in Turkey and larger than Hyderabad in India [4, pp. 45-52].

The sample as described in Section 1.3 gave a population estimate of 1.803 million as of April 1, 1959. When 37 thousand for nonhousehold population, omitted from the universe, are added we arrive at a figure of 1.840 million.

The 1961 Census reports a figure of 2.049 million for the Karachi district and 1.917 million for the city (Karachi *minus* the rural parts) consisting of an area of 595 square kilometers. The figure for the former Federal Capital Area or Karachi as covered in our 1959 survey has not been reported separately. In a personal communication to the author, the Census Commissioner's office has advised that in 1961 the population of the 37 villages of Thatta district which were added to Karachi to form a district was 16 thousand. Exclusion of this figure from the total population of the district (2,048,745 — 16,473 =2,032,272) gives a rounded population figure of 2.032 million for Karachi.

2.3 Trends of Population Growth

From the evidence cited in the previous section and the results presented here it has become obvious that Karachi has grown from a small agglomeration of fourteen thousand to a large metropolis of over two million population in a period less than six scores of years. The growth of Karachi is a result not only of excess of births over deaths but also of net inflow of migrants. A very high proportion (more than four-fifths) of migrants found in the total population in 1959 (Fig. 1.1) shows that the migration factor has played an important role in accelerating the rate of growth. The following subsections undertake to describe how such a rapid growth of population has taken place.

2.3.1 Population Growth, Karachi City, 1843 to 1961: The availability of data makes it possible to study the growth of population of the city since 1843. The city population grew by 307 per cent during the period 1843 to 1872, which may be attributed to various developments which occurred after the area became a British Colony.

TABLE II.1

KARACHI CITY POPULATION GROWTH, 1843—1961

Year	Population (in 000)	Increase since previous date		Geometric rate of growth*
		absolute	per cent	
(1)	(2)	(3)	(4)	(5)
1961	1,917	849	79.5	6.0
1951	1,068	681	176.0	10.7
1941	387	123	46.6	3.9
1931	264	47	21.7	2.0
1921	217	65	42.8	3.6
1911	152	35	29.9	2.6
1901	117	12	11.4	1.1
1891	105	31	41.9	3.5
1881	74	17	29.8	2.9
1872	57	43	307.1	5.0
1843	14	—	—	—

* Since previous date.

Sources : [18, pp. II-III]; [5, pp. 18-22]; [10, pp. 22-23]; [19, p. 82 and p. III-3]; [14, pp. 94 and 199].

The developments consisted not only of construction of roads, buildings and drainage, but also:

i) the establishment of a Board of Conservancy in 1846, which was replaced by Municipal Committee in 1852;

ii) the rapid growth of trade and commerce and the establishment of a Chamber of Commerce in 1860;

iii) the construction of railway from Karachi to Kotri, which was completed in 1861;

iv) the development of Karachi harbour; and

v) improvements in postal service and public administration [6, pp. 1-20].

Such developments, especially when combined with the improvement in transportation facilities, accelerated the growth of population during this period. The annual rate of growth of 5 per cent during the period beginning 1843, the year in which Sind including Karachi was taken over by the British, to 1872, the year in which the first census in the British India was completed, was the highest until 1941. With some fluctuations, the city continued to grow, though not as rapidly during the period 1872 to the end of the century.

A plausible explanation in the absence of concrete evidence for the decline in growth rate during the period between the first two census years, *i.e.*, 1872 to 1881, is that the in-migration rate had slowed down during this period as until 1878 railway transport facilities were available only upto Kotri, *i.e.*, only one hundred miles towards north of Karachi. Probably, the bulk of in-migrants from the areas up to which transportation facilities had been extended from Karachi had already been drawn.

By 1878, the railway from Karachi to Kotri had been extended to Khanpur [19, p. 83]. In 1886 the Karachi Port Trust was constituted, which brought about considerable improvements in the port including construction of new berths [19, p. 83]. These developments seem to have accelerated the annual rate of growth for the decade 1881 to 1891.

In the next decade ending 1901, however, not only the rate, but also the absolute population growth were of the lowest order. This is ex-

plained by the fact that the closing years of the nineteenth century are marked in the history of Karachi city by the plague epidemics [6, pp. 91-93]. The explanation for the growth of the city during the period 1901 to 1961 is more or less the same as for the Karachi metropolis since the latter overlaps the former. Additional explanation for the growth during this period would be found in the next subsection on Karachi.

A full inquiry into the causes of fluctuations in growth as has been noted for Karachi city would call for a detailed study of not only the demographic factors, such as reproductive change and migration, but also of the economic forces which were associated with the demographic variables. Such study would depend on the availability of data on births, deaths and migration for the past decades. Neither the vital registration system in Karachi city nor the decennial censuses provide adequate data on births and deaths. In addition, the censuses provide very little information on migration to and from cities.

Only the 1921 census volume, as far as could be ascertained, provides information on the place of birth of in-migrants for the city of Karachi. Table II.2 lists the places of birth and gives the masculinity ratio of each group of out-born in Karachi city in 1921. Although the place of

TABLE II.2

KARACHI CITY: MASCULINITY RATIO

Migrant Status and Region of Origin, 1921

Migrant status and region of origin	Both sexes		Masculinity ratio		
	Number	Per cent	Male	Female	Masculinity ratio
(1)	(2)	(3)	(4)	(5)	(6)
All persons ...	216,688	100.0	132,926	83,762	159
Natives	115,607	53.4	67,897	47,710	142
In-migrants	101,081	46.6	65,029	36,052	180
Districts of Sind ...	13,656	6.3	9,250	4,406	210
Baluchistan	13,767	6.4	7,370	6,397	115
Cutch	23,618	10.9	13,308	10,310	129
Kathiawar ...	18,033	8.3	10,512	7,521	140
Punjab & N.W.F.P ...	11,811	5.4	9,028	2,783	328
United Provinces ...	8,661	4.0	7,480	1,181	633
Rajputana ...	5,227	2.4	3,521	1,706	206
Ratnagiri ...	4,688	2.2	3,422	1,266	270
Surat	868	0.4	598	270	221
Ahmedabad ...	752	0.3	540	212	255

Source : [18, p. CXXII].

birth statistics are not free from the risk of including the same birth place for the children as that of their parents, they provide some understanding of the in-migration.

The proportion of in-migrants in the total population of the city in 1921 was more than 46 per cent. It is likely that the flow of migrants into the city was accelerated during the decade 1911 to 1921 due to increased activities of the seaport, in turn attributable to World War I. A substantial proportion, *i.e.*, 19 per cent of the total population, was drawn from Cutch and Kathiawar. More than 12 per cent had their place of birth either in Baluchistan or districts of Sind. It is interesting to observe that prior to the partition of Indo-Pakistan subcontinent a larger proportion (more than 60 per cent) of in-migrants were drawn from the areas which are now in India than from areas which are now in Pakistan.

Table II.2 further shows that in 1921 the in-migrants had a masculinity ratio (*see* glossary) of 180 per hundred as compared to 142 per hundred for the natives. While 180 for migrants is not impossible, the figure of 142 males per each 100 females for the Karachi-born inhabitants of Karachi strains credence. It throws considerable doubt on the figure generally and suggests a considerable female underenumeration, higher female mortality and/or (less likely) female selective migration.

TABLE II.3

KARACHI CITY: RANK CORRELATION
Rate of Growth and Masculinity Ratio, 1872—1931

Year (1)	Geometric rate of annual growth* (2)	Masculinity ratio (3)	Year (4)	Ranking: Geometric rate of annual growth* (5)	Ranking: Masculinity ratio (6)
1931 ...	2.0	145	1872 ...	1	1
1921 ...	3.6	159	1921 ...	2	2
1911 ...	2.7	146	1891 ...	3	4
1901 ...	1.1	142	1881 ...	4	6
1891 ...	3.5	146	1911 ...	5	3
1881 ...	2.9	145	1931 ...	6	5
1872 ...	5.0	159	1901 ...	7	7

*Since previous date.

Sources : Table II.1; [18, pp. ii-iii]; [5, pp. 18-22].

Table II.3 demonstrates the association of the per-cent annual rate of growth and the masculinity ratio for the census years 1872 to 1931. The rank order correlation coefficient for this relationship (+0.821) is significantly different from zero at the 5-per-cent level and suggests that as the masculinity ratio increases, (which in turn is positively associated with migrants) the per-cent rate of annual growth also increases. It is, thus, implied that migration has been an important factor in the growth of population of Karachi city—a major component of the metropolis.

The masculinity ratios for the years 1941, 1951 and 1961 are 136, 135, and 131 respectively which are lower as compared to those of the preceding censuses, although the annual rate of population growth showed an opposite pattern (Table II.1). It seems that the in-migration during the 1930s, 1940s and 1950s into the city was not as selective of males as it was in the previous decades. Evidently, the migrants in the 1930s and the displaced persons from India in the 1940s and 1950s were moving to the city of Karachi more with their families than the earlier migrants.

A general explanation of population growth of the city can be made as follows: the coastal location of the city of Karachi, its contacts with foreign countries and hinterland (facilitated by the improvement in means of transport by land, sea and air) increased trade and economic opportunities; these in combination attracted the migrants which caused the growth rate to rise substantially above the level of reproductive change.

2.3.2 Population Growth of Karachi, 1901 to 1961: The figures shown in Table II.4 for various decades are consistent with the area of Karachi as shown in map on pages (*ii*) and (*iii*) and, therefore, are comparable. It is noted that the population growth in Karachi has not been steady. The lowest annual rate of growth of 2.1 per cent is observed for the decade 1921-1931 which may be a result of the possible underreporting of the 1931 figure, attributed to the noncooperation movement, presumably more effective in a metropolis than in the country as a whole, then prevailing against the British in the Indo-Pakistan sub-continent. The decreases in in-migration due to the economic depreseion must also have contributed to the unusually low rate of growth.

TABLE II.4

KARACHI AND PAKISTAN: POPULATION GROWTH

1901—1961

Year	Population (in 000)		Increase since previous date				Geometric rate of growth	
			absolute (in 000)		per cent			
	Kar.	Pak.	Kar.	Pak.	Kar.	Pak.	Kar.	Pak.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1961 ...	2,032	93,812	192	3,301	10.4	3.6	5.6	2.1
1959 ...	1,840	90,511	714	14,669	63.4	19.3	6.3	2.2
1951 ...	1,126	75,842	691	5,563	158.4	7.9	10.0	0.8
1941 ...	436	70,279	135	11,133	44.9	18.8	3.8	1.7
1931 ...	301	59,146	57	4,783	23.2	8.8	2.1	0.8
1921 ...	244	54,363	57	3,426	30.7	6.7	2.7	0.7
1911 ...	187	50,937	50	5,433	37.0	11.9	3.2	1.1
1901 ...	136	45,504	—	—	—	—	—	—

Sources : *i*) [19, Tables 3-2 and 3-5]; [14].

ii) The 1959 figure are estimated.

The rise in the rate of population growth during the decade 1931-1941, aside from communal overreporting in 1941, could be attributed to several factors. The province of Sind was separated from Bombay Presidency in 1936 as a result of which Karachi became the headquarters of the provincial government. The establishment of the government offices resulted not only in the arrival in Karachi of the government staff and their families, but also in the increased building and construction activities, which continued till 1939 when the World War II broke out. Employment opportunities arising out of war-generated activities, directly or indirectly, attracted migrants from outside Karachi. Thus, the annual rate of population growth during the decade 1931 to 1941 was accelerated.

Karachi experienced an unprecedented increase of 158.4 per cent during the decade 1941 to 1951 by adding 691 thousand persons to its population. The annual rate of growth during this decade was 10 per cent, the highest ever recorded for Karachi. The population increased by 906 thousand between 1951 and 1961, with a higher true increase than the forties but with a lower proportionate increase of 80.5 per cent, or an annual rate of growth of 6.1 per cent as compared with the 10 per cent of the preceding decade. The growth during these two decades was substantially due to net migration consisting mainly of persons displaced during the period 1947-1955, as a result of the partition of the Indo-Pakistan subcontinent in 1947. The fact that Karachi functioned as the first Federal Capital of the nation from 1947 to 1959 was another important factor attracting, directly or indirectly, both in-migrants and immigrants.

The population figure of 1.840 million estimated by the sample survey for 1959 provides a total increase of 714 thousand and gives an annual rate of population growth of 6.3 per cent between 1951 and 1959 (Table II.4).

If a figure of 37 thousand on account of exclusions from the sample universe were not added, this would give an increase since the 1951 Census of 63 per cent or an annual growth rate of 6.0 per cent prevailing between 1951 and 1959. Recently, the rate of growth of Karachi has been declining, although the absolute additions have been increasing. According to the figure estimated from this survey and the census figure, the annual rate of growth between 1959 and 1961 was 5.6 per cent which is lower than the annual rate of growth for the period 1951 to 1959. This was expected. The influx of migrants from India slowed down during the second half of the decade because of the strict implementation of the immigration rules. In July 1955, the Government banned the unauthorised entry of Muslims from India to Pakistan [7]. In October 1959, the Federal Capital Area was shifted to Rawalpindi. These factors appear to have slowed down the annual population growth rate of Karachi. In further validation of these suggestions, specific data on migration into Karachi by year of arrival may be examined in Table II.5. These data show that since 1950 there is a pronounced dec-

balanced population, in terms of age and sex, than the in-migrants—and have, therefore, produced a well-balanced population—while migrants from other parts of Pakistan were more age and sex selected.

Graphs presented in Figs. 3.2 to 3.5 further demonstrate the extent to which grouping of the single-year age data into quinquennial age groups removes the heaping (noted in Appendix B) for each migrant-status group by sex. Most striking is the unbalanced in-migrants pyramid (Fig. 3.4) which reflects the heavy in-migration of young adult males. The in-migration (as noted in Chapter 2) is still an increasingly continuous process (Table II.5) and its effects are noticeable especially in age groups 20-24 years and 25-29 years. In fact, the pyramid (Fig. 3.5) showing the migrants from India suggests a more balanced and better-reported population than the pyramid of the native population on Fig. 3.2.

3.2 Changes in the Age Structure

It is relevant to acquaint the reader with the changes in the age composition of the total population of Karachi since the last census taken in 1951. No such presentation can be made for earlier decades and by migrant status because of the unavailability of comparable data.

Table III.4 provides the per-cent distribution of quinquennial age groups for 1951, 1959, and 1961, but this comparison has limitations. The 1951 Census and 1961 figures excluded non-Pakistanis whereas the 1959 figures include non-Pakistanis. The number of non-Pakistanis, however, is too small to make any significant difference. The 1959 figures by age suffer from the bias of not including some 37 thousand persons who were not living in regular households. This figure is 2 per cent of the estimated total population figure of 1.84 million; and if this population had a very unusual age distribution, it could influence the age distribution and should not, therefore, be ignored altogether. The 1961 figures are for Karachi district which include, in addition to the population of Karachi, some 16 thousand persons living in 37

TABLE III.4

KARACHI: PER-CENT DISTRIBUTION, ALL PERSONS AND SEX: 1951, 1959 AND 1961
(District)

FIVE-YEAR AGE GROUPS

Five-year age group	PER CENT								
	1961			1959			1951		
	Both sexes	Males	Females	Both sexes	Males	Females	Both sexes	Males	Females
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
All ages	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 — 4	15.3	13.8	17.3	15.0	13.6	16.8	14.3	12.7	16.4
5 — 9	14.6	13.6	16.0	14.4	13.4	15.7	12.4	11.2	14.0
10 — 14	11.0	10.3	11.9	11.4	11.1	11.9	11.4	10.8	12.3
15 — 19	9.6	9.4	9.8	9.0	9.0	8.9	10.0	9.4	10.8
20 — 24	10.5	11.2	9.6	10.3	10.7	9.9	11.5	12.4	10.2
25 — 29	9.1	9.7	8.4	9.8	10.1	9.4	10.1	11.2	8.6
30 — 34	7.5	8.1	6.7	7.7	8.5	6.7	7.5	8.5	6.2
35 — 39	5.7	6.3	4.7	5.6	6.2	4.9	5.5	6.1	4.6
40 — 44	4.6	5.1	4.0	4.6	5.0	4.1	5.0	5.4	4.4
45 — 49	3.2	3.5	2.8	3.2	3.4	2.8	3.2	3.5	2.9
50 — 54	3.0	3.2	2.9	3.3	3.3	3.2	3.4	3.6	3.2
55 — 59	1.6	1.6	1.5	1.5	1.6	1.3	1.5	1.4	1.7
60 and over	4.3	4.2	4.4	4.1	4.0	4.3	4.2	3.9	4.6

Source: [6, p. III-6]; Table III.1; [5, p. IV-8-9].

Notes: *i*) The 1951 and 1961 figures exclude small numbers (of less than half a per cent) of non-Pakistanis.
ii) Population of district in 1961 was in excess of Karachi population only by 16 thousand.

TABLE III.5

KARACHI: PERCENTAGE POINT CHANGE, ALL PERSONS BY SEX 1951, 1959 AND 1961 (District)

FIVE-YEARS AGE GROUP

Five-year age group	PERCENT CHANGE								
	1959—1961			1951—1959			1951—1961		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
All ages	—	—	—	—	—	—	—	—	—
0 — 4	0.3	0.2	0.5	0.7	0.9	0.4	1.0	1.1	0.9
5 — 9	0.2	0.2	0.3	2.0	2.2	1.7	2.2	2.4	2.0
10 — 14	—0.4	—0.8	—	0.0	0.3	—0.4	—0.4	—0.5	—0.4
15 — 19	0.6	0.4	0.9	—1.0	—0.4	—1.9	—0.4	0.0	—1.0
20 — 24	0.2	0.5	—0.3	—1.2	—1.7	—0.3	—1.0	—1.2	—0.6
25 — 29	—0.7	—0.4	—1.0	—0.3	—1.1	0.8	—1.0	—1.5	—0.2
30 — 34	—0.2	—0.4	0.0	0.2	0.0	0.5	0.0	—0.4	0.5
35 — 39	0.1	0.1	—0.2	0.1	0.1	0.3	0.2	0.2	0.1
40 — 44	0.0	0.1	—0.1	—0.4	—4.0	—0.3	—0.4	—0.3	—0.2
45 — 49	0.0	0.1	0.0	0.0	—0.1	—0.1	0.0	0.0	—0.1
50 — 54	—0.3	—0.1	—0.3	—0.1	—0.3	0.0	— 0.4	—0.4	—0.3
55 — 59	0.1	0.0	0.2	0.0	0.2	—0.4	0.1	0.2	—0.2
60 and over	0.2	0.2	0.1	—0.1	0.1	—0.3	0.1	0.3	—0.2

Source: Table III. 4

villages (which when added to Karachi form Karachi district). The 1961 Census does not give a separate age distribution for Karachi. However, 16 thousand population is less than 1 per cent of the 1961 total population of Karachi and would not affect significantly the per-cent age distribution for the purposes of comparison—particularly as the age distribution of rural population of Karachi district is not likely to be different from that of the urban population to the extent of making much difference.

Table III.5 shows the change in the per-cent distribution of the age structure which occurred during the periods 1951-1959, 1959-1961, and 1951-1961. The *plus* and *minus* signs indicate the gain and loss of each age group (in percentage points) in its proportion of the total population. The gain and loss in the proportions by age vary as shown in Table III.5A. It is noted that the age structure of the population

TABLE III.5A

SUMMARY: MAXIMUM GAIN OR LOSS BY AGE GROUPS AND SEX IN PERCENTAGE POINTS, 1951-1959, 1959-1961 and 1951-1961

Period	Maximum gain				Maximum loss			
	Age group	Male	Age group	Female	Age group	Male	Age group	Female
1951-59	5—9	2.2	5—9	1·7	20—24	1.7	15—19	1.9
1959-61	20—24	0.5	15—19	0.9	(25—29) 30—34	0.4	25—29	1.0
1951-61	5—9	2.4	5—9	2.0	25—29	1.5	15—19	1.0

of Karachi has shown a significant change even during a very brief period of less than two years, April 1959 to February 1961. A part of the variation is attributable to changes in age and sex selective migration into Karachi. Another part of the change may be due to

changes in fertility and mortality (perhaps to a lesser extent) and due to serious errors in the age data. A greater part of the changes which have occurred over a short period, *i.e.*, within a period of a decade, are probably attributable to irregularities in the reporting of age and migration.

The change observed in the youngest age groups, 0-4 and 5-9, during a period of 8 years (1951 to 1959) or a period of a decade (1951-1961) is important for its demographic significance. It is noted that these two age groups show a gain in their proportions in 1959 over the 1951 Census year and in 1961 Census year over 1959. This discussion of the changes in the age distribution must take into account the following factors:

i) nonenumeration of 37 thousand persons in the 1959 survey;

ii) decline in the gain due to net migration relatively to the population, especially in ages 15 years-and-over since the 1951 Census;

iii) increasing fertility rate and decreasing mortality rate since the 1951 Census;

iv) better coverage of the population aged 0-9 years in the 1959 survey as compared to the 1951 Census;

v) tendentious underreporting of ages of persons in the age bracket 10-19 in 1961.

If it is accepted that the entire underenumeration of 37 thousand persons in the 1959 survey was spread in ages 15 years-and-over, and allowance for this were made, the gain by 1959 in ages 0-4 years and 5-9 years in Table III.5 would be reduced for both sexes from 0.7 to 0.4 and from 2.1 to 1.8 (per cent points) respectively.

It has already been shown that immigrants from India have conformed more or less to a pattern of age distribution of settled population. The effect of immigration and out-migration is not apparent from the age structure. In-migration is probably the only important factor which is likely to influence the age distribution besides fertility. The per-cent age distribution already presented in Table III.3 shows that the proportions of in-migrant males in age groups 0-4 to 5-9 years are lower as compared to the corresponding age groups of the natives and

the immigrants from India. This is because of the effect of in-migrants of ages 20-29 years. There are no comparative data either for the 1951 or for the 1961 Census to prove whether there has been a decline in the proportion of migrants aged 20-29 years. However, Table III.5 shows that by 1959 the age groups 20-24 and 25-29 for males were proportionately smaller by about 3 percentage points and by 1961 these age groups had an insignificant gain of one-tenth of a percentage point. There is an implication that the migration of adult males of those age-groups into the metropolis declined relatively to the total population of males. There could be two explanations for this: *i*) the adult males who had moved into the metropolis as single persons were settling down either by bringing their families or by getting married; and/or *ii*) many of them were moving into the metropolis with their families.

Then there is also an implication that the birth rate increased after 1951. The only possible comparison which can be made to prove this is the ratio of children under 5 years to women 15-49 years which has

TABLE III.6

KARACHI: CHILDREN UNDER FIVE PER THOUSAND WOMEN 15 TO 49 YEARS OF AGE BY MARITAL STATUS OF WOMEN: 1951, 1959 AND 1961 (DISTRICT)

Marital status	1961	1959	1951
(1)	(2)	(3)	(4)
All women	771	721	702
Ever-married women*	909	827	789
Married women	974	887	860

Sources: [6, p. III-6]; Table III.1; [2]; [5, p. IV-8-9].

* Includes women reported to have been married at sometime of their life: *see* glossary.

been demonstrated in Table III.6 by marital status. It is noted that the child-woman ratios have been consistently increasing since 1951 for all marital-status groups. Part of the increases may be attributed to better

coverage of children under 5 years and to a drop in the infant mortality rate. Comparison of age specific fertility rates would have been a better proof, but unfortunately the data are not available either for 1951 or for 1961.

For comparison of the coverage of population 0-9 years in the sample survey of 1959 with the coverage of the 1951 Census, three alternative postulates can be advanced:

i) the coverage in both the enumerations was of the same quality;

ii) the coverage of the 1951 Census was better; or

iii) the coverage of the 1959 survey was better.

If either *i*) or *ii*) is accepted, then the increase in the proportion of the population 0-4 years and 5-9 years can safely be attributed to an increase in the fertility rate and a decline in the mortality rate. Even if *iii*) is accepted, the possibility of the increase in the proportion due to increase in the age-specific fertility rate and decline in the child-mortality rate cannot be discarded. The higher proportions at young age may have been only partly due to higher coverage and partly to higher fertility. This can be further supported by the gain shown by the females in ages 0-4 and 5-9 years. This gain is a more important indication of the falling average age of the population, as the relative importance of female age groups is not increased by the underenumeration of 37 thousand persons (being predominantly males) to the extent male age groups are. Furthermore, the decline in the size of net migration of males of working ages into the metropolis does not increase the percent size of the female age-group.

The gain shown by the age groups 0-4 and 5-9 in 1961 bears out the hypothesis that the population of Karachi is growing younger, although a part of this increase (particularly in age group 5-9) is attributable to tendentious underreporting of ages of persons in the age bracket 10-19 years. Aside from the usual underreporting of ages by the respondents, there was a tendency on the part of the 1961 Census enumerators to reduce their work by understating the ages of persons in 10-19 age bracket. By underreporting the *ages* of persons the honorary enumerators could save themselves from writing complicated information about the economic characteristics of the population [1, pp. 56-65], which

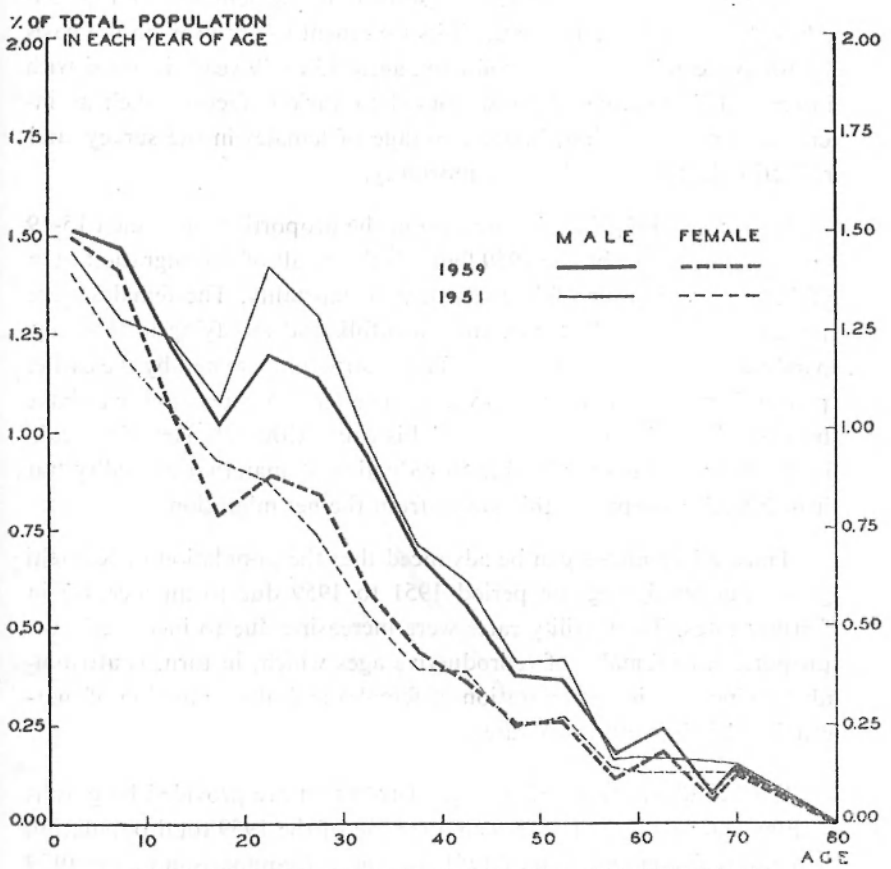

FIGURE: 3·6 AGE DISTRIBUTION BY SEX, KARACHI, 1951 AND 1959
(BOTH SEXES = 100 % EXCLUDING FOREIGNERS)

SOURCES: i) [illegible]
ii) TABLE [illegible]

was required of persons of ages 10 years-and-over. This somewhat inflated the number in 0-9 age bracket. Part of the shortage in age bracket 10-19 may be attributable to excess of infant mortality and to temporary drops in the birth rate beginning in the early 1940s.

Meanwhile, a substantial gain shown by the females on Fig. 3.6 (though not in Table III.5 due to its treatment of each sex on the basis of 100 per cent) in their reproductive ages, 15 to 49 years, is noted with interest. This gain could be attributed to various factors, such as increase in net migration, better coverage of females in the survey and reduction in the rate of female mortality.

It is more likely that the increase in the proportion of women 15-49 years of age shown by the 1959 figure is the result of net migration than of better coverage or of improvement in mortality. The females were presumably joining belatedly their menfolk and rectifying in this way, partly at least, the imbalances in the sex structure, created by the earlier predominantly male migration waves. The fertility rates appear to have been accelerated mainly because of this gain. Although part of the gain in the proportions may be due to reduction in maternal mortality but it is difficult to separate this factor from the net migration.

Thus, a hypothesis can be advanced that the population of Karachi grew younger during the period 1951 to 1959 due to an increase in fertility rates. The fertility rates were increasing due to increase in the proportion of females of reproductive ages which, in turn, is attributable to increase in net migration of females and also reduction of maternal and infant mortality rates.

Further illustrations of the age distribution are provided by graphs in Figs. 3.6 to 3.8. In Fig. 3.6 comparison of the 1959 total population is made with the age data of 1951. In Fig. 3.7 comparison of the 1959 age data is undertaken with the age distribution as of 1961. Fig. 3.7 seems to show that much of the gain made by women in child-bearing age during the years 1951-1959 was lost in 1959-1961. This may partly be due to some family-type population moving out, in turn attributable to the shift of capital from Karachi to Rawalpindi—Islamabad—immediately after the survey in 1959 and partly due to fresh male selective in-migration waves.

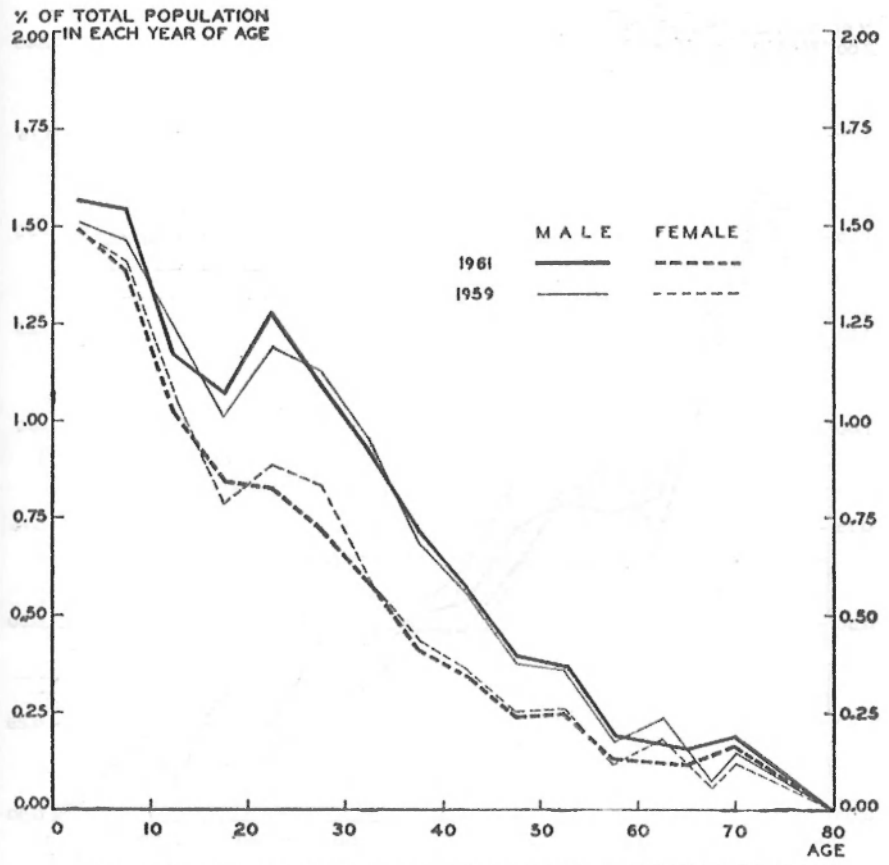

FIGURE : 3.7 AGE DISTRIBUTION BY SEX, KARACHI 1959 AND KARACHI DISTRICT, 1961
(BOTH SEXES=100% EXCLUDING FOREIGNERS)

Source: [5, pp. IV-8-9]; Table III.1

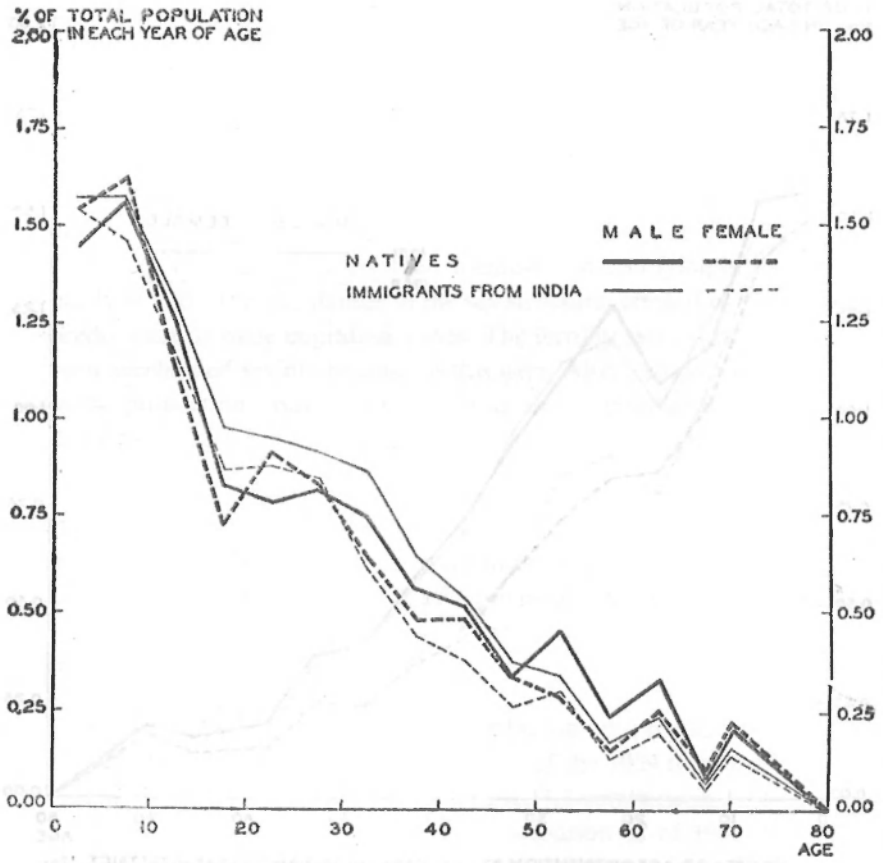

FIGURE: 3·8 AGE DISTRIBUTION BY SEX, NATIVES AND IMMIGRANTS-INDIA, KARACHI 1959 (BOTH SEXES=100 %)

SOURCE: TABLE III·3

Fig. 3.8 compares the age distribution of natives with that of the immigrants from India. In spite of the gain, shown earlier, in the proportion of children 0-9 years of age, the graphic comparison of the two youngest age groups 0-4 and 5-9 implies a shortage of children in the age group 0-4 in 1959 (Fig. 3.6). Ordinarily, populations do not have such an upward protruding link at ages 5-9 unless there was a pronounced decrease in the level of births over the last five years prior to the survey. Even the most optimistic observer of the family-planning campaign would not claim such pronounced results so quickly. The shortage is more likely to be the result of underenumeration. This shortage appears to be relatively greater in 1959 than in 1951 (Fig. 3.6) but less pronounced in 1959 than in 1961 (Fig. 3.7). It is more pronounced in the case of children of natives as compared to the children of immigrants from India (Fig. 3.8). It is likely that the probable inadequacies of the 1959 survey affected and to a more considerable extent the native population. Part of this shortage could be due to some children 0-4 years of age reported at higher ages or partly some children 10-14 years of age (particularly in 1961) were reported at younger age group 5 to 9 years. In addition, the single-year age distribution (Table B.1) in Appendix B has shown already that the underenumeration was concentrated heavily among children under 3 years of age. In spite of this underenumeration of children of less than 3 years of age the distribution in 1959 implies a higher fertility level than in 1951. One of two things or a combination, must have happened. Either the underenumeration of children in 1951 was still greater than in 1959 or there has been an increase in fertility. Informed opinion is that the 1951 Census was, as far as censuses go, of quite high standard [3], and it would be somewhat unrealistic to argue, in the absence of any concrete evidence, that the underenumeration of children was still more severe in 1951 than in 1959, although it cannot be ruled out. In 1951 the fertility was low mainly due to less favourable age structure of the women of reproductive ages.

It can be concluded that the increases in fertility rates since 1951 brought substantial changes in the age structure of the population of Karachi. The decline in the male selective net immigration and inmigration rates combined with the decline in mortality rates of infants and females of reproductive ages seems to have increased the propor-

tion of children 0-9 years. This is a tentative conclusion which has been drawn from the age and sex composition of the population as reported in the 1951 Census, the 1959 sample survey and the 1961 Census. The continuation of the changes in the age composition observed in the 1961 Census age data (although part of the increase in the proportion of population 0-9 is due to understatement of ages of persons of higher ages) more or less confirms the findings of the 1959 survey and shows that the social and economic implications of this demographic phenomenon are important. The rejuvenation of the population affects the proportion of population in the working age groups; it will increase the dependency ratio and the need for housing and schooling—though the need for housing is smaller when the family size increases than when there is an increase in the number of families. A similar phenomenon may be observed for the country as a whole because of the continuing progress in the availability of medical facilities. Some impressions about the age distribution of the population of Pakistan, as a whole, have already been expressed [3]. In addition, a comprehensive study of the age distribution of the population of the country and its sub-areas is already being undertaken at the Pakistan Institute of Development Economics.

3.3 Broad Age Groups and the Dependency Ratio

3.3.0 The social and economic implications of the age distribution of Karachi can be studied further by classifying the population into three broad age groups 0-14, 15-64 and 65 years-and-over. The children 0-14 and aged persons 65 years-and-over constitute the dependency load. The population in the primary working ages, 15-64 years of age, carry this load. It should be borne in mind that this is a crude classification and does not indicate the actual number of dependents and workers. There will be some children and aged persons who will not be dependents. Similarly, there will be many persons in the working ages (particularly the females) who will not be supporters. The dependency ratio is the ratio of the number of children *plus* the aged persons to the population in the working ages. This ratio is further multiplied by 100 to arrive at the average number of dependents per each 100 adult persons. This is an approximate measure of dependency load and is useful for the purpose of comparability.

3.3.1 Broad Age Groups: The distribution of the population in broad age groups is shown by migrant status in per-cent distribution in Table III.7. From this table the high juvenescence of the population

TABLE III.7

KARACHI: PER-CENT DISTRIBUTION, MIGRANT STATUS
Broad Age Groups, 1959

Broad age group	Per cent[a] all persons	Per-cent migrantstatus			
		Natives	migrants[b]	Migrants	
				in-migrants	immi-grants —India
(1)	(2)	(3)	(4)	(5)	(6)
All ages ...	100.0	100.0	100.0	100.0	100.0
0 — 14 ...	40.9	42.8	40.9	32.8	43.1
15 — 64 ...	57.1	54.2	57.2	66.4	54.7
65 and over ...	2.0	3.0	1.9	0.8	2.2

Source: Tables III.1 and III. 2.

Notes: a) Includes immigrants from countries other than India and persons whose migrant status is not known.

b) Includes immigrants from countries other than India.

is apparent in spite of the underenumeration at youngest ages. There are very few populations with more than 45 per cent of their population below 15 years of age. This proportion in Karachi is as high as 41 per cent. According to the migrant status, the migrants from India have the highest proportion—43.1 per cent. The highest proportion of population in the basic working ages is 66.5 per cent for the migrants from other parts of Pakistan. The natives have the highest proportion (3.0 per cent) of aged persons. It is likely that some of the migrants have probably left behind their old fathers to take care of their properties. Older persons are less mobile anyway.

In Table III.8 comparison of the 1959 per-cent broad age distribution has been made with that of 1951 and 1961 Censuses.

TABLE III.8

KARACHI: PER-CENT DISTRIBUTION OF BROAD AGE GROUPS, 1951, 1959 AND 1961
(District)

Broad age group	1961	1959* adjusted for non-enumeration	1951
(1)	(2)	(3)	(4)
All ages	100.0	100.0	100.0
0 — 14	40.9	40.1	38.1
15 — 64	56.9	57.8	59.8
65 and over	2.2	2.1	2.1

Source : Table III. 4

* The nonadjusted figures provide the following proportions: 40.9 for 0-14, 57.1 for 15-64, 2.0 for 65 years-and-over.

The comparison between the 1951 and 1959 proportions shows that in spite of the adjustment for the nonenumerated population the proportion of children 0-14 in 1959 is higher than in 1951, and it is still higher in 1961. These results again imply fertility in Karachi is increasing and are consistant with the results presented in the earlier subsection.

3.3.2 The Dependency Ratio: The dependency ratios have been calculated as already defined, and results are shown by migrant status in Table III.9. The dependency load appears to be highest for natives and

TABLE III.9

KARACHI: DEPENDENCY RATIOS BY MIGRANT STATUS, 1959

Age group	All persons	MIGRANT STATUS			
		natives	migrants	Migrants	
				in-migrants	immi-grants —India
(1)	(2)	(3)	(4)	(5)	(6)
All dependents ...	75.2	84.6	74.5	50.5	82.8
0 — 14 ...	71.7	79.1	71.3	49.3	78.8
65 and over ...	3.5	5.6	3.2	1.2	4.0

Note: See note on Table III.7 *Source :* Tables III.1 & III. 2

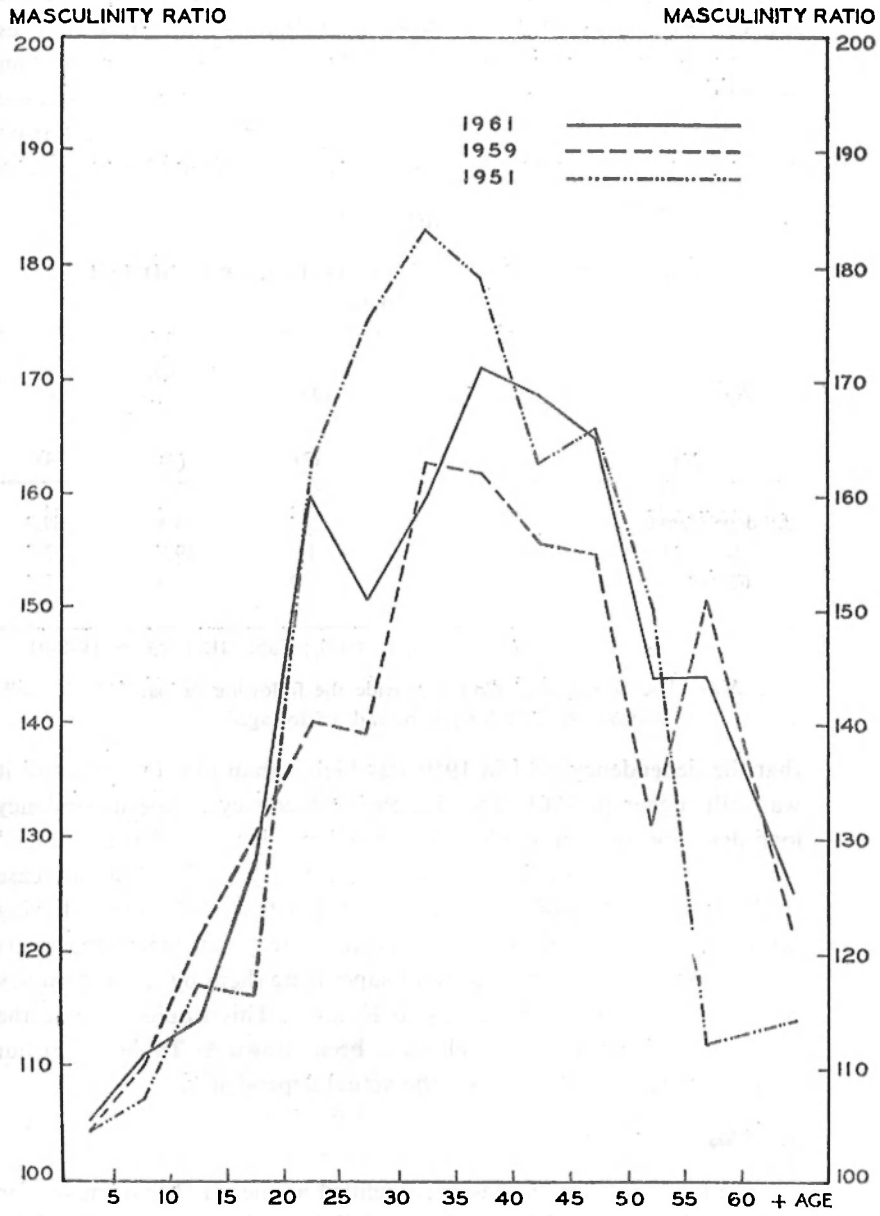

FIGURE · 3·9 MASCULINITY RATIO, KARACHI 1951, 1959 (ADJUSTED) AND KARACHI DISTRICT, 1961

SOURCE: TABLE III·11

lowest for in-migrants. The in-migrants give a distorted picture because many have their dependents elsewhere in Pakistan. Although, the natives have a slightly lower proportion of children than the immigrants from India (Table III.7), their dependency ratio is higher. This is so, because the natives have a higher proportion of aged persons. The comparison of the dependency ratios of 1951, 1959 and 1961 (Table III.10) reveals

TABLE III.10

KARACHI: DEPENDENCY RATIO, 1951, 1959 AND 1961
(District)

Age groups	1961	1959 adjusted for non-enumeration	1951
(1)	(2)	(3)	(4)
All dependents	75.8	73.1	69.3
0 — 14	71.9	69.5	63.8
65 and over	3.9	3.6	3.5

Source: [6, p. III-6]; Table III.1; [5, p. IV-8-9].

Note: The nonadjusted figures provide the following ratios: 75.2 for all dependents, 71.7 for youth, and 3.5 for aged.

that the dependency load in 1959 was higher than that in 1951, and it was still higher in 1961. This increasing tendency in the dependency load does not, in fact, depict the actual dependency load as mentioned earlier but it does provide a crude general magnitude of the increase in dependency. Part of the increase may not be real for the following reason. Many of the in-migrants who previously had their dependents in other parts of Pakistan and were supporting them by sending money have now brought their families to Karachi. This would increase the crude dependency ratios which have been shown in Table III.10 but would not have much effect on the actual dependency.

3.4 Masculinity Ratio

The masculinity ratio has been defined as the number of males for each 100 females. In Table III.11 masculinity ratios have been listed for 1951, 1959 and 1961 and shown further graphically in Fig. 3.9.

TABLE III.11

KARACHI: MASCULINITY RATIOS, 1951, 1959 AND 1961

Age group (1)	1961 (2)	1959 adjusted* (3)	1951 (4)
All ages	132	129	134
0 — 4	105	104	104
5 — 9	111	110	107
10 — 14	115	121	117
15 — 19	128	130	116
20 — 24	154	140	162
25 — 29	152	139	175
30 — 34	160	163	184
35 — 39	171	162	179
40 — 44	169	156	163
45 — 49	165	155	167
50 — 54	144	131	150
55 — 59	144	151	112
60 and over	125	121	114

Sources : [6, p. III-6]; Table III.1; [5, p. IV-8-9].

* For nonenumeration of 3,700 males.

The overall masculinity ratio was higher (134 per hundred) in 1951 than in 1959 (129) or 1961 (132). The gain made by females during the period 1951-1959 appears to have been lost in 1959-1961 partly due to some family-type population moving out in turn attributable to shift of capital from Karachi and partly due to fresh male selective in-migration waves. The masculinity ratio shows great variation by age. The ranges of variation are shown in Table III.11A.

TABLE III.11A

SUMMARY: AGE GROUPS OF MINIMUM AND MAXIMUM MASCULINITY RATIO, 1951, 1959 AND 1961

Year	Minimum		Maximum	
	Age group	Mas. ratio	Age group	Mas. ratio
1961	0—4	105	35—39	171
1959	0—4	104	30—34	163
1951	0—4	104	30—34	183

The range in 1951 is wider than the ranges in either 1959 or 1961. One should expect very little difference between the 1959 and 1961 ranges as the time interval between the collection of the two sets of data is only one year and ten months. However, part of the difference may be due to chance variation, especially in 1959 as the data are based on a sample. Also part of the differences among the three years may be due to differences in anomalies in the age data. The masculinity ratios in 1951, 1959 and 1961 in age group 0-4 are close to the expected masculinity ratio at birth (105 per hundred). The ratios in the working ages, especially in age groups 20-24 to 45-49, are higher than the other age groups in all the three years. The minimum and maximum masculinity ratios are in the same age groups in 1951 and 1959 but in 1961 the maximum ratio has shifted to next higher age group 35-39.

It is observed from Table III.12 that the masculinity ratio of migrants is markedly higher than that of the natives. The differences in the working ages are remarkably high. Among migrants, the in-migrants have higher ratios than the migrants from India. But the natives have the lowest ratio among all the groups. It is noted that masculinity ratio increases with age for the total population upto age 30-34 years and then it tends to fluctuate. There is a marked fluctuation in the masculinity ratios of natives which is probably due to more deficiencies in the age reporting of natives. In a closed population (which is unaffected by migratory movements) and under normal conditions of

TABLE III.12

KARACHI: MASCULINITY RATIOS BY MIGRANT STATUS FIVE-YEAR AGE GROUPS, 1959

Five-year age group	All persons	MIGRANT STATUS			
		natives	migrants	Migrants	
				in-migrants	immi-grants —India
(1)	(2)	(3)	(4)	(5	(6)
All ages	124.3	104.0	127.2	187.0	115.0
0 ...	100.2	103.8	99.3	106.8	96.4
1 — 4 ...	101.3	91.8	103.3	105.5	103.0
5 — 9 ...	106.0	96.3	108.4	110.4	108.0
10 — 14 ...	116.3	110.1	117.5	143.2	112.2
15 — 19 ...	125.4	113.2	124.9	196.7	112.0
20 — 24 ...	134.9	89.2	138.4	250.9	107.5
25 — 29 ...	134.2	98.4	137.2	253.1	107.8
30 — 34 ...	157.0	115.5	163.1	252.8	142.0
35 — 39 ...	156.4	118.1	163.1	248.0	146.2
40 — 44 ...	150.8	108.3	161.8	300.7	140.1
45 — 49 ...	149.8	101.0	163.6	285.6	143.8
50 — 54 ...	126.0	116.2	127.8	239.1	112.3
55 — 59 ...	145.7	157.8	142.6	266.7	129.7
60 — 64 ...	126.6	135.3	123.8	146.0	121.2
65 and over ...	108.5	94.6	113.9	145.0	111.3

Note: *See* note on Table III.7. *Source :* Tables III.1 and III.2

mortality, one could expect a masculinity ratio of approximately 100. Speaking more strictly, but still very generally, the masculinity ratio would start with about 105 at birth and go on declining due to greater male mortality while at older ages it would stand below

100. Populations which are at a high level of general mortality also have a high level of maternal mortality. In such populations masculinity ratios would rise at reproductive ages. It is surprising to note that the natives in Karachi have masculinity ratios as low as 89 per hundred in age group 20-24 and 98 per hundred in age group 25-29 (females in both these age groups are generally most reproductive). For Karachi, in which maternal mortality is expected to be higher than the paternal mortality, such observations, particularly for natives, are unusual. Since males in the working ages frequently migrate to Karachi from other parts of Pakistan, a higher overall masculinity ratio and also higher masculinity ratios in the reproductive or working age groups have been noted for in-migrants.

The masculinity ratio under one year of age is no substitute for masculinity ratio at birth, but it can provide some indication of the latter. It is noted that this ratio is highest (107 per hundred) for in-migrants and lowest for immigrants from India (96 per hundred). These differences can be attributed to sex differences:

i) at birth,

ii) in underreporting,

iii) in infant mortality rates.

It is a universal phenomenon that more male babies are born than female babies, although variation in the masculinity ratio at birth have been noted by demographers [7, p. 165]. Underreporting of females in West Pakistan is indicated by the reported 500 thousand more married men than married women in 1951 Census [4] (not, incidentally, recurring in 1961). Furthermore, preference for male babies is likely to cause higher mortality of female babies. For lack of adequate data it is not possible in the present study to isolate the effect of each of these factors. However, underenumeration of females in a *purdah*-observing society, like Pakistan, is likely and has been pointed out by earlier studies [3].

3.5 Conclusion

The single-year age distribution mainly reveals shortage of infants and preference for digits in the following orders: 0, 5, 2, 8, 6, 4, 7, 3, 9

and (Appendix B). When the single-year age distribution is combined into conventional quinquennial age groups many irregularities revealed by the former disappear. The immigrants from India appear to have moved into Karachi as a more balanced population in terms of age and sex than the in-migrants. The age distribution of the immigrants from India conforms more to a typical pattern than the age distribution of either natives or in-migrants. Karachi attracts young adult males particularly in age bracket 20-29 from other parts of Pakistan.

The age structure has shown significant changes during the periods 1951 to 1959 and 1959 to 1961. These changes are attributable to various factors such as irregularities in age data, differences in age and sex, selective migratory movements, difference in quality of coverage, especially of infants and females, improvement in mortality conditions, especially in infant and maternal mortality. In addition, an increasing level of fertility by increasing the proportion of younger population has contributed to the changes in the age structure. The population of Karachi is becoming younger and it is more true for immigrants from India than for other migrant-status groups. The natives have the highest proportion of older persons and also have the highest dependency ratio among the migrant-status groups.

The overall masculinity ratio and also the range of masculinity ratios in 1959 or 1961 have shown a decrease over 1951. This ratio is higher for migrants than for natives and the differences in the working ages are remarkably high.

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CHAPTER 4

MARITAL STATUS

4.0

Marital status conditions the fertility behaviour of a community and, therefore, its study is important from the demographic point of view. Almost all births in Pakistan and in Karachi occur within wedlock. Although, there are isolated instances of illegitimate births in Karachi, their number is negligible and has no demographic significance. Fertility is influenced by the proportion of female population married and also by the age structure of the married females and age at marriage. In this chapter, an attempt is made to investigate these demographic implications of the marital status of the sample population.

A question about the marital status of every individual living in a household was asked and the categories enumerated were: single, married, widowed, divorced, and separated. It is suspected that some married persons, with spouse absent might have been reported as separated in the survey (although in fact the actual separation may not be due to marital discord) which would slightly inflate their number. In addition, age-sex-specific marriage rates presented in this chapter suffer from such biases as misstatement of ages and age and sex selective underenumeration. Thus, the results must be interpreted with caution.

4.1 Married

Proportion of those who were reported married in the 1951 and 1961 Censuses and in our 1959 survey were computed specific for age and sex. Table IV.1 shows that the proportion of marriages at early ages of less than 15 years is insignificant for both sexes although it is even less significant for males than for females. These proportions have shown decreases in 1959 and 1961 over 1951. Although the proportions in 1961 are somewhat higher than in 1959 the figures are too small to draw a conclusion. This difference could also be affected by chance variation. This reflects that the incidence of child marriage in Karachi is very insignificant and it is also decreasing.

TABLE IV.1

KARACHI: PROPORTION OF MARRIED PERSONS BY AGE GROUPS, 1961, 1959, 1951

Age group	1961			1959			1951		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
All married 15-and-over ...	63.4	57.2	73.5	66.1	60.3	74.0	67.0	61.9	74.9
Under 15	01.0	00.4	01.6	00.2	00.04	00.3	01.4	00.5	02.3
15 — 19	26.0	07.7	49.3	24.2	04.3	49.1	35.3	10.7	64.0
20 — 24	55.4	36.5	84.4	53.6	28.8	87.0	61.5	44.5	89.1
25 — 29	74.1	62.2	92.2	77.8	65.6	94.2	74.8	64.4	92.9
30 — 34	84.3	79.1	92.7	87.0	83.0	93.2	84.1	80.8	90.1
35 — 39	86.4	84.4	89.9	90.6	90.1	91.3	85.9	85.0	87.5
40 — 44	83.0	85.2	79.3	86.0	89.2	81.2	80.7	84.7	74.3
45 — 49	82.3	87.0	74.8	82.0	87.4	74.0	80.8	86.8	70.8
50 — 54	74.7	85.0	59.8	70.4	85.6	51.4	71.8	84.7	52.4
55 — 59	72.6	84.0	56.3	69.8	85.4	47.1	71.5	82.2	59·5
60 and over	52.8	71.6	29.2	48.8	73.1	20.4	51.2	73.0	26.3

Source: [4, pp. IV-8-9]; [5, p. III-6]; [2, Table 1.01].

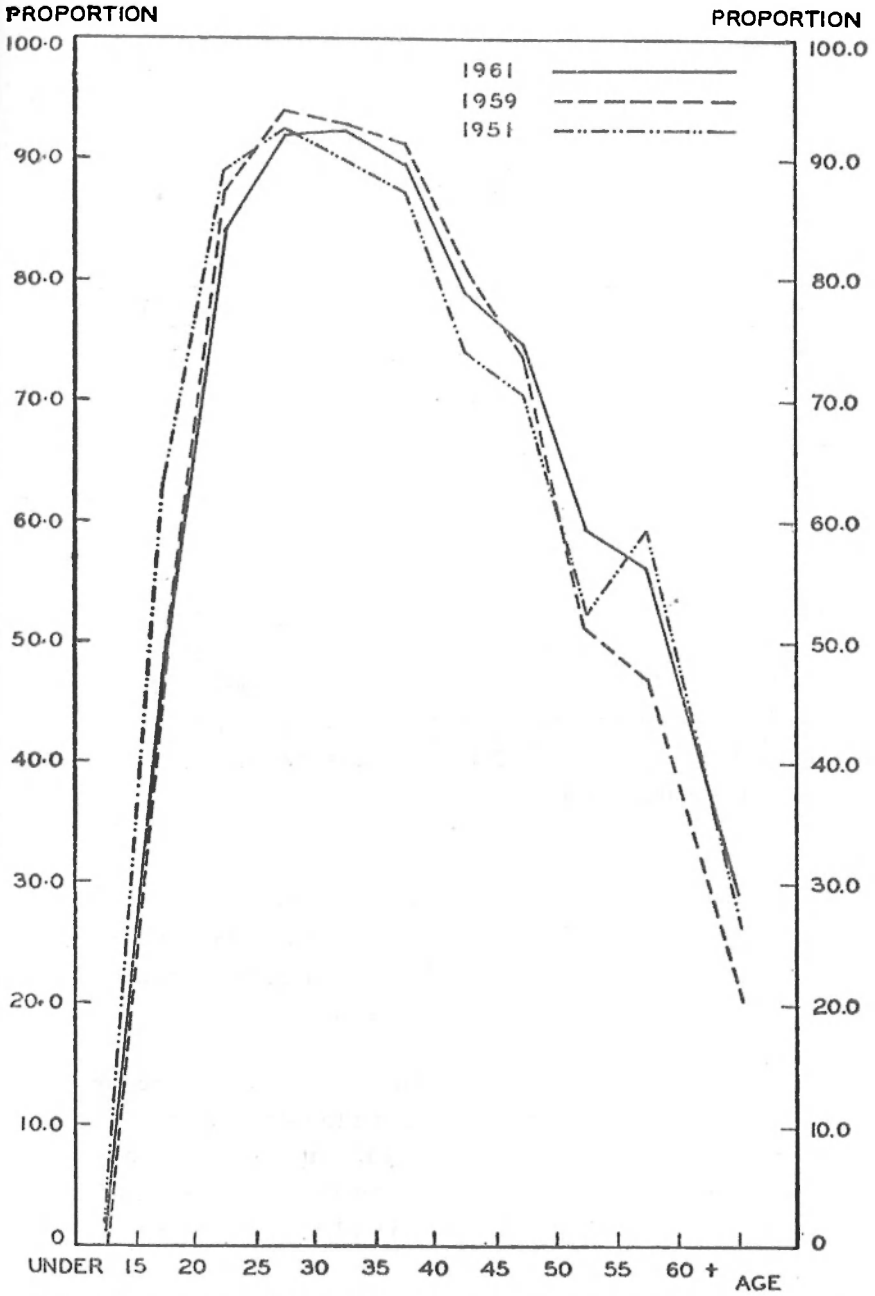

FIGURE: 4.1 PROPORTION OF MARRIED FEMALES BY AGE GROUPS KARACHI 1951, 1959, KARACHI DISTRICT 1961

SOURCE: TABLE IV-1

The next two higher age groups 15-19 and 20-24 also show a decrease in the proportions in 1959 and 1961 over 1951. This implies that the age at marriage is increasing. The proportions of married females are of special interest as they affect the fertility level. It is noted that the proportions of married females in all age groups between 25-29 and 45-49 in 1959 and 1961 have shown a rise over 1951. This is further demonstrated graphically in Fig. 4.1. It is noted with interest that the peak in 1951 and 1959 is in the same age group 25-29 whereas in 1961 it has slightly shifted to the next higher age group (30-34). The graphic pattern in all the three years is almost the same with more variations at older ages than in younger ages.

It has already been shown earlier in Chapter 3 that the proportion of females of reproductive ages has increased in 1959 and 1961 over 1951. This increase coupled with the increase in the proportions of married women of reproductive ages (25-49) must increase the fertility level of a society in which family planning is yet in its infancy. The decrease in the proportion of married females in age group 20-24 in 1959 and 1961 over 1951 should have an effect in the opposite direction. The females of this group (as shown in the next section), have the second highest (after age group 25-29) level of fertility among the females of reproductive ages 15-49.

It appears that the increase in the proportion of married females of age bracket 25-49 in 1959 and 30-54 in 1961 increased the fertility level in the fifties. Thus, part of the increase in the proportion of children 0-4 and 5-9 in 1959 and 1961 over 1951 is attributable to an increase in the proportion of married females.

The increase in the age at marriage might also have increased the fertility level (couples married late trying to catch up with their peers married earlier) but one could also argue that in the first instance this increase may not be significant and secondly even if it is significant it would be levelled off by the decrease in the level of fertility in the earlier age groups.

TABLE IV.2

KARACHI: MIGRANT STATUS AND SEX: PROPORTION OF MARRIED PERSONS BY AGE GROUPS, 1959

Age group	MIGRANT STATUS											
	Natives			Migrants			Migrants					
							In-migrants			Immigrants-India		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
All married 15-and-over	67.8	65.2	70.7	66.2	60.2	74.8	64.6	56.4	84.5	66.6	61.5	72.7
Under 15 years ...	00.2	—	00.4	00.2	00.1	00.3	00.1	—	00.3	00.2	00.1	00.3
15 — 19 ...	22.7	5.4	42.3	24.6	4.0	50.3	23.1	3.0	62.6	25.1	4.3	48.3
20 — 24 ...	58.2	32.8	80.9	53.8	28.9	88.2	44.6	25.8	91.9	58.2	31.0	87.3
25 — 29 ...	79.3	70.5	88.0	78.3	65.8	95.4	71.6	61.3	97.7	81.2	68.5	94.9
30 — 34 ...	84.3	79.9	89.4	88.0	84.3	94.0	86.8	82.7	97.1	88.4	85.0	93.2
35 — 39 ...	90.3	89.7	91.0	90.8	90.5	91.5	92.8	91.4	96.5	90.1	90.0	90.4
40 — 44 ...	85.0	91.0	78.5	86.4	89.0	82.1	92.3	92.7	91.2	84.8	87.7	80.8
45 — 49 ...	85.7	86.5	85.0	81.4	87.8	70.9	85.6	87.9	78.9	80.1	87.6	69.4
50 — 64 ...	70.6	87.7	48.3	64.4	82.3	41.2	75.0	87.9	47.8	62.4	81.1	40.2
65 and over ...	45.6	71.0	21.5	40.8	66.1	12.0	42.9	69.0	5.0	40.6	65.7	12.6

Source: Unpublished data of the Karachi Survey.

Table IV.2 shows the proportion of married persons by age, sex, and migrant status in 1959. It is again noted that child marriages (under 15 years) are insignificant for all the migrant-status groups. Taking into account also the age group 15-19 it is noted that there is a tendency on the part of in-migrants to give their daughters in marriage at early ages than the other migrant-status groups. A higher proportion (62.6 per cent) of in-migrant females is married in age group 15-19 years than other migrant-status females of the same age. This does not necessarily mean that in-migrant females are more popular. The higher proportion of married in-migrant females may simply mean that some of their unmarried sisters do not in-migrate and in view of the high masculinity ratio of the in-migrants this hypothesis is likely one. The proportion of immigrants from India who are married increases with age up to age group 35-39, after which it drops systematically except for females, in whose case the drop begins in an earlier age group, *i.e.*, 30-34. For native males and in-migrants the proportion of married men increases up to 40-44 years, instead of 35-39 years.

4.2 Polygyny

Although monogamy is the most prevalent form of marital union in the world, there are many instances of polygamy. Polygyny is a form of polygamous marital union in which one man is married to two or more women at the same time. This form of marital union is permissible (with certain restrictions) in Muslim cultures.

Table IV.3 indicates the extent of polygyny in Karachi. The type of polygyny observed in Karachi was mostly one man married to two women. It was only in one case in the sample (or approximately 25 cases in the whole of Karachi) that a husband had three wives and there was none who had more than three. It is revealed by Table IV.3 that only 0.8 per cent of the husbands in the entire metropolis were involved in polygynous marriage. The native husbands tend to have the highest rate (1.7 per cent) of polygynous marriages and the lowest rate is observed for the migrants from India (0.5 per cent). In all, there were 2,450 polygynous marriages in Karachi out of which 975 (about 40 per cent) are found among the natives. Natives are only 16.6 per cent of the total population of Karachi.

TABLE IV.3

KARACHI: MONOGAMOUS AND POLYGYNOUS, MARRIAGES BY MIGRANT STATUS, 1959

Migrant status (1)	All marriages (2)	Type of union	
		Monogamous (3)	Polygynous (4)
All groups ...	321,075 (100%)	318,625 (99.2%)	2,450 (0.8%)
Natives	56,125 (100%)	55,150 (98.3%)	975 (1.7%)
Migrants	264,775 (100%)	263,300 (99.4%)	1,475 (0.6%)
In-migrants	*51,150* *(100%)*	*50,775* *(99.3%)*	*375* *(0.7%)*
Immigrants	*213,625* *(100%)*	*212,525* *(99.5%)*	*1,100* *(0.5%)*
No information ...	175 (100%)	175 (100%)	—

Source: [2, Table 6.80].

The data show that in statistical terms the proportion of polygynous marriages is not significant. However, in the Pakistani society as a whole in which masculinity ratio is as high as 111 per hundred (as of 1961) and if the rate of polygynous marriages is higher particularly in the rural areas and among nomads than in Karachi, polygyny may have some sociological significance. Polygyny in Pakistan means that some additional males must remain unmarried. The social and psychological implications of polygyny are serious. Not only would it arouse jealousies, resentments and frictions among the females who are in the polygynous marriages but also it would create emotional stress among males who remain unmarried due to scarcity of prospective spouses. The demographic implications of this level of polygyny are not serious. One would expect that women who are involved in polygynous marriages would reproduce more if they were involved in monogamous marriages. However, the proportion of polygynous marriages in the total marriages in Karachi is as low as 0.8 per cent and, therefore, the demographic implications would be almost insignificant. These are suggestions as hypotheses which deserve studies and research in their own right. In view of the serious social and psychological implications, one should not conclude too quickly that polygyny is a form of preventive measure which a welfare state should adopt to meet its problem of population growth.

4.3 Widowhood

Table IV.4 shows that there were almost no widows or widowers below the age of 15 years. This further shows that aside from the incidence of child-marriage the incidence of child-widowhood in Karachi is insignificant. The proportions of widowed in all ages 15 years-and-over are higher for females than for males in all age groups. Is the mortality of married males higher than the mortality of married females? Or, is it a reflection of the lower remarriage practice of widows as compared with widowers. It is difficult to answer these questions precisely in the absence of data on remarriage.

The possibility that married males may have higher mortality than the married females cannot be discarded. Although the masculinity ratio of ever-married persons (includes persons reported to have been married at sometime in their life: *see* glossary) in Karachi in 1959 was 102 per hundred, the masculinity ratio of ever-married persons in Pakistan in 1961 was 91 per hundred. Karachi's ratio is inflated by many married males who had their families elsewhere in Pakistan. On the basis of the low masculinity ratio of ever-married persons in Pakistan, higher mortality of married males is at least a possible factor in the higher proportion of widows than of widowers.

Lower remarriage rate of widows is almost a universal phenomenon. In spite of the fact that the males outnumber the females in Karachi the chances of getting remarried are lower for widows than for widowers. This is an indication of the general attitude of the males in the society for marrying virgins. Probably, the widowers also discriminate against marrying widows. It is likely that the chance of remarrying for a widow with dependent children would be still lower although there may be isolated instances of such widows marrying in many cases their husbands' brothers.

The problem of widowhood becomes more grave with dependent children since widowed mothers in Pakistani society are not usually equipped to undertake the economic responsibility. The husband in most of the cases is responsible for earning and spending money and the wife usually lacks training to undertake a job. The situation is more grave if a widow comes from a *purdah*-observing society. In addition, there are not many employment opportunities for females.

Selected ag	ATUS Migrants				
	ı-migrants		Immigrants-India		
(1	Male (12)	Female (13)	Both sexes (14)	Male (15)	Female (16)
All widowed 15	2.6	7.4	10.4	6.1	15.7
Under 15	—	—	0.01	—	0.01
15 —	0.7	0.6	1.1	1.0	1.4
30 —	3.1	2.3	5.2	4.4	6.4
40 —	5.4	13.3	14.8	9.1	23.0
50 —	10.5	52.2	36.2	16.7	59.4
65 and	25.9	95.0	58.8	33.3	87.2
All divorced 15	0.02	0.1	0.1	0.1	0.2
All separated 15	0.03	0.2	0.3	0.3	0.4
15 — 2	0.1	0.1	0.3	0.2	0.4
30 — 3	—	0.2	0.4	0.3	0.5
40 — 4	—	0.4	0.5	0.5	0.5
50 — 6	—	—	0.5	0.6	0.3
65 and	—	—	—	—	—

Unpublished data of the Karachi Survey.

Notes: a) Incl s was available.
b) Incl

TABLE IV.4

KARACHI: MIGRANT STATUS AND SEX, PROPORTIONS OF WIDOWED, DIVORCED, SEPARATED TO ALL PERSONS, 1959

Selected Age Groups

Selected age group	ALL PERSONS[a]			MIGRANT STATUS											
				Natives			Migrants[b]			Migrants					
										In-migrants			Immigrants-India		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
							WIDOWED								
All widowed 15 years-and-over	9.0	4.9	14.6	10.2	4.7	16.2	8.8	5.0	14.2	4.0	2.6	7.4	10.4	6.1	15.7
Under 15 years ...	0.003	—	0.01	—	—	—	0.004	—	0.01	—	—	—	0.01	—	0.01
15 — 29 ...	1.0	0.8	1.3	1.1	0.8	1.5	1.0	0.9	1.2	0.6	0.7	0.6	1.1	1.0	1.4
30 — 39 ...	4.6	3.9	5.7	4.7	3.2	6.5	4.6	4.0	5.5	2.9	3.1	2.3	5.2	4.4	6.4
40 — 49 ...	12.9	7.7	20.6	11.0	5.2	17.2	13.2	8.1	21.5	7.4	5.4	13.3	14.8	9.1	23.0
50 — 64 ...	32.8	14.3	56.7	27.5	9.9	50.4	34.2	15.5	58.4	23.9	10.5	52.2	36.2	16.7	59.4
65 and over ...	56.5	30.6	84.6	51.4	24.4	76.9	58.4	32.5	87.8	54.1	25.9	95.0	58.8	33.3	87.2
							DIVORCED								
All divorced 15 years-and-over...	0.1	0.1	0.1	0.3	0.2	0.4	0.1	0.1	0.1	0.1	0.02	0.1	0.1	0.1	0.2
							SEPARATED								
All separated 15 years-and-over...	0.3	0.3	0.4	0.5	0.3	0.8	0.3	0.2	0.4	0.1	0.03	0.2	0.3	0.3	0.4
15 — 29 ...	0.3	0.1	0.5	0.7	0.2	1.2	0.2	1.0	0.4	0.1	0.1	0.1	0.3	0.2	0.4
30 — 39 ...	0.4	0.3	0.4	0.5	0.6	0.3	0.3	0.2	0.4	0.1	—	0.2	0.4	0.3	0.5
40 — 49 ...	0.5	0.5	0.5	0.5	0.4	0.6	0.4	0.4	0.5	0.1	—	0.4	0.5	0.5	0.5
50 — 64 ...	0.4	0.4	0.3	0.3	0.2	0.4	0.4	0.5	0.2	—	—	—	0.5	0.6	0.3
65 and over ...	0.1	0.1	0.1	0.6	0.6	0.5	—	—	—	—	—	—	—	—	—

Source: Unpublished data of the Karachi Survey.

Notes: a) Includes immigrants from countries other than India and persons about whom no information on migrant status was available.
b) Includes immigrants from countries other than India.

Widowhood increases with age both for males and females in all, which conforms to the expected pattern. The much higher proportions of widows than of widowers at all ages pose a great problem for the metropolis society. Slightly more than one-fifth of the women in age bracket 40-49 and more than half in age bracket 50-64 and more than four-fifths in age 65 years-and-over are widows. Although female widowhood is mostly concentrated in ages 40 years-and-over, great numbers (8,200 out of 65,100 or about 13 per cent of the total widows) are also found widowed in the ages under 40. Widowhood in younger ages may be more serious as more dependent children are likely to be found among widows who are below 40 than widows who are above 40.

The differences by migrant status are not conspicuous. However, the natives have somewhat higher rates of widowhood than the migrants. Among the migrants, the immigrants from India have higher rates than the in-migrants.

4.4 Divorce

As indicated in Table IV.4 the proportion of divorces in the total population 15 years-and-over is very small and below 15 years divorce is nonexistent. As the differences are statistically insignificant only very tentative explanation is advanced, the proportion of female divorces is somewhat higher than the males, which may be a reflection of the sex discrimination in remarriage of divorced persons. The natives seem to have a greater tendency to divorce than do other groups. The Karachi pattern of divorce is not much different from the country pattern in which the divorce rate is slightly higher (0.2 per cent for males and 0.3 per cent for females). Karachi, or Pakistan, compared with other societies of the world (listed by Landis, 1959) would suggest that Karachi, or Pakistan, is one of the lowest-divorce-rate areas of the world [3, p. 431].

In Karachi as well as in Pakistan, as a whole, in most of the cases divorce is still a one-way street. It is mostly the male prerogative to divorce. In a Muslim society like that of Pakistan a male can marry (though under certain restrictions) a second or a third wife without divorcing the first or the second or both. In other words, a divorce may not take place even if a male marries a second wife, which is unlike

the Western pattern. The Pakistani society is not tolerant towards divorce and has no favourable built-in attitude towards this institution. Thus, the sexual inequality of the social role assigned to the female may serve to reduce the tension between husband and wife (as the wife accepts a subordinate role), but it may also simply repress these marital tensions. In some cases, tension may exist but the males may not seek divorce to safeguard their prestige and honour. The wives, for their part, may lack the initiative to take such drastic action. Thus, it is apprehended that the low divorce rate observed for Karachi may, in fact, be at the cost of marital or family adjustment.

4.5 Separation

The proportion of those who are separated is also very small in the total population 15 years-and-over (Table IV.4) and, therefore, the reader is warned against drawing strong conclusion from the explanation given in this section very tentatively. Below 15 years there are no separations. The proportion of separated females is somewhat higher than the males, showing partly that males desert their families more often than the females do and partly females may report themselves as separated (or deserted) when the man involved does not himself consider that he has deserted his family. He may intend to return. In addition, after deserting one wife the male may marry another wife without divorcing the first one. In such a situation, the deserted wife would report herself as separated, whereas the husband would not. As the wives are much more involved in their home life and children than their husbands they probably desert less and are deserted more. The natives, who have somewhat higher proportions of divorces, have also a somewhat higher proportion of separated persons than other groups.

4.6 Difference in Ages of Husbands and Wives

The differences between the ages of spouses show that in the majority of cases (98.22 per cent), the husband is older than his wife; in 1.24 per cent cases the husband and wife are of the same age; and in only 0.54 per cent of the cases is the wife older than her husband (Table IV.5). In 6.30 per cent the age of the husband is 1 to 2 years older than the wife and only in 0.22 per cent is the wife older than her husband to the same extent. It should be noted that the data presented do not permit us to differentiate whether the marriage is first marriage or a remarriage.

TABLE IV.5

KARACHI: MARRIED COUPLES BY MIGRANT STATUS, DIFFERENCE BETWEEN AGES OF HUSBAND AND WIFE, 1959

Difference in years	Absolute numbers					Percentage				
	All status	Natives	Migrants	Migrants		All status	Natives	Migrants	Migrants	
				In-grant	Immi-grants				In-migrants	Immi-grants
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
All couples	321,075	56,125	264,775	51,150	213,625	100.00	100.00	100.00	100.00	100.00
Husband older than wife ...	(315,375)	(54,525)	(260,675)	(49,875)	(210,800)	(98.22)	(97.15)	(98.45)	(97.51)	(98.68)
Husband is 15 years and more older than wife	37,800	7,275	30,450	4,975	25,475	11.77	12.96	11.50	9.73	11.93
Husband is 10-14 years older than wife	74,125	12,125	16,925	11,900	50,025	23.09	21.60	23.39	23.26	23.42
Husband is 5-9 years older than wife	147,850	24,650	123,175	24,450	98,725	46.05	43.92	46.52	47.80	46.21
Husband is 3-4 years older than wife	35,350	5,650	29,700	5,625	24,075	11.01	10.07	11.22	11.00	11.27
Husband is 1-2 years older than wife	20,250	4,825	15,425	2,925	12,500	6.30	8.60	5.83	5.72	5.85
Husband is of same age as wife	(3,975)	(1,200)	(2,775)	(975)	(1,800)	(1.24)	(2.14)	(1.05)	(1.91)	(0.84)
Husband is younger than wife ...	(1,725)	(400)	(1,325)	(300)	(1,025)	(0.54)	(0.71)	(0.50)	(0.59)	(0.48)
Husband is 1-2 years younger than wife	700	100	600	125	475	0.22	0.18	0.23	0.24	0.22
Husband is 3-4 years younger than wife	425	150	275	100	175	0.13	0.27	0.10	0.20	0.08
Husband is 5 years or more younger than wife ...	600	150	450	75	375	0.19	0.27	0.16	0.15	0.18

Source: [2, Table 1.40].

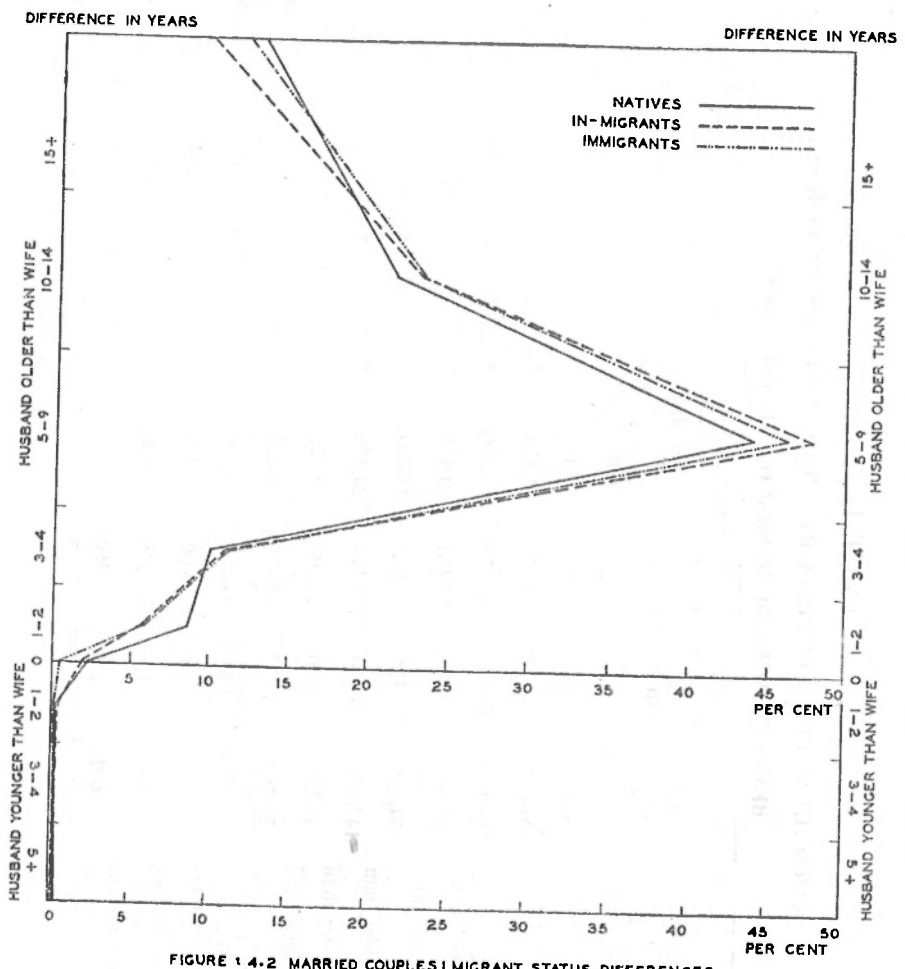

FIGURE 4.2 MARRIED COUPLES: MIGRANT STATUS DIFFERENCES BETWEEN AGES OF HUSBAND AND WIFE, KARACHI 1959

SOURCE: TABLE IV.5

TABLE IV.6

KARACHI: MARRIED COUPLES, AGE OF HUSBAND IN RELATION TO AGE OF WIFE, 1959

Age of wife	All couples	Age of husband								
		under 15	15—19	20—24	25—29	30—34	35—39	40—44	45—64	65 and over
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	(*per cent*)									
All ages ...	100·00	0.02	0.79	7.42	16.58	17.92	15.60	12.53	25.47	3.67
Under 15 ...	0.29	0.02	*0.09*	0.15	0.02	0.01	—	—	—	—
15—19 ...	10.63	—	0.69	*5.10*	3.53	102	0.21	0.03	0.04	0.01
20—24 ...	20.83	—	0.01	2.12	*10.92*	5.14	1.77	0.58	0.29	—
25—29 ...	21.31	—	—	0.05	2.07	*10.70*	5.98	1.60	0.90	0.01
30—34 ...	15.28	—	—	—	0.03	0.99	*6.93*	4.46	2.82	0.05
35—39 ...	11.10	—	—	—	—	0.04	0.66	*5.49*	4.81	0.10
40—44 ...	8.14	—	—	—	—	0.01	0.04	0.32	7.60	0.17
45—64 ...	11.74	—	—	—	0.01	—	0.01	0.05	*9.00*	*2.67*
65 and over ...	0.68	—	—	—	—	0.01	—	—	0.01	0.66

Source: [2, Table 1.50].

Although, the migrant-status groups do not show striking differences (Fig. 4.2), there is some indication that more immigrant males tend to marry younger wives than any other migrant-status group. The most common difference is that husband is 5-9 years older than his wife. This is true for all the migrant-status groups. The second most common difference is that the husband is 10 to 14 years older than his wife—which is also true for all the migrant-status groups.

Table IV.6 cross-classifies ages of husbands and wives. The mode with one exception is that husband is either in the next higher age group or in the second next higher age group. As the range of age bracket 45-64 is wider, most of the husbands and wives fall in the same age bracket.

In general, the data reveal that the husband tends to be considerably older than his wife. In other words, there is a tendency among the males in Karachi to marry considerably younger wives. There are many instances that girls aged 15 to 19 and 20 to 24 are married to males who are 40 years of age and above. But, the reverse is not true (Table IV.7 and IV.8). Older husbands (65 years-and-over do have wives aged 15 to 19 but no husband under 45 years of age with a minor exception has an older wife (65 years-and-over).

Table IV.9 shows that there is no significant relation between the personal incomes of husbands and the differences in the ages of spouses. However, the proportion of rich husbands (with personal income of one thousand rupees and over) who are older than their wives, is the lowest (96 per cent). On the other hand, the proportion of rich husbands who are either of the same age or are younger than their wives is the highest (about 3 per cent and 1 per cent respectively). In other words, the differences between the ages of husbands and wives among the rich people tend to be narrower than the corresponding differences among the spouses who according to the personal income of husbands, are placed in the lower income-groups.

4.7 Conclusion

Child-marriage in Karachi is insignificant. The age at marriage particularly of females appears to be increasing. Gains in the proportions of married females of reproductive ages appear to have increased the level of fertility.

TABLE IV.7

KARACHI: MARRIED COUPLES, AGE OF HUSBAND IN RELATION TO AGE OF WIFE IN EACH SELECTED AGE GROUP, 1959

Age of wife	All couples	Age of husband								
		under 15	15—19	20—24	25—29	30—34	35—39	40—44	45—64	65 and over
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
		(*per cent*)								
All ages ...	100.00	0.02	0.79	7.42	16.58	17.92	15.60	12.53	25.47	3.67
Under 15 ...	100.00	5.41	32.43	51.35	8.11	2.70	—	—	—	—
15—19 ...	100.00	0.07	6.45	47.99	33.19	9.67	1.98	0.29	0.29	0.07
20—24 ...	100.00	—	0.08	10.17	52.41	24.67	8.49	2.80	1.38	—
25—29 ...	100.00	—	—	0.26	9.72	50.20	28.10	7.49	4.20	0.03
30—34 ...	100.00	—	—	—	0.20	6.47	45.36	29.21	18.45	0.31
35—39 ...	10.000	—	—	—	—	0.35	5.96	49.45	43.33	0.91
40—44 ...	100.00	—	—	—	—	0.19	0.48	3.83	93.40	2.10
45—64 ...	100.00	—	—	—	0.07	—	0.07	0.46	76.66	22.74
65 and over ...	100.00	—	—	—	—	1.14	—	—	2.27	96.59

Source: [2, Table 1.50].

TABLE IV.8

KARACHI: MARRIED COUPLES, AGE OF HUSBAND IN EACH SELECTED AGE GROUP IN RELATION TO AGE OF WIFE, 1959

Age ofwife	Al 1 couples	Age of husband								
		under 15	15—19	20—24	25—29	30—34	35—39	40—44	45—64	65 and over
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10	(11
	(.....per cent.....)									
All ages ...	100.00	100.00	100.00	100.00	100.00	100.003	100.00	100.00	100.00	100.00
Under 15 ...	0.29	0.67	11.76	2.00	0.14	0.04	—	—	—	—
15—19 ...	10.63	0.33	86.28	68.73	21.28	5.73	1.35	0.25	0.12	0.21
20—24 ...	20.83	—	1.96	28.54	65.85	28.67	11.33	4.66	1.13	—
25—29 ...	21.31	—	—	0.73	12.49	59.69	38.37	12.74	3.52	0.21
30—34 ...	15.28	—	—	—	0.19	5.52	44.41	35.61	11.07	1.28
35—39 ...	11.10	—	—	—	—	0.22	4.24	43.82	18.90	2.76
40—44 ...	8.14	—	—	—	—	0.09	0.25	2.49	29.85	4.67
45—64 ...	11.74	—	—	—	0.05	—	0.05	0.43	35.35	72.82
65 and over ...	0.68	—	—	—	—	0.04	—	—	0.06	18.05

Source: [2, Table 1.50.]

TABLE IV.9

KARACHI: MARRIED COUPLES, PERSONAL INCOME OF HUSBAND, DIFFERENCE BETWEEN AGES OF HUSBAND AND WIFE, 1959

Difference in year	All incomes	Personal income of husband in rupees									
		less than 50	50—74	75—99	100-124	125-149	150-199	200-299	300-499	500-999	1000 and over
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	(.....per cent.....)										
All couples	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Husband older than wife ...	(98.22)	(98.35)	(98.18)	(98.26)	(98.54)	(98.50)	(98.27)	(98.14)	(98.40)	(96.46)	(96.19)
Husband is 15 years and more older than wife	11.77	25.54	12.64	9.47	11.25	9.05	8.98	10.83	10.28	10.43	8.5
Husband is 10-14 years older than wife	23.09	28.23	22.68	21.73	21.70	23.46	23.43	25.77	23.63	21.78	21.74
Husband is 5-9 years older than wife	46.05	33.40	45.58	47.39	48.03	49.66	47.82	46.22	47.13	45.40	46.19
Husband is 3-4 years older than wife	11.01	6.52	10.22	12.26	11.50	12.35	11.54	8.50	13.75	14.72	10.33
Husband is 1-2 years older than wife	6.30	4.66	7.06	7.41	6.06	3.98	6.50	6.82	3.61	6.13	9.78
Husband is same age as wife ...	(1.24)	(1.34)	(1.37)	(1.37)	(0.88)	(0.82)	(1.38)	(1.03)	(1.20)	(1.23)	(2.72)
Husband is younger than wife ...	(0.54)	(0.31)	(0.45)	(0.37)	(0.58)	(0.68)	(0.35)	(0.83)	(0.40)	(0.31)	(1.09)
Husband is 1-2 years younger than wife	0.22	—	0.15	0.05	0.08	0.27	—	0.65	0.27	0.31	1.09
Husband is 3-4 years younger than wife	0.13	0.31	0.11	0.14	0.04	0.14	0.28	0.09	0.13	—	—
Husband is 5 years or more younger than wife	0.19	—	0.19	0.18	0.46	0.27	0.07	0.09	—	—	—

Source: [2, Table 1.43].

In-migrants give their sons and daughters in marriages at earlier ages than other groups. Polygyny is practically slightly less than one per cent of the total marriages.

More families in Karachi are broken by widowhood than by divorce or desertion. Marriage instability among the natives, like in the United States, [1, p. 469] appears to be more than it is among the migrants, but the differences due to very low proportion of disrupted families among all the groups, are not sharp. More data are required to study the marital adjustment than has been produced by the survey.

In most of the cases, the husband is older than his wife and the model difference between the ages of the husband and wife is from 5 to 9 years. Such differences are narrower among rich couples.

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CHAPTER 5

FERTILITY

5.0

Fertility is the most important determinant of population growth. It is defined as the actual reproductive performance and is different from fecundity which is the potential physical capacity to reproduce. Its measurement is essential for the study of family size, population growth, age structure and differentials in rates of reproduction of various socio-economic groups. The results of such a study are useful for answering questions of population policy and for formulating socio-economic programmes.

There are various measures of fertility. One is to measure it on the basis of number of live births in a population. The number of live births is obtained through a system of registration. In the absence of a reliable registration system (as in the case of Pakistan), birth data can be obtained through censuses and sample surveys. Alternatively, when birth statistics are not available from any source, fertility measures can be derived entirely from the age data reported in census or a sample survey. Both the birth statistics and the age distribution used in this chapter were obtained through a sample survey.

In the survey under analysis, a question was asked about the number of births which occurred *in a household* during the calendar year 1958. This created the problem at the coding stage of assigning births to the appropriate mothers in the case of two or more women of reproductive ages in a single household. This difficulty arose in a small number of schedules which were less than half a per cent of the total. In such cases, a decision was taken by studying the age and relationship of women of reproductive ages and children to the head of family. There were a few cases, (less than 0.1 per cent of all schedules) in which the decision was made by flipping a coin. In these cases, there were two or more women of about equally reproductive ages having the same relationship to the

head of family. In fact, the difficulty of assigning births to the mothers was not as great as was anticipated. This is also because a major proportion of 72 per cent of the family-type households consisted of nuclear families (defined as having husband and wife, with or without never-married children or a parent and never-married children). Joint families (defined as having at least two nuclear families) constituted only 11 per cent of the total number of family-type households, and the remaining 17 per cent were extended families (defined as having one nuclear family *plus* one or more other relatives): also *see* glossary. The difficulty of assigning births to mothers could arise in some cases of joint families only where there were two or more married women of reproductive ages.

The measures used for the analysis of fertility in this chapter are several and have been computed not only on the basis of the number of births reported for the calendar year 1958 but have also been derived from the age data. In fact, this chapter is an exercise in the application of demographic techniques which demographers use in fertility analysis. The different measures of fertility used in this chapter not only exemplify the techniques but also bring out some major sources of variation in fertility and somewhat widen the scope of comparability.

The limitations of the age data and the underenumeration of children have already been discussed in Appendix "B" and Chapter 3. Some limitations of the birth statistics collected in the sample survey have also been pointed out in the discussion of underreporting of infants in Appendix "B". It is also probable that the number of births reported in a sample is subject to chance variation. Underreporting and overreporting of births are also likely to cause errors. The time reference in the survey might also have caused some distortion in birth reporting. If the underreporting and overreporting were of the same magnitude they would cancel out each other but their relative magnitudes are not known.

It is shown in Appendix "B" that the number of births reported in the survey is 69 per cent more than the number of living infants reported. Such a wide difference does not seem to be entirely due to infant mortality and chance variation, but it also implies that the children under one year of age were underreported. It is roughly estimated that less than

half of the 69 per cent excess of births over counted infants would be accounted for by infant mortality. The higher number of births than the infants shows that reporting of births was better than the reporting for children under one year.

The other statistics used for computing fertility measures are the number of children under 5 years of age, number of females 15-49, by age, and the total population. A discussion of the quality of these data has already been undertaken in Chapter 3 and Appendix "B".

5.1 Measures of Fertility

Several measures have been developed to study fertility patterns of populations. The selection of a measure depends on the availability of data. As already indicated in Section 5.0. some measures are computed on the basis of available birth statistics. Others are based on the number of children under one year and under five years of age reported in a census or survey. In this chapter, the number of births as well as of children under one year and under five years, obtained in this survey, are used to compute fertility measures. The fertility measures selected for use are six in number: *i*) crude birth rate (CBR); *ii*) general fertility rate (GFR); *iii*) age specific fertility rate (ASFR); *iv*) gross reproduction rate (GRR); *v*) total fertility rate (TFR); and *vi*) child-woman ratio (CWR).

5.2 Crude Birth Rate

5.2.0 The crude birth rate (CBR) is the ratio of the number of births in one year to the total mid-year population. In order to get the mid-year population, the 1959 estimated figures were adjusted by the rate of growth experienced by the population of Karachi between 1951 and 1959.

5.2.1 Crude Birth Rate by Migrant Status. Table V.1 provides crude birth rates by the migrant-status groups. It is noted that a CBR of 47 per thousand for Karachi, if compared with the urban patterns of the Western nations, seems very high. For example, Chicago in 1950 had a CBR of 22 per thousand [13, p. 6]. The differences between

TABLE V.1

KARACHI: CRUDE BIRTH RATES BY MIGRANT STATUS, 1958

Migrant status (1)	No. of birth (2)	Population (3)	CBR (4)
All persons[a] ...	80,675	1,725,525	47
Natives	11,450	287,200	40
Migrants[b]	69,150	1,426,350	48
In-migrants	*13,150*	*302,775*	*43*
Immigrants—India ...	*55,650*	*1,100,275*	*50*

Source: [10, Table 2.01] and original tabulation.

Notes: *a*) Includes immigrants from countries other than India and also persons about whom no information on migrant status was available.

b) Includes immigrants from countries other than India.

the birth rates of migrants and of natives are significant. The migrants from India have the highest CBR of 50 per thousand as against the lowest of 43 per thousand of in-migrants. Whether these differences reflect the actual difference in the level of fertility of the migrant-status groups cannot be determined from a crude measure like CBR. This is examined by using some more refined measures in the following sections.

5.3 General Fertility Rate

5.3.0 The CBR is a widely used method but it is a poor measure of fertility level. If the denominator (total population) contains a high proportion of women of reproductive ages, the CBR will be high. Only a portion of the female population is exposed to the risk of child bearing. Almost all births occur to women while they are between 15 to 49 years of age (which is further limited by their marital status). Thus, the proportions of males, and of females, outside the reproductive ages affect the CBR.

In order to eliminate the effect of sex and age composition of the total population, a fertility ratio of births which occur during a year to women of reproductive ages (15 to 49 years) is computed. By excluding the population which is not exposed to the risk of child-bearing on the basis of age and sex, this ratio provides a better picture than the CBR. Such a measure, when computed for segments of the population by demographic or social characteristics, can help to understand intergroup differences in fertility. The GFR as presented in this chapter is the ratio of total number of births in 1958 to total mid-year female population 15 to 49 years of age as of July 1, 1958.

5.3.1 General Fertility Rate by Migrant Status. Table V.2 provides GFR by migrant status. The GFR for Karachi is 224 per thousand. It is noted that in-migrants who had the second lowest CBR (Table V.1),

TABLE V.2

KARACHI: GENERAL FERTILITY RATES PER 1000 WOMEN 15-49 BY MARITAL STATUS AND BY MIGRANT STATUS, 1958

Migrant status	All women	Ever-married women	Married women	Married women husband present
(1)	(2)	(3)	(4)	(5)
All persons	224	257	276	282
Natives	181	213	232	238
Migrants	233	266	285	291
In-migrants	*243*	*265*	*273*	*278*
Immigrants-India ...	*233*	*269*	*290*	*297*

Note: See, notes *a*) and *b*) under Table V.1. *Source:* [10, Table 2.01] and original tabulation.

have now the highest GFR (243 births per thousand women 15 to 49 years of age). This is so because the in-migrants have the highest proportion of working population, composed of single or married males who have their families elsewhere in Pakistan. When the denominator

is reduced from total population to women of reproductive age, the in-migrants show the highest level of fertility among the migrant-status groups. This is still a more or less crude picture. As the denominator is further restricted from the total number of women to number of women ever married and married with husband present, the differences become more and more refined and clear. This is so because the number of women 15 to 49 years of age, even though they are the potential group, their risk of child-bearing is further conditioned by their marital status and still further by the presence or absence of a husband. Ultimately, it is noted that in these more restricted categories the immigrants from India have the highest level of GFR and not the in-migrants.

The differences in the fertility rates of in-migrants from those of other groups increase as the births are restricted to women who are exposed more and more to the risk of child-bearing. Column (5) of Table V.2 shows that the range of GFR is 297 per thousand for immigrants from India to 238 per thousand for natives. Strangely enough, the natives have the lowest level of fertility irrespective of refinements. The comparison of Tables V.1 and V.2 shows that after all refinements the pattern of CBR and GFR (shown in Column (5) of Table V.2) are exactly the same. This is coincidental and does not prove that CBR is as good a measure of fertility as GFR computed for married women, husband present. The GFRs shown in Column (5) of Table V.2 are definitely more refined than the CBRs shown in Table V.1 but they are less refined than the gross reproduction rates (GRRs).

5.4 Age Specific Fertility Rate, Gross Reproduction Rate and Total Fertility Rate

5.4.0 The age specific fertility rate (ASFR) is a ratio of births occurred to women of a given age group, *i*, in a given year to mid-year total female population in the same age group. In this chapter, it is computed as described below:

$$ASFR_i = \frac{\text{Births during 1958 to women in age group } i}{\text{Women in age group } i \text{ on July 1, 1958}}$$

where *i* is any of the seven intervals of five-year age groups, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44 and 45-49.

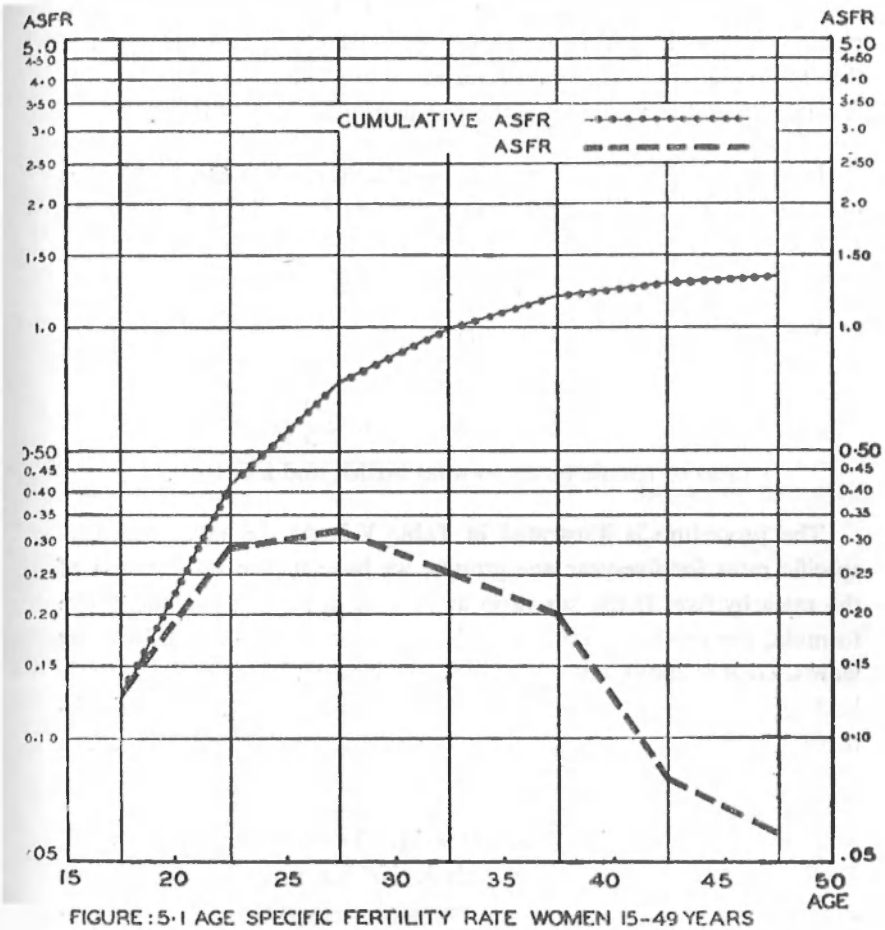

FIGURE : 5·1 AGE SPECIFIC FERTILITY RATE WOMEN 15-49 YEARS OLD, KARACHI 1958

SOURCE: TABLE V·3

The gross reproduction rate is one of the several measures of fertility which are preferred by demographers in the analysis of fertility. It is defined as the number of female children a cross-sectional cohort of one thousand women would bear during their child-bearing period (starting at age 15 and ending at age 49) if no women in the cohort ever died[1] and to the schedule of age-specific fertility rates found in the given population at the given time. It takes into account the age distribution of the females of reproductive ages and, therefore, is not influenced by differences in age composition of the population being compared.

In our analysis, we use a cross-sectional cohort of women 15-49 years of age as reported in the survey with fertility rates as of July 1, 1958. The rate thus equals:

$$GRR = i\sum_{1}^{7} ASFR_i \times \frac{100}{100+105} \times k$$

Where i is an interval of five years; $\frac{100}{205}$ is the assumed ratio of female births to total births; and k is 1000.

The procedure is illustrated in Table V.3. As we have used age-specific rates for five-year age groups, we have multiplied the sum of the rates by five. If the sex ratio at birth is not applied in the above formula, the resultant rate is called total fertility rate (TFR). In other words, GFR is about half of the total fertility rate. The GRR and TFR both represent the same female population as the GFR, but the difference is that the first two account for the differences in age composition whereas the last does not.

5.4.1 Levels of ASFR, GRR and TFR. Table V.3 provides ASFRs, GRR and TFR for the total population of Karachi. The ASFRs and cumulative ASFRs are further shown graphically in Fig. 5.1 on a logarithmic scale. The highest level of ASFR is noted in age group 25-29

[1] There is another measure, less preferred than GRR, called net reproduction rate. This measure uses the same age-specific fertility rate but is based on surviving cohort taken from a life table: *see* for details [1, pp. 212-213].

TABLE V.3

KARACHI: AGE SPECIFIC FERTILITY RATES, GROSS REPRODUCTION RATE, AND TOTAL FERTILITY RATE, WOMEN AGED 15-49, 1958

Five-year age groups of women (15-49)	Births	Women (15-49)	Age specific birth ratio
(1)	(2)	(3)	(4)
All women (15-49)	77,600	359,875	0.216
i_1 15—19	8,650	68,700	0.126
i_2 20—24	21,600	75,775	0.285
i_3 25—29	23,000	72,125	0.319
i_4 30—34	13,075	51,850	0.252
i_5 35—39	7,550	37,825	0.200
i_6 40—44	2,475	31,725	0 078
i_7 45—49	1,250	21,875	0.057

Source: [10, Table 2.20].

$$\sum_{1}^{7} i = 1.317$$

$$GRR = \frac{100}{205} \times 5 \times 1.317 \times 1000 = 3212$$

$$TFR = 5 \times 1.317 \times 1000 = 6585$$

and next highest in age group 20-24 which is consistent with the pattern elsewhere [4]. The ASFR curve rises gradually but swiftly from age group 15-19, reaches its peak in age group 25-29, and then it tapers off systematically. The rise is steeper than the fall and the level in the opening age group 15-19 is higher than the level in the closing age group 45-49. The curves conform to a typical pattern of age-specific fertility [2, p. 3]. The cumulative curve, in fact, illustrates the total fertility rate (although the ASFRs have not been multiplied by 5 for convenience of presentation). It is noted that the GRR of 3,212 per

thousand and TFR of 6,585 per thousand indicate the prevalence of a very high level of fertility in Karachi. These rates suggest that on the average 1,000 women in Karachi, on completion of their reproductive period bear a total number of 3,212 female babies or 6,585 babies of both sexes combined. This shows that unless there is very high mortality, the population is reproducing effectively far above (slightly more than three times) its replacement level.

5.4.2 GRR and TFR by Migrant Status. The presentation of the fertility level by migrant status in Subsections 5.2.1 and 5.3.1 on the bases of rather crude measures of fertility, *i.e.*, crude birth rate and general fertility rates, does not take into account the effect of age composition of females of reproductive ages. Let us now examine the effect of age composition on the fertility behaviour of females by migrant

TABLE V.4

KARACHI: TFR AND GRR PER 1,000 WOMEN AGED 15-49 BY MIGRANT STATUS, 1959

Migrant status (1)	TFR (2)	GRR (3)
All persons	6,585	3,212
Natives	5,625	2,744
Migrants	6,775	3,305
In-migrants	*6,670*	*3,254*
Immigrants-India	*6,885*	*3,359*

See notes *a*) and *b*) under Table V.1. *Source:* [10, Table 2.20] and original tabulation.

status. It is noted in Table V.4 that TFR and GRR indicate almost the same pattern as revealed earlier in Subsections 5.2.1 and 5.3.1. It seems that the differences in the age composition of the various migrant-status groups are too insignificant to be reflected in their fertility patterns. The findings of Table V.4, however, establish that immigrants from India have the highest (3,359 per thousand), in-migrants have the

intermediate (3,254 per thousand), and natives have the lowest (2,744 per thousand) level of GRR. The differences between the migrants and natives are too wide to be attributed to chance variation and, therefore, are quite significant.

There has been very little research done on the fertility of the developing nations which looks at fertility differences by migrant status. However, from the findings of the studies undertaken in the United States it appears that the differences noted in this study are not unusual. Warren S. Thompson (1931) reported for the United States that in 1920 the foreign born had higher fertility than the natives and that the differences between the fertility levels of the native and foreign-born white women were greater in the cities than in the nation as a whole [20, p. 40].

Clyde V. Kiser, on the basis of a survey which covered 7,00,000 families in 83 cities of the United States reported that fertility rates among foreign-born wives in 1935 were higher than the native wives in all ages [15, p. 35]. Wilson H. Grabill attributed the below-replacement-level fertility in the urban United States prior to World War II to the native white population. He further pointed out that the foreign-born population in the urban areas of Middle Atlantic States inflated the fertility of these areas to the extent that the rates exceeded the levelling-off limit [6, p. 105].

Thus, the evidence from at least one other population is consistent with our findings for Karachi. This finding insinuates that urbanization and fertility may be negatively correlated, but with a substantial lag. The natives have already slowed down relative to the migrants—though the natives in this case are still very prolific.

5.5 Fertility Level by Income

The object of this section is to explore how variation in income affects the fertility patterns in an urban area of developing country. The association of income and fertility is a well-known phenomenon. Even the layman knows that rich persons have fewer children than the poor. But, there are hardly any studies undertaken in developing countries on urban fertility differences and income. One exception is David Yaukey's study of differences in fertility of towns and villages in the

Lebanon. He does not have income as a specific variable for this study but instead he has used three variables, education of couple, room per capita and occupation of husband, as indices of socio-economic status. Yaukey has found no differences in the level of fertility by education or rooms per capita among the Muslim couples but in the case of Christian couples he has noted a mild inverse association [22, p. 34]. Assuming that education and rooms per capita are valid indices of income, Yaukey's findings gain relevance for mention in this context.

The returns on monthly family income (sum of personal incomes of all individuals related to the head of a household by blood and marriage) reported in our survey, have been aggregated into ten income groups. This classification is likely to suffer from underreporting of income and from differences due to chance variations. In addition, family income may not be as good a determinant of attitude towards the desired number of children as monthly personal income (sum of individual's income earned and received from other sources) of the husband. The family income may either inflate or deflate the status of a couple whose fertility is being studied. With these limitations in view general fertility rates (GFRs) have been computed by income and migrant status as shown in Table V.5.

TABLE V.5

KARACHI: GENERAL FERTILITY RATE PER 1,000 MARRIED WOMEN, 15-49 HUSBAND PRESENT, BY MIGRANT STATUS AND BY FAMILY INCOME, 1958

Family income (rupees)	All persons	Migrant status			
		natives	migrants	in-migrants	immigrants from India
(1)	(2)	(3)	(4)	(5)	(6)
All incomes ...	262	222	270	260	274
Under 50 ...	289	228	316	448	280
50 — 74 ...	262	227	270	235	282
75 — 99 ...	274	250	279	273	281
100 —124 ...	255	247	256	227	260
125 —149 ...	280	194	292	283	295
150 —199 ...	265	217	274	228	284
200 —299 ...	261	201	272	290	267
300 —499 ...	271	176	284	305	284
500 —999 ...	243	233	245	246	243
1000 and over ...	214	125	229	195	269

Source: [10, Table 2. 10] and original tabulation.

The birth statistics used are the number of births of those married females (15 to 49 years of age) whose husbands were living with them. The GFRs computed on the basis of these births provide a more exact picture than do the fertility rates computed on the basis of total births (Tables V.1 and V.2). It is again observed that immigrants from India have the highest GFR of 274 per thousand, and the natives have the lowest rate of 222 per thousand (Table V.5). The differences between the migrant-status groups are striking and are less likely to be attributed merely to chance variation.

It is noted that although fertility rates fluctuate from one income group to another, they indicate, a mild, but generally inverse, relation-

TABLE V.6

KARACHI: RANK CORRELATION OF GFR BY MIGRANT STATUS AND FAMILY INCOME, 1958

Family income (rupees)	All persons		Ranking: migrant status							
			Natives		Migrants		In-migrants		Immigrants—India	
	Income	GFR	Income	GFR	Income	GFR	Income	GFR	Income	GFR
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Under 50	1	10	1	7	1	10	1	10	1	5
50— 74	2	5	2	6	2	4	2	4	2	7
75— 99	3	8	3	10	3	7	3	6	3	6
100—124	4	3	4	9	4	3	4	2	4	2
125—149	5	9	5	3	5	9	5	7	5	10
150—199	6	6	6	5	6	6	6	3	6	8
200—299	7	4	7	4	7	5	7	8	7	3
300—499	8	7	8	2	8	8	8	9	8	9
500—999	9	2	9	8	9	2	9	5	9	1
1,000 and over	10	1	10	1	10	1	10	1	10	4

Source: Derived from Table V.5

Migrant status	*Rank correlation coefficient*
— All persons	—0.648
1. Natives	—0.564
2. Migrants	—0.527
3. In-migrants ...	—0.273
4. Immigrants from India ...	—0.212

ship with income. The rank order correlation coefficient (r) is — 0.648 (Table V.6) for all migrant-status women and is significant at the 5-per-cent level. Thus, fertility decreases as income increases in Karachi. This is also true for each of the migrant-status groups. The natives have the highest coefficient of correlation of — 0.564, but it is only slightly lower than the value of r (0.602) which could be significant at the 5-per-cent level. The coefficients of correlation of other migrant-status groups are also not statistically significant. But they do show a definite inverse association of income and fertility.

It is further to be noted that the migrant-status groups of the lowest income-bracket, in general, have the highest fertility rate whereas the migrant-status groups in the highest income-bracket, have the lowest fertility rate. Among the natives, women in the income group Rs. 75-99 have the highest fertility rate. For migrants from other parts of Pakistan, the highest rate is observed for women in the lowest income group, *i.e.*, under Rs. 50 per month. The highest rate for immigrant women from India is observed in the income group Rs. 125-149.

In order to assess the influence of income on fertility more precisely the effect of age composition should be controlled. For this reason, GRRs and TFRs have been computed specific for monthly income of husband. These are shown in Table V.7 along with general fertility rates. The income concept employed in this table is the personal income of the husband, a more refined measure than the family-income concept used in Tables V.5 and V.6. The results shown in this table are somewhat different from those shown in Table V.5.

The highest GRR is observed for the women in income group Rs. 200-299, the next highest in income group Rs. 300-499 and the lowest in the income group Rs. 150-199. The different ranks shown by GFRs and GRRs in Table V.7 is attributable to differences in the age distribution of females in the various income groups. In Table V.5, the highest GFR was observed for the women in the income group Rs. 125-149 and the lowest in income group Rs. 1000-and-over. It seems that age composition of the women and personal income of the husband do effect the fertility pattern. The GRRs shown in Table V.7 do not

TABLE V.7

KARACHI: GFR, GRR AND TFR, PER 1,000 WOMEN FOR MARRIED WOMEN AGED 15-49 HUSBAND PRESENT AND BY PERSONAL INCOME OF HUSBAND, 1958

Personal income of husband (rupees) (1)	GFR and rank (2)	GRR and rank (3)	TFR (4)
All groups	262	3,182	7,815
Under 50	203 (1)	4,044 (6)	8,290
50 — 74	250 (5)	3,707 (5)	7,600
75 — 99	254 (6)	3,644 (4)	7,470
100 — 124	246 (4)	3,502 (2)	7,180
125 — 149	301 (8)	4,263 (8)	8,740
150 — 199	280 (7)	3,473 (1)	7,120
200 — 299	332 (10)	4,985 (10)	10,220
300 — 499	302 (9)	4,273 (9)	8,760
500 — 999	218 (3)	3,551 (3)	7,280
1,000 and over	213 (2)	4,085 (7)	8,375

Source: [10, Table 2.21].

conform to the class position if determined by the income level of the husband. The rank correlation coefficient for this relationship is + 0.224. Though the value of this coefficient is positive, statistically it is not significant. In other words, income of husband does not seem to be an important factor in accounting for the variation in the GRRs of Karachi. The negative association indicated by Table V.6 on the basis of family income has now disappeared.

These findings are consistent with the findings of Yaukey (especially about Muslims) mentioned at the beginning of this section. It is probably true that in developing countries where family-planning programmes are still being formulated, the level of income has an insignificant influence on the level of urban fertility.

However, for the Western countries it has been generally shown that level of fertility is sensitive to the variation in income. Many studies in the past have shown inverse association between income (measured in a variety of ways) and urban fertility. But evidence of an opposite pattern has also been reported by a number of studies. It may be worthwhile to acquaint the reader with the findings of some of the relevant studies undertaken in the Western world.

The first ev idence of a reversal came from K.A. Edin (1929) who rep orted that in 1927 there were no significant differences between the general fertility rates for the poor and wealthier districts of Stockholm (Sweden), and the legitimate birth rates of the wealthier districts were higher than those of poorer districts [4, p. 259].

On the basis of rental value of housing, H. W. Green (1931) found a positive relation of socio-economic status and unstandardized birth rate per 1,000 women 15 years-and-over for 1928 in Cleveland, Ohio (USA) [7, p. 69].

William F. Ogburn (1933) in a study based on a special sample of 60,000 native white wcmen of native parentage under 45 years of age, living in places of 5,000 or over in the East North Central States of the United States, reported a positive relation between family size and rental value (in rental groups of $100-and-over) for larger cities [19, pp. 686-687].

In a subsequent study of Stockholm, by K. A. Edin and E. P. Hutchinson (1935), again a positive relation between income and births per 1,000 years of married life, standardized for age and marriage duration, were found for an earlier period (1919-1922) than reported before [5, p. 53].

P. K. Whelpton (1936) also reported a reversal in the high-rent districts of Buffalo, Columbus and Chicago in the United States for 1930 on the basis of unstandardized birth rate per 1,000 white women 15 to 44 years of age, using the census tract as the unit [21, p. 48].

Philip M. Hauser (1938) found a sharp inverse relation between gross and net reproduction rates and economic status determined by median rent of census tracts for both white and non-white population in Chicago for 1929-1931 [12, p. 53].

Clyde V. Kiser (1942) indicated the usual inverse relation between gross and net reproduction rates and family income for the urban whites in the United States. However, he reported reversal for the urban natives in the upper income levels for 1935 [15, pp. 124, 189].

P. H. Jacobson (1945) on the basis of median rent (on the assumption that rental value has high positive correlation with income) of 348 Health Areas in New York City reported an inverse relation between crude birth rate per 1,000 persons 15 to 44 years of age and the median rent, for the period 1929-1934. He further found that by 1942 the pattern had changed to a direct relation [14, pp. 135-146].

Evelyn M. Kitagawa (1951), using median rent as an index for economic status, found an inverse association between total fertility rates and five economic status classes for Chicago for the period 1920-1940 for native white, foreign white and Negro. But on the basis of marital fertility rates standardized for age, she found a reversal in the three upper economic classes for whites in 1930 [17, pp. 11, 70, 108].

In the Indianapolis study of the United States, in general, an inverse relation between income and the cumulative fertility rate is shown. However, a reversal is also found on the basis of marital fertility rates in the upper economic level within the "number and spacing planned group" [16].

By applying the statistical technique of multiple regression analysis, the author of this study found that in the Chicago metropolitan area in 1950 the neighbourhoods with higher family income tended to have higher GRR but the lower family income was not a significant factor in accounting for variation in the neighbourhood GRR [8. p. 53].

Although many other studies reveal inverse association of income and fertility, the exceptions to this pattern have important implications. They suggest that income alone is unable to always explain adequately variations in fertility and that additional factors are at work. In other words, fertility is a function of many variables, including income. In order to assess the relative effect of income, more powerful statistical techniques of analysis are required than have either been used in many of the studies just cited or in this study.

Finally, it can be inferred from the analysis presented in this section that, unlike Western countries, variation in income in Karachi is not yet sensitive to the changing behaviour of fertility. It is noted that even the well-to-do persons in Pakistani urban society have not yet manifested in their fertility behaviour any effort at regulating the size of their families; or maybe they are just now starting.

5.6 Fertility Level by Major Occupation

The occupation of the husband plays a vital role in determining the class position of a family, although it is not the only index for this purpose. It has been used quite often as an indicator of class position for studies of differences in fertility. Occupation is a qualitative variable and difficulty is often experienced in finding proper grouping. In addition, many people change their occupations during their lifetime and it is possible that the previous occupation may have a stronger impact on their attitude toward limiting the size of their family than the present one. There are not many studies which can be cited on occupational differences in fertility in the developing countries. However, Yaukey has found no significant differences between the fertility levels of Muslim farmers and nonfarmers of the towns and villages of the Lebanon. However, he did find inverse association for the same relationship for Christians [22, p. 33].

TABLE V.8

KARACHI: GFR, GRR AND TFR PER 1,000 MARRIED WOMEN 15-49 HUSBAND PRESENT BY OCCUPATION OF HUSBAND, 1958

Occupation of husband (1)	GFR (2)	GRR (3)	TFR (4)
Total	262	3812	7815
Professional technical and related workers	256	4339	8895
Administrative, executive and managerial workers	248	3861	7915
Clerical workers	325	3637	7455
Sales workers	255	3898	7990
Farmers, fishermen and related workers	219	3380	6930
Transportation and communication workers	249	3490	7155
Craftsmen, production process workers			
Skilled	283	4024	8250
Semiskilled and Labourers	258	3837	7865
Service, sports and recreation workers	246	3629	7440
Members of the armed forces	362	5002	10255
Workers not classifiable	282	3963	8125
Unemployed	175	3422	7015
Husband not in labour force	146	3622	7425

Source: [10, Table 2.22] and original tabulation.

Table V.8 provides GFRs and GRRs and TFRs by occupation of husband. Not only are the GFR, GRR and TFR of the wives of members of the armed forces the highest among the occupational groups, but their level (GFR, 362; GRR, 5002; TFR, 10255 all per thousand) is also very high. The next highest GFR among the occupational groups occurs among the wives of clerical workers, but the next highest GRR is observed for the professional people. The differing patterns indicated by the two measures are attributed to the differences in age composition of the women (15 to 49) distributed by the occupational group of their husbands. The GRR depicts the more real picture.

The lowest GFRs are reported for the category of women whose husbands were not in the labour force and the second lowest for the women whose husbands were unemployed. However, their GRRs, which are more refined, show the opposite. The range of GFRs between 146 per thousand to 362 per thousand is wide and shows that differences in the fertility levels of occupational groups do exist. Similarly, the range of GRRs between 3,380 per thousand to 5,002 per thousand is also wide, and affirms that differences among the occupational groups are real and can hardly be attributed to chance variation. It is noted that farmers and fishermen have not the highest but the lowest level of GRR. Persons whose occupations involve the use of physical exertion such as craftsmen, production process workers, skilled and semiskilled labourers, and members of armed forces, have above-average GRRs.

It seems that the association of occupation and the level of GRR in Karachi does not conform to a pattern of class position. In other words, if occupation is considered as an indicator of class position, the pattern does not conform to a gradient. The differentials on account of employment status are, however, notable. Women whose husbands are either not in the labour force or are unemployed manifest a lower level of GRR than do the average women or women whose husbands are employed.

The high GRR of the armed forces has an important demographic implication. Assuming that the armed-forces employees are healthier and that they and their wives have better medical facilities available to

them than the rest of the population (either of Karachi or of the country as a whole), their higher fertility may be attributed to better health and medical facilities. Better health facilities probably ensure better survival of maternal women and better health of women of reproductive ages lowers the incidence of miscarriages and decreases the number of still births. All these factors are likely to accelerate the number of births. On the basis of this reasoning, if health and medical facilities in the country keep on improving, the fertility level of the country may actually rise, unless and until some effective measures to regulate the size of family are adopted.

5.7 Fertility Level by Family Classification

It is interesting to note a pattern of fertility level shown by all the fertility measures presented in Table V.9. The fertility level in nuclear

TABLE V.9

KARACHI: SOME FERTILITY RATES AND FAMILY CLASSIFICATION, 1958

Family classification	CBR	GFR (W)	GFR (MW)	GFR (MWH)
(1)	(2)	(3)	(4)	(5)
All classifications ...	47	224	276	282
Nuclear	54	247	292	295
Extended	43	203	263	278
... ...	44	183	228	237

W = All women

MW = married women

MWH = married women husband present

Source: [10, Table 2.03].

families is substantially higher than either in extended or joint families. Extended families have a higher fertility level than joint families. These

results imply that: *i*) presence of one or more relative influences the fertility level of a couple; and *ii*) presence of a subfamily in a primary family[2] with or without other relatives also influences the fertility level of a couple, but its effect is greater than the effect of presence of relatives alone.

In Pakistan, as well as in most other societies of the world, engaging in sex act in public or in the presence of relatives is a source of shame. A couple needs utter privacy for a sexual intercourse. The extent of such privacy is reduced in extended or joint-family settings as compared with the nuclear-family settings. In the former situation, a couple has to wait for an opportune moment and such a moment may not necessarily coincide with the time of ovulation in the sexual cycle of females. Thus, the probability that sexual intercourse will result in fertilization is lower in the extended or joint-family settings than the nuclear-family settings. Thus, it seems that as the crowding of nonmembers of a nuclear family increases, the frequency of sexual intercourse decreases, which in turn decreases fertility.

These findings have important implications for a society which is developing and in which with social and economic development, the family pattern is likely to change from joint and extended to a nuclear type of family.

5.8 Children-Women Ratios Derived from Age Distributions

The use of birth statistics for the study of fertility is preferred to the use of more indirect measures. But if the birth statistics are inadequate or lacking, fertility measures derived from the age and sex statistics are useful. The object of presenting fertility measures, derived from the age and sex statistics, is to compare the results obtained by the measure computed by using the birth statistics. Two measures are derived from the age and sex data: *i*) the ratio of children under 1 year of age to women 15 to 49 years of age; and *ii*) the ratio of children under 5 years of age to women 15 to 49 years of age. The number of children

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[2] A multiple-persons household of an independent character where the members of the household are all related to the head by blood or marriage, excluding servants and lodgers.

under 5 years of age is affected by high infant mortality and by under-enumeration. Therefore, the child-woman ratio is not a true indicator of the level of actual birth performance.

It has already been noted that the fertility level is highest for im-migrants from India, intermediate for in-migrants and the lowest for natives. Table V.10 shows child-woman ratios (CWRs) for the migrant-

TABLE V.10

KARACHI: CHILD-WOMAN RATIO BY MARITAL STATUS OF WOMEN AND MIGRANT STATUS, 1959

Migrant status	All women 15-49		Ever married women 15-49		Married women 15-49	
	children under 5	children under 1	children under 5	children under 1	children under 5	children under 1
(1)	(2)	(3)	(4)	(5)	(6)	(7)
All status ...	721	127	827	145	887	156
Natives ...	680	102	798	120	870	130
Migrants ...	730	132	833	151	891	161
In-migrants ...	*759*	*133*	*830*	*146*	*854*	*150*
Immigrants-India	*727*	*132*	*837*	*152*	*904*	*165*

See notes *a*) and *b*) under Table V.1. *Source:* Original tabulation.

status groups. The results shown in this table confirm the previous findings, except when CWRs are computed for married women (15 to 49) and children under 5 years (Column (6)). A higher CWR is found for natives (870 per thousand) than for in-migrants (854 per thousand). Conversely, the ratio of infants (under one year) is lower for natives than the corresponding ratio of in-migrants. Part of the differences may be due to differences in the extent of under-enumeration of children (and also women) but this is difficult to ascertain. It is likely that more of the in-migrants are actually married (as they settle down in Karachi) and a higher proportion of their wives (as compared to the wives of natives), are exposed to the risk of

first or second child rather than third child. This reasoning is supported by the observation that 38 per cent of the in-migrant ever-married females (15 to 49) are in the age bracket 15 to 24 compared to a corresponding figure of 29 per cent for the natives. Lastly, as will be noted in the following chapter the in-migrants have a somewhat higher mortality level than the natives which may be more selective of children under 5 years. Thus, the different patterns shown by the ratio of children under 5 years of age to married women in age group 15 to 49 years, aside from the crudeness of the measure, are probably due to differences in parity and also due to differences in mortality of children under 5 years between natives and in-migrants.

5.9 Areal Differences in Fertility

There is a growing interest in the study of distribution of the phenomenon of urban fertility. But this type of study for Karachi as of 1959 has the following limitation. The *Juggis* (huts mostly occupied by the low-income immigrants from India) at the time this survey was undertaken were scattered all over Karachi, including the upper residential area. This fact is likely to bias the true difference in the fertility rates between the ecological groups. Since the survey, most of the *juggi*-dwellers have been shifted to the newly built residential areas, such as Korangi, Landhi and others in the suburbs of Karachi.

TABLE V.11

KARACHI: SOME FERTILITY RATES BY MAJOR DIVISIONS, 1958

Major division	CBR	GFR (W)	GFR (WM)	GFR (WMH)	GRR
(1)	(2)	(3)	(4)	(5)	(6)
All major divisions ...	47	224	276	284	3212
Commercial area ...	42	200	262	268	3002
Industrial area ...	50	259	298	305	3549
Lower residential area ...	52	241	292	301	3373
Middle residential area ...	50	230	287	294	3254
Upper residential area ...	43	199	243	252	2900
Noncontiguous area ...	52	309	353	358	4100
Labour area ...	45	232	275	285	3300
Rural area ...	36	174	204	220	2622

Source: [10, Table 2.24] and original tabulation.

However, with the above limitation in mind, Table V.11 presents various types of fertility rates for major divisions. The GRRs shown in this table reveal a somewhat different pattern from other fertility measures. This shows that the age compositions of the women of the reproductive ages in various major divisions affect the fertility pattern indicated by rather less refined fertility measures.

It is noted that the noncontiguous area, where most of the families of the members of the armed forces reside, has invariably the highest level of fertility among the major divisions. This corroborates our finding in Section 5.6 that the armed-forces employees have the highest level of fertility among occupational groups.

The differences in the fertility level between the upper and lower residential areas are also of interest. The upper residential areas has the lowest GRR. This is not quite in agreement with the previous finding in Section 5.5 in which it is found that income is not significantly associated with fertility. It is somewhat risky to draw any conclusion with reference to this relationship in view of the limitation mentioned in the beginning of this section.

The rural area indicates the lowest level of fertility—which is an unusual finding. One would expect significantly higher rates in the rural parts than in the urban parts as urban birth-rates have traditionally been lower than rural rates. There is further evidence on the basis of 1961 Census data in Table V.12 for the district of Karachi to support that fertility is higher in the urban than in the rural area. The ratio of children under 1 year of age to women (both total and ever married)

TABLE V.12

KARACHI DISTRICT: CHILD-WOMAN RATIO, CHILDREN UNDER 1 YEAR AND WOMEN 15-49, URBAN - RURAL, 1961

Area	Child-women ratio	
	Total women	Ever-married women
(1)	(2)	(3)
Total	142	167
Urban	142	168
Rural	134	149

Source: Computed from [18].

15 to 49 years of age is higher in the urban than in the rural area. One may argue that this difference may be due to differences in infant mortality rates but the differences as revealed by the CWRs of ever-married women is quite wide (probably wider than the difference in the infant mortality rates implied by the difference in crude death rates in the following chapter) and it is probably not justifiable to attribute all of it to the difference in the infant mortality rate. It must be noted that CWRs do not take into account the effect of age composition of the female population of the reproductive ages; and part of the difference in the CWRs may be attributable to differences in the age structure.

Since no study of urban-rural differences in fertility has been undertaken in this country, it would be unfair to assert on the basis of this meagre evidence that in Pakistan fertility in the urban areas is higher than that in the rural areas or even that there are no significant differences between urban and rural fertility. Maybe, Karachi or the district of Karachi is a unique case. However, even if this is true, there seems, nonetheless little justification for regarding urbanization as an important determinant of fertility. In other words, urbanization may or may not be a solution to the fertility problem in a country like Pakistan.

5.10 Factors Affecting Fertility

The above analysis shows the existence of differences in the fertility levels among the socio-economic groups of Karachi. The immigrants from India have the highest fertility rates compared with in-migrants and natives. General fertility rates vary inversely with family income; but when age composition of the married women of reproductive age and personal income of the husband are taken into account, the negative association disappears. This change is produced especially by the high level of fertility of the women who are in income groups Rs. 200-299 and Rs. 300-499. These are above-average income groups in Karachi. These women appear to have better medical facilities than the women in the lower income-groups and most of the wives of members of the armed forces who have exceptionally high fertility belong to these income groups. They are healthier, survive better, have fewer miscarriages and still births, and reproduce more than the average woman, who has

comparatively less adequate medical facilities available to her. Women in the highest income group (Rs. 1000-and-over) have a GRR moderately higher than the average GRR.

Among the major occupational groups, differences in fertility exist, but they do not conform to a pattern of class position. Members of the armed forces and professional technical and related have the highest fertility rates while the lowest rates are observed for farmers, fishermen and related workers. Fertility is higher in nuclear families than in extended or joint families. The fertility level in the rural area of Karachi is somewhat lower than its urban parts.

This study brings out a very crucial point, *i.e.*, that developmental factors such as changing pattern of marriage from polygynous to monogamous (*see* Chapter 4) internal migration, improvements in health conditions and changing patterns of family, all are associated positively with the level of fertility. In other words, fertility is increasing in Karachi with improvements in social and economic conditions. Although this observation is based on short-run evidence, one is tempted to advance a hypothesis that fertility in the developing countries may be increasing with improvements in social and economic conditions. Nevertheless, it may be a transitional phase.

It has been noted that in general the level of fertility in Karachi is by no means low. Both the CBR (47 per thousand) and the GRR (3212 per thousand) are very high. These findings give rise to the question: is urbanization an important factor affecting the fertility level in Pakistan ? This question cannot be fully answered unless a comparative study of urban-rural fertility is undertaken; but on the basis of a high level of fertility in Karachi, the answer is in the negative.

Although urban birth rates in the West, and particularly in the United States, have traditionally been lower than rural rates, there is little factual basis for claiming that progressive urbanization has been a main factor in fertility decline. The historic decline in fertility in the United States was no less sharp in the rural areas than in the urban areas, and occurred throughout the nineteenth century and the first four decades of the twentieth century. Urban fertility has declined sharply

in decades when there was little urbanization, and has failed to decline proportionately in other decades when there was a great deal of urbanization [9, Chapter 1]. Increase in urbanization means increase in net migration into the urban areas. The migrants in the city environment probably tend to increase the level of fertility.

In addition, the urban populations of developing countries, including Pakistan, are quite dissimilar in their composition from that of the West and there is little probability that fertility trends in these countries parallel exactly those of the West, so that a faith that urbanization will automatically solve the population problems of Pakistan may not be justified. Thus the demographers, policy-makers and social agencies in Pakistan should not blindly look towards progressive urbanization to solve the fertility problem.

From the findings of this study, one begins to suspect that the family-planning scheme in Karachi at least upto 1958 has had little effect. This is not an unjustified view. India is ahead of Pakistan in the programme of family planning. But it is reported that family planning in India has not yet produced significant results, as "the number and percentage of couples who are availing themselves of family planning services and information is discouragingly low" [3, p. 503]. The research done in India to investigate this problem has revealed that lack of family-planning communications and of a motivation programme are mainly responsible for this [3, p. 50]. The same may be true of Karachi and of Pakistan. The signs are clear that the 1961 population of Pakistan will be doubled after a generation. How far the national population policies are able to regulate population depends mainly on the extent of family-planning communication, motivation, and implementation.

Finally, if rural fertility in Pakistan is of the same general order as that observed in Karachi, the challenge to the family planners and other action agencies is great. It is definite that coping with the problem in the rural areas where the major portion (87 per cent) of the total population lives is going to be more serious than it is in Karachi.

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CHAPTER 6

MORTALITY

6.0

Although mortality is a less important determinant of population growth than is fertility, an increasing interest is being shown by demographers in the study of this factor, because of its serious demographic significance. Births and immigration or in-migration increase population, whereas mortality and out-migration cause it to decrease. The balance of increases and decreases is the absolute population growth or decline. Thus, mortality is one of the basic factors which determine the size and growth of population. In recent decades, mortality in the developing countries has declined rapidly and rates of population growth are increasing rapidly.

Mortality may be measured on the basis of the number of deaths per thousand of population. Age-specific death rates are also highly useful. It is ideal to obtain the number of deaths and ages of deceased persons through a system of registration, but this system is inadequate in Karachi (as in rest of the country) and has not produced reliable data. The data are underregistered and the extent of underregistration is not known.

In the survey under analysis an attempt was made to collect the number of deaths which occurred in Karachi during the year 1958. The reliability of these data cannot be vouched for, and shortcomings of the following nature occur:

i) if a death had occurred in a single-person household, no one was left to report this event,

ii) if a head of family died the whole family may have disintegrated, leaving no reporting unit,

iii) death is an unpleasant event and people hesitate to report its occurrence,

iv) the age of the deceased was not asked.

Therefore, the absolute values of the mortality measures computed on the basis of these data may not be of significance. But the measures computed are useful as they serve as relative measures to compare the levels of mortality by the socio-economic characteristics of the population. In this chapter, the computation of crude death rates has been undertaken on the basis of statistics made available by the survey.

6.1 Crude Death Rates by Migrant Status

The crude death rate (CDR) is the number of deaths in a year (1958) per 1000 of the total mid-year (1958) population (of Karachi).

Table VI.1 provides crude death rates specific for migrant status. It is observed that the CDR for the total population is 11.0 per thousand which is quite low for the metropolitan area of a developing country. It compares with crude death rate of 11.2 per thousand for Chicago (as

TABLE VI.1

KARACHI: CRUDE DEATH RATES BY MIGRANT STATUS, 1958

Migrant status (1)	Crude death rate (2)
All Status[a]	10.9
Natives	9.1
Migrants[b]	11.2
In-migrants	*10.6*
Immigrants-India	*11.5*

Source: [3, Table II.40] and original tabulation.

Notes: *a*) Includes immigrants from countries other than India and persons whose migrant status was not reported.

b) Includes immigrants from countries other than India.

of 1950), which is one of the most developed cities of the world [1, p. 6]. The CDRs of both Karachi and Chicago might have been accelerated by high accident rates. Still, Karachi should be expected to have a higher CDR than Chicago. It, thus, seems obvious that deaths were

underreported in the survey. This is further supported by the discussion of reported infants, in Appendix B. There it is very roughly approximated that 13,995 infants died during the year 1958. The total deaths estimated frcm the survey for 1958 are 18,775. In other words, the estimated infant deaths are roughly 75 per cent of the total deaths. This is an unusual proportion of infant deaths in the total number of deaths as there are nowadays very few populations in which such a proportion exceeds 40 per cent. If we assume that the proportion of infant deaths in the total deaths in Karachi was the same (39 per cent) as that observed for West Pakistan [2, pp. 133-137], the total deaths in Karachi should have been approximately 35,885. Thus, the extent of underreporting of deaths in the survey could be as great as 48 per cent. The reader is cautioned not to attach much significance to these figures as these are very rough approximations, and have been mentioned to show that the underreporting of deaths in the survey was of a great magnitude.

The differences in the CDRs by the migrant-status groups are of little significance and it is for this reason that rates (Table VI.1) have

TABLE VI.2

KARACHI: CRUDE DEATH RATES BY MIGRANT STATUS AND FAMILY INCOME, 1958

Family income (rupees)	Crude death rates				
	All status	Natives	Migrants	In-migrants	Immi-grants—India
(1)	(2)	(3)	(4)	(5)	(6)
[1] All Incomes ...	11	9	11	11	12
Under 50 ...	12	15	12	11	12
50 — 74 ...	13	9	14	11	15
75 — 99 ...	15	10	16	15	16
100 — 124 ...	11	10	11	9	11
125 — 149 ...	13	14	11	9	11
150 — 199 ...	11	13	11	4	12
200 — 299 ...	8	6	8	10	8
300 — 499 ...	9	—	10	19	9
500 — 999 ...	6	3	6	3	7
1000 and over ...	11	5	12	—	16

numbers too small. *Source:* [3, Tables II.41 and II. 42] and original tabulation.

been shown in with decimal places to the figures. The small differences reveal that immigrants from India have the highest (11.5 per thousand) and natives have the lowest reported CDR (9.1 per thousand). It may be recalled that the highest CBR was observed for the immigrants from India and lowest for the natives. Maybe, the immigrants from India are better reporters of vital events than the other migrant-status groups, but it is difficult to establish this without any concrete evidence.

6.2 Crude Death Rates by Migrant Status and Family Income

Crude death rates have been computed by migrant status and by family income (Table VI.2). The rank order correlation (Table VI.3) shows that as the income increases the mortality rates decrease. Although, it is true for the total population as well as for all the migrant-status groups, the correlation coefficients for in-migrants and immigrants from India are statistically not significant. The correlation coefficient is highest (—0.733) for natives (which is statistically significant at the 5-per-cent level) and lowest (—0.382 for immigrants from India), (which is statistically insignificant). These results are consistent with what one would expect. The rich people have either been provided with better medical facilities or they can afford to have better medical aid in a Pakistani society or any other such society in which medical practice is both public and private enterprise.

6.3 Crude Death Rates by Occupational Groups

Table VI.4 provides crude death rates by major occupational groups of principal earner. If we classify the occupational groups by mortality level into three categories, *i.e.*, high, medium, and low, the following observations are made. Families in which the principal earner was either not in the labour force or was employed as a semiskilled labourer, unskilled labourer, farmer or fisherman, had high levels of mortality (CDR ranging between 13 and 17 per thousand). Families in which the principal earner was employed in one of the following occupational groups, *i.e.*, salesman, domestic servant or related worker, skilled labourer, professional worker, technician and unclassifiable worker, had medium levels of mortality ranging between 10 and 12 per thousand. The lowest levels of mortality (CDRs ranging between 2 and 8 per thousand) are found among the families in which the principal earner was either un-

TABLE VI.3

KARACHI: RANK CORRELATION OF CDR BY MIGRANT STATUS AND FAMILY INCOME, 1958

Family income (rupees)	Ranking[1]: migrant status									
	All status		Natives		Migrants		In-migrants		Immigrants—India	
	Income	CDR	Income	CDR	Income	CDR	Income	CDR	Income	CDR
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Under 50	1	7	1	10	1	8	1	7	1	6
50— 74	2	9	2	5	2	9	2	8	2	8
75— 99	3	10	3	7	3	10	3	9	3	10
100—124	4	5	4	6	4	6	4	5	4	5
125—149	5	8	5	9	5	4	5	4	5	4
150—199	6	6	6	8	6	5	6	3	6	7
200—299	7	2	7	4	7	2	7	6	7	2
300—499	8	3	8	1	8	3	8	10	8	3
500—999	9	1	9	2	9	1	9	2	9	1
1,000 and over	10	4	10	3	10	7	10	1	10	9

[1] Rankings assigned after rounding.

Source: Table vi.2.

Migrant status	*Correlation*
— All status	—0.782*
1. Natives	—0.733**
2. Migrants	—0.673**
3. In-migrants	—0.539
4. Immigrants—India ...	—0.382

* Significant at 1-per-cent level.

** Significant at 5-per-cent level.

employed or was employed as an administrator, manager and clerical worker. Part of the differences in the mortality level among the occupational groups would be due to chance variation. Some differences may

be due to differences in underreporting of deaths. For example, a CDR of 2 per thousand for the families in which the principal earner was unemployed is unbelievable. As the proportion of such families was less than one per cent (the lowest among the families in the occupational groups) in the total families, not much significance can be attached to this extremely low figure. The occupational groups which fall in high, medium and low levels of mortality more or less conform to a pattern of class position. It is, thus, noted that mortality levels have an inverse relation with the class position determined by occupational group. If we assume that income and occupation go together, as usually is the case, the findings of this section are consistent with the findings in the previous section.

TABLE VI.4

KARACHI: CRUDE DEATH RATES BY MAJOR OCCUPATIONAL GROUP OF PRINCIPAL EARNERS, 1958

Occupational group (1)	CDR (2)
All occupations	11
Professionals and technical and related workers ...	10
Administrators, executive and managerial workers ...	8
Clerical workers	6
Sales workers	12
Farmers, fishermen, and related workers	13
Transportation and communication workers ...	10
Craftmen, production process workers—	
Skilled	11
Semiskilled and labourers	14
Service, sports and recreation workers	12
Workers not classifiable*	10
Unemployed	2
Persons not in labour force	17

Source: [3, Table 2.45].

*In the mechanical tabulation members of the armed forces were merged into this category and, therefore, have not been shown separately.

6.4 Crude Death Rates by Living Conditions

A further light on the differences in mortality level of Karachi is thrown by Table VI.5. It is noted that the *Juggi*-dwellers had the highest CDR (14 per thousand) and that the lowest (9 per thousand) is found among those who were living in *pucca* houses (dwellings with all their walls and roofs made entirely of bricks, stone or concrete). This table in general shows a typical pattern, *i.e.*, as the living conditions improve the crude death rate decreases. People who had no facilities or the least facilities had the highest death rates. The CDRs show some deviations from the pattern when computed for the distributional aspects of the traits, facilities and type of habitation. As the probability of error in the cells increases with the breakdown of the traits, not much significance should be attached to these deviations. In general, it is noted that people who have better living have lower mortality than the persons whose living conditions are substandard.

TABLE VI.5

KARACHI: CRUDE DEATH RATES BY TYPE OF HABITATION AND FACILITIES IN THE HOUSEHOLD, 1958

Facilities	Type of habitation			
	All	Pucca	Semi-pucca	*Juggi*
(1)	(2)	(3)	(4)	(5)
All persons	11	9	10	14
Both water and electricity ...	6	6	3	...
Water, no electricity ...	7	4	14	22
Electricity, no water ...	7	8	2	...
Neither water nor electricity ...	13	12	11	14

Source: [3, Tables 2.43 and 2.44].

6.5 Crude Death Rates by Major Divisions

Table VI.6 shows that the highest crude death rates prevail in the labour, rural, and middle residential areas. This is partly in conformity with the findings of Section 6.3, in which it is found that semi-

skilled and unskilled labourers, farmers, and fishermen have high levels of mortality. The middle residential area, surprisingly, has a higher crude death rate than the lower residential area.

TABLE VI.6

KARACHI: CRUDE DEATH RATES BY MAJOR DIVISION, 1958

Major division	CDR	Per cent of total population living in *Juggis*
(1)	(2)	(3)
All major divisions	11	35.3
Commercial area	7	19.5
Industrial area	10	34.5
Lower residential area	11	50.5
Middle residential area	13	38.7
Upper residential area	10	39.0
Noncontiguous area	8	0.3
Labour area	14	32.3
Rural area	13	71.6

Source: [2, Table 2.46.]

The lowest CDR is noted for the persons living in the commercial area and not for the persons living in the upper residential area. The second lowest CDR is observed for the persons living in the noncontiguous area where most of the families of army personnel live. These rates for major divisions do not depict the actual picture of the ecological groups, as the spatial distribution of demographic traits is affected by the *juggi*-dwellers, who (as already noted) have high levels of mortality and are generally distributed in the major divisions (Table VI.6). For example 39.0 per cent of the population living in upper residential area and 38.7 per cent in middle residential area of *juggi*-dwellers would increase the CDRs of these areas. The rank correlation coefficient for

the relation between the CDRs and the proportion of population living in *juggis* is +0.50 which is not statistically significant at the 5-per-cent level, but is significant with a greater probability of error (10-per-cent level). This coefficient becomes significant and shows (though mildly) that as the proportion of *juggi*-dwellers in a major division increases the CDR increases. It is probably the influence of *juggi*-dwellers which hides the true effect of environmental factors.

6.6 Factors Affecting Mortality

The data presented in this chapter appear to be inadequate and do not lead to any significant conclusions. However, a set of tentative suggestions from the data are advanced and the reader is warned against putting much reliance in them.

It is noted that although migrant status is not an important factor affecting the mortality levels of Karachi, a slightly higher mortality level does exist for the migrants from India than for the other migrant-status groups. Income appears to be inversely correlated with mortality for all the migrant-status groups. The immigrants from India also show an inverse association of income and CDR, but the correlation is statistically insignificant. This association probably is due to a comparatively lower level of living of the immigrants from India (as three-fifths of the *juggi*-dwellers were immigrants from India and only 14 per cent of the *juggi*-dwellers had a monthly family income of Rs. 300 or above). Labour-force status and the occupational group of the principal earner do affect mortality and produce variation in death rates. If the principal earner of the family is not in the labour force (is a beggar or a pensioner; *see* glossary) the death rate is high. The occupational groups do show an inverse association of class position and CDR. People living in *juggis* or who have meagre facilities, experience higher death rates than the rest of the population of Karachi. The death rates are higher in labour, middle class, and rural areas. The CDRs of Karachi do not conform to ecological patterns as the spatial distribution of demographic traits (especially of the middle and upper residential areas) is affected by the *juggi*-dwellers, who in 1959 were generally distributed in the major divisions. In general, poor lower-class persons with

substandard living conditions have higher mortality level than the relatively rich upper class with better living conditions. This is what one would expect in any society and, therefore, it is not a surprising finding.

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CHAPTER 7

SUMMARY AND IMPLICATIONS

7.0

Study of the demographic characteristics of an urban society of a developing country is important for understanding the role which urbanization may play in solving the national problem of population growth. In the past with economic development, and hence with urbanization, the demographic variables revealed a transitional pattern, *i.e.*, a transition from rapid growth, through medium growth and finally slow growth. A brief cross-sectional examination of the demographic variables of the people of Karachi, an area highly oriented to industry and commerce, does not support this preconceived pattern. Among the main variables dealt with in this study are size and growth of population, age structure, marital status, fertility and mortality.

7.1

The increase in the population of Karachi (the largest metropolis of Pakistan) has been phenomenal, from 14 thousand in 1843 to 0.436 million in 1941 to 1.126 million in 1951 to 1.840 million in 1959 and to 2.032 million in 1961. In other words, in less than a century (1843 to 1941) the population of Karachi increased by 31 times and in less than two decades (1941 to 1959) it increased by more than fourfold. Population densities are (as of 1961) 966 persons per square kilometre in the metropolis and 3,214 persons per square kilometre in the city. The metropolis is filled with migrants, mainly displaced persons from India and in-migrants.

The growth rates have been fluctuating due mainly to variation in the net migration. The lowest annual growth rate of 2.1 per cent has been observed for the decade 1921-1931 and the highest, 10.0 per cent per annum for the decade 1941-1951. The latter, though exhorbitant, has been accelerated by the immigration of displaced persons from India

and therefore is a special case. The more recent rates of growth of 6.3 per cent per annum for the period 1951-1959 and 5.6 per cent per annum for the period 1959-1961 show that the population of Karachi is increasing at a rate higher than that of urban population of Pakistan, of West Pakistan, of Lahore, or Dacca, the last two being the second and third largest metropolises of Pakistan. At least, 60 per cent of the current growth of the population of Karachi is due to excess of births over deaths; and of the rest, in-migration accounts for about two-thirds, while immigration accounts for about one-third. The recent trend of migration shows that in-migration is increasing and the immigration is decreasing.

7.2

The age distribution of the population of Karachi revealed by the 1959 survey shows that the age structure of immigrants from India is more balanced than the age structure either of in-migrants or of the natives. Significant changes have occurred in the age structure, during the period 1951 to 1959 and 1959 to 1961. The growth in quinquennial age groups has been uneven. The changes are mainly attributable to four factors: *i*) errors in age reporting; *ii*) changing pattern of net migration; *iii*) increase in fertility (which is in turn attributable to an increase in the proportion of females of reproductive ages); and *iv*) improvements in mortality conditions.

In spite of the heavy influx of adults (15 years-and-over) of working ages and underenumeration at youngest ages the proportion of children under 15 years in the total population of Karachi is as high as 41 per cent. For immigrants from India this proportion is the highest (43 per cent). The natives have the highest proportion (3 per cent) of older persons among the migrant-status groups. The overall dependency load is highest for the natives and lowest for in-migrants.

The masculinity ratio has shown a decrease in 1959 and 1961 over 1951 which gives an indication that, although migration into Karachi is still predominantly male selective, the sex differences are being narrowed down.

7.3

The data on marital status reveal that child-marriage in Karachi is insignificant. The age at marriage of both males and females is increasing but it is more true for females than for males. The proportion of married females in Karachi has increased since 1951 which, in turn, has increased the level of fertility. In-migrants give their sons and daughters in marriage at earlier ages than natives or immigrants from India.

A small proportion of slightly less than 1 per cent of the total husbands (2,450 out of 3,21,075) have more than one wife. Only in one case (in the sample) a husband did have three wives; in all other cases of polygynous marriages a husband had two wives.

More families in Karachi are broken by widowhood than by divorce or desertion. Natives have more marriage instability than migrants.

Differences in ages of husbands and wives are wide and show that a husband in Karachi tends to be older than his wife by 5 to 9 years. Such differences are narrower among the rich couples.

7.4

The immigrants from India have higher fertility rates than in-migrants or natives. Income does not appear to influence the level of fertility. Members of the armed forces have the highest fertility level among occupational groups. Fertility is highest among nuclear families, intermediate among extended families and lowest among joint families.

7.5

Immigrants from India who have the highest fertility have also a slightly higher crude death rate than natives or in-migrants. Income and also occupational groups show a negative association with CDR. The better the living conditions, the lower is the CDR. The mortality level is higher in labour, middle class and rural areas than in any other major division of Karachi.

7.6

The most industrialised metropolis of Pakistan is currently adding 1,25,000 to 1,50,000 souls to its population annually. A high birth rate

of 47 per thousand and net migration are the sources of addition while a declining death rate is the main source of depletion.

The main demographic variable, *i.e.*, fertility, does not show any sign of decline. On the contrary, it is apparent that the birth rate is rather stimulated by migration, better health-conditions and changing patterns of family and marriage—all of which are the by-product of economic development, industrialization and urbanization. Thus, the metropolis and probably other metropolises, cities and towns of Pakistan, aside from migration, are faced with the problem of high fertility.

The study implies that there may not be enough justification for regarding urbanization as an important determinant of fertility especially in the developing countries today. Industrialization and commerce have expanded in Karachi rapidly and have created new labour markets. Immigrants from India and people from other parts of Pakistan, attracted by better work opportunities, have moved into Karachi rapidly and are probably adopting many new ways of life in the metropolis. But in regard to fertility, they apparently still think in their old ways, and have not changed from their traditional pattern of high fertility. If their fertility does not begin a downward trend soon, while death rate is already declining, the increase due to excess of births over deaths (the influx of migrants remaining unchanged) will accelerate further the rate of growth of population. The administrators and city planners are usually aware and interested in the problem of migrants but the problem of excess of births over deaths attracts less attention. This study shows that in recent years the share of natural entries in the growth of population of Karachi has been greater than the share of the entries due to migration. Although the influx of a migrant may cause greater inconveniences to an urban community than a newly born baby, the latter is probably a greater burden than the former—as the migrants are usually working adults. The migration into the metropolis is no longer a production of Partition and has already tapered off. The main current problem of population growth is, therefore, no longer a product of net migration but rather of procreation.

In-migration into Karachi is increasing while immigration is declining. The contribution of the latter to future growth is likely to become

insignificant. Thus there are two main sources for the future growth of population in Karachi, *i.e.*, excess of births over deaths and in-migration. In a developing country, internal migration from rural to urban and from smaller urban areas to large urban areas is a normal process. It accompanies the industrialization process—which is usually a healthy sign of development. Thus, internal migration or urban-ward migration which provides a bulk of the labour force is not usually controlled. In-migration could be controlled if it were desirable to do so. But control on natural growth would be a preferred method through which the hazards of rapid growth of population can be overcome.

Although there are always unexpected developments which disturb demographic predictions, a few observations are worth-making. The population of Karachi will continue to grow rapidly perhaps for some decades. If the rate of growth observed for the period 1959 to 1961 continues, the population of Karachi will double itself approximately every 13 years. As stated by the Director General of Karachi Development Authority, the metropolis already has about 1,00,000 shelterless families and about 30,000 additional houses are required every year to meet the growing need [1]. Although the city planners are busy building and providing houses to the shelterless families, it is difficult for them to keep pace with the growth of population. By 1974 the 1961 population is likely to double itself, *i.e.*, to increase to approximately 4 million. With an inadequate supply of housing, the congestion and slums in the metropolis are likely to increase. Schooling facilities in the metropolis are already inadequate. A recent study shows that slightly more than one-third of the school-age population (5 to 20 years of age) is going to school [2]. With the current level of fertility, it seems difficult and not impossible for several years to achieve the desired goal of providing schooling for most of the school-age population. These and many other problems created by the growth of population particularly by its birth component are already acute and their magnitude is likely to increase.

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APPENDIX A

ENUMERATION SCHEDULE

Survey of Karachi Population

MIGRANTS
NON-MIGRANTS

CHUNK AND SEGMENT No.... .. ..

SERIAL No.....

1. Name of Head of Family.....Father's Name.....Address.....
2. Composition of Family:

Relationship to Head of Family (1)	Sex (2)	Marital Status (3)	Age (4)	Occupation		Income (Last month)		Normal Place of Work (9)
				Present (5)	Former (6)	Earned Income (7)	From Other Sources (8)	
(*i*) Head of Family.....	.....	.....	.....	.....	.....	.....	.....	.....
(*ii*)	.....	.....	.....	.....	.....	.....	.....	.....
(*iii*)	.....	.....	.....	.....	.....	.....	.....	.....
(*iv*)	.....	.....	.....	... .	.....	.....	.....	.....
(*v*)	.....	.....	.....	.....	.....	.....	.....	.....
(*vi*)	.....	....	.....	.. ..	.....	.....	.....	.....
(*vii*)	.....	.....	.....	.....	.....	.....	.....	.....
(*viii*)	.....	....	.....	.....	.....	.....	.....	.....
(*ix*)	.....	.....	.....	.....	.....	.....	.....	.....
(*x*)	.....	.....	.....	.....	.....	.....	.....	.....

3. No. of births last year .....No. of deaths last year.....
4. Type of Habitation: Pucca Semi-pucca *Jugzi* On roof top No regular shelter
5. Tenure of Habitation: Owner occupied Rented Rent Free
6. Facilities in the Habitation: Water Electricity Bathroom Latrine
7. Original Place of Residence Province/State.....Distt.....Town/Village.....Year of migration from India.....Year of arrival in Karachi.....
8. Claim, if any Verified Rs.....Not Verified Rs.....Not filed Rs.....
9. Prepared to buy any Plot by Instalments/Cash.....
10. Prepared to buy House by Instalments/Cash.....
11. If prepared to buy Plot or House, Amount that can be paid: Each Month Rs..... .. .. Total Cash Rs.....
12. Land owned in Pakistan: { Agricultural (Acres).....Location..... / Residential (Built).....Square yards and Location.....Unbuilt..... Square yards and location.....

GENERAL REMARKS BY ENUMERATORS:

Checked by

Signature of Enumerator.....

Date..... .....

APPENDIX B

SINGLE-YEAR AGE DISTRIBUTION

B.0

In this appendix an attempt is made to analyse and appraise the quality of the single-year age data obtained in the survey. The survey tabulations disclose the expected errors of the information collected, including misstatement of ages. There are many sources of errors in surveys, *e.g.*, underenumeration, overenumeration, missing information, wrong information, errors of interviewing response, of recording, sampling, coding, punching and tabulation. In this appendix one source of error, *i.e.*, misstatement of ages is mainly dealt with. As many defects of demographic data originate from irregularities in the age data, appraisal of their quality is important.

B.1 Age Reporting

B.1.0. In the survey under analysis ages were recorded as reported. In most of the cases ages were reported in completed years. In less than one per cent of the total schedules were ages reported in fractions. These were rounded for the purpose of tabulation. If at the time of enumeration a fraction was more than a half year it was rounded upward, if less than half a year it was rounded downward and to even numbers if it was reported exactly half a year.

The difficulty of getting even approximately correct ages of people especially in the developing countries of the world is well known. Illiteracy is considered the major cause of this [11, pp. 31-32]. Because of the same difficulty in Pakistan, the reported ages are usually erroneous. It is for this reason that the age tables in the official release for the 1951 Population Census were presented in broad age groups of 0-9, 10-39, 40-59 and 60 years-and-over [9, pp. 48-50]. This is a justifiable procedure if there is a general tendency toward misreporting of ages. If there is age-selective under- or overenumeration, then that kind of

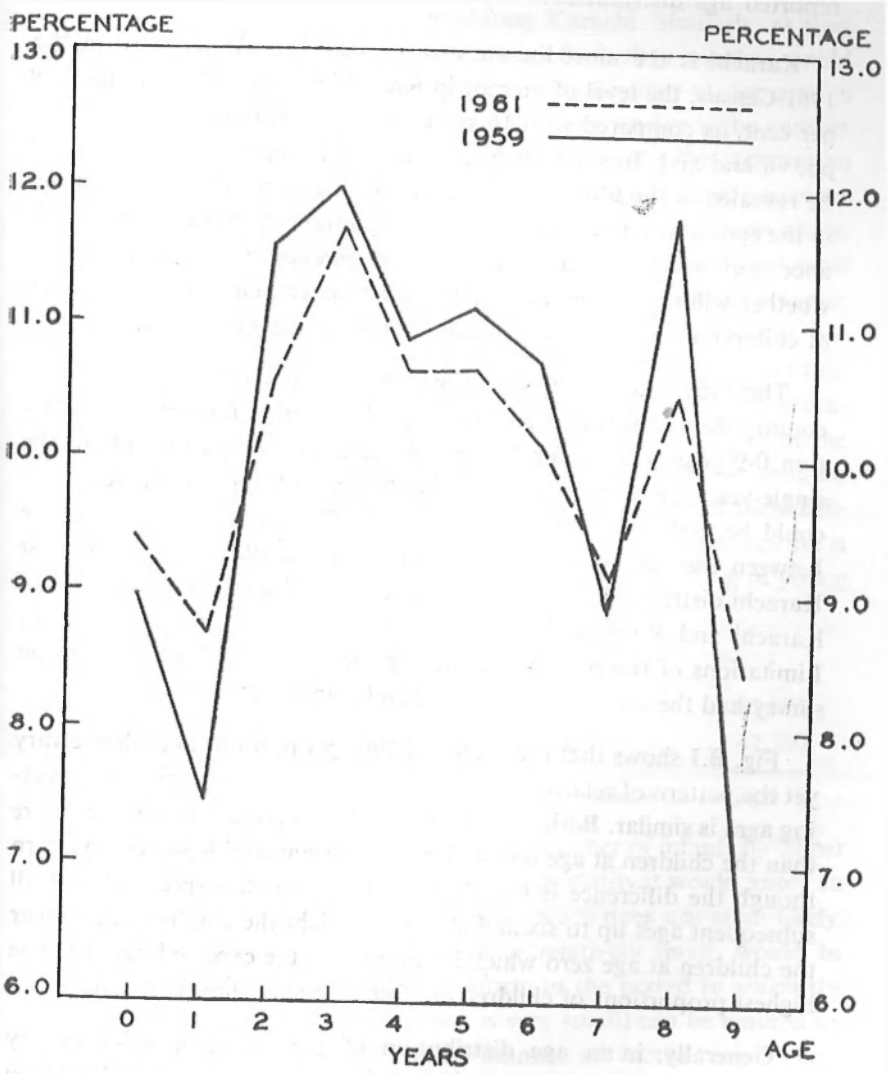

FIGURE: B-1 SINGLE-YEAR AGE DISTRIBUTION KARACHI 1959 AND KARACHI DISTRICT 1961

SOURCES: i) [7, P. IV-16]
ii) TABLE B-1.

broad grouping spreads such under- or overenumeration over a broader age group and conceals in this way a vital characteristics of the reported age distribution.

Karachi is the most literate area of Pakistan. As reported in the 1961 Census, the level of literacy in Karachi was slightly more than 39 per cent, as compared with 16 per cent for the country as a whole [8, pp. vii and xiv]. In spite of this, the age reporting for Karachi, as will be revealed in the following sections, is of low quality. The deficiencies in the age data can be attributed to: *i*) underreporting at digits of avoidance and overreporting at digits of preference by the respondents, whether wilfully or due to ignorance; *ii*) underenumeration, especially of children under five years of age; and *iii*) overenumeration.

The 1951 and 1961 Censuses which have so far been taken in this country do not provide single-year age distribution (except for population 0-9 years of age for 1961) and hence no comparison of all the single-year age data collected in the survey with those of the censuses could be undertaken. Fig. B.1 compares the age reporting up to age between the survey data for Karachi and the 1961 Census data for Karachi district. The differences between the size of the population of Karachi and Karachi district is too small to affect the comparison. Limitations of the comparison among the age data obtained from the survey and the censuses are outlined in Chapter 3.

Fig. B.1 shows that the 1959 and 1961 proportions at each age vary yet the pattern of relative preference and avoidance of digits for reporting ages is similar. Both in 1959 and 1961 children at age zero are more than the children at age one which is consistent to the expected pattern though the difference is less than what one would expect. But at all subsequent ages up to six and also at age eight the children outnumber the children at age zero which is contrary to the expected pattern. The highest proportions of children are found at ages three and eight.

Generally, in an age distribution of population growing mainly due to reproductive change, the number at age zero year should be expected to be the largest as compared to the number at each successive single-year age as more and more are born every year. Karachi had its population growing, but it was not closed to migration. One of the

two conditions in this is not fulfilled. Nevertheless, it is demographically a most unusual feature to have such small proportions at ages zero and one of a population of the type inhabiting Karachi. Similarly, as they grow up and pass through successive ages of life their number would be gradually reduced by death. Therefore, the number at age zero is usually higher than the numbers at successive ages and so is the number at age one. For the metropolis this is not true. What is the explanation for the irregularities observed in the age distribution of children under ten years of age? No one would expect children under ten years of age to out-migrate or in-migrate without their families unless and until there is a very special cause. Then why the number of children at age zero, although larger than the number of children at age one, is unexpectedly smaller as compared to each of the number at ages two, three, four, five, six or eight years? There is evidently some underenumeration of children at ages zero and one. It is also likely that part of the deficiencies observed in the age reporting is attributable to children erroneously reported at higher ages. Although the extent of these deficiencies in the absence of any immediate evidence is not known, yet it is observed that such deficiencies do exist in the age-reporting of young children.

The survey data reveal the following information:

number of births in 1958 ... ..: ...	80,675
number of infants (age 0) as of April 1, 1959 ...	47,700
difference	32,975

The number of births is greater than the number of infants by 69 per cent. If the entire difference is attributed to mortality it would imply an infant mortality rate of 403 per thousand which does not seem likely. The number of infants, which is already relatively small, would be reduced further if it is adjusted to conform to the period to which the births belong. This adjustment (which is very small) can be ignored on the assumption that the 1958 total number of births might also have included some births which actually occurred in 1959 (as discussed in Chapter 5) and, thus, inflated somewhat the number of reported births. From this scanty information, assuming that the births were more completely enumerated than infants (discussion in Chapter 5

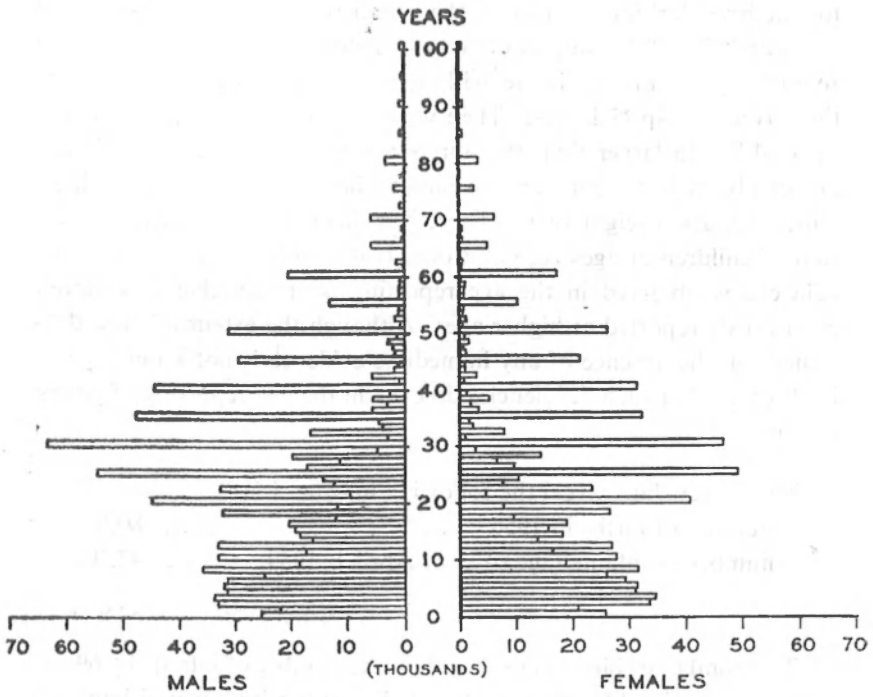

FIGURE: B·2 POPULATION BY SINGLE YEARS OF AGE AND SEX, KARACHI 1959

SOURCE: TABLE B·1

provides basis for this assumption), the following crude estimate of the underenumeration of infants is made:

total infants missing	32,975
died (assuming that Karachi had same infant mortality rate of 171 per thousand as for West Pakistan [3, p. 132])	13,995
net missing	18,980

In other words it is roughly estimated that more than one-fourth of all infants were omitted from the survey. Some of the infants might have been reported at higher age. The expected total number of infants then would be:

$$47700 + 18980 = 66680$$

B.1.1 Misstatement of Ages: Table B.1 and Fig. B.2 show the pattern of single-year age reporting for male and female populations. The bars at ages ending with 0 and 5 in Fig. B.2 are much longer than the rest. Bars at ages ending in digits 2 and 8 are more prominent than those at ages ending in digits 1, 3, 4, 6, 7, and 9. This pattern of age reporting revealed by the survey is not likely to be the result of systematic periodic variation in births in the past years nor could it very well be the result of age-selective migration, resulting in predominance of ages ending in 0, 2, 5 and 8 in 1959. Deficiencies in numbers of ages reported at digits 1 or 9 are pronounced as compared with other digits. Marked deficiencies are also noted in number of ages reported at digits 4, and 6. These deficiencies are, of course, mainly the result of preference for digits 0 and 5.

It will be observed that the configurations of the age-reporting of males and females are similar to each other. In other words, there seems a uniformity in the direction of errors of age reporting of males and females but the magnitude of the errors for females appears to be higher. This could partly be due to errors made by respondents who in the survey were not only providing information for themselves but also for other members living in the same household. The respondents were predominently males and while reporting for females they misstated in the same direction as for the males. But they misstated more for females than for males. Results based on further investigation of heaping of ages are given in the following section.

TABLE B.1

KARACHI: SINGLE YEARS OF AGE AND SEX, 1959

Terminal age digits and sex		All persons	TEN-YEAR AGE GROUPS									
Digit	Sex		0—9	10—19	20—29	30—39	40—49	50—59	60—69	70—79	80—89	90—99
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
All digits ...	m	9,98,575	270,300	201,025	207,925	146,850	84,225	48,325	27,475	8,125	3,575	750
	f	8,03,475	261,175	167,200	154,575	93,700	56,000	36,675	21,975	8,225	3,175	775
0 ...	m	2,54,325	23,875	30,950	41,875	59,500	41,350	29,075	19,100	5,350	2,675	575
	f	2,08,925	23,825	25,925	37,450	43,225	29,050	24,425	16,000	5,700	2,850	475
1 ...	m	50,200	20,500	16,375	9,000	2,575	800	450	400	100	—	—
	f	39,850	19,375	15,200	4,000	550	325	200	100	100	—	—
2 ...	m	1,16,700	30,875	30,925	30,725	15,475	5,325	1,550	1,300	400	100	25
	f	88,325	31,050	24,800	21,575	7,200	2,425	725	425	100	—	25
3 ...	m	64,675	31,600	15,250	11,875	3,350	1,400	700	325	175	—	—
	f	54,275	31,975	12,775	6,775	1,775	625	200	150	—	—	—
4 ...	m	66,825	29,425	17,450	13,300	4,150	1,125	850	300	200	25	—
	f	57,400	28,525	16,700	9,375	1,425	725	350	250	25	25	—
5 ...	m	1,93,700	30,000	18,350	51,300	46,450	27,375	12,450	5,425	1,550	675	125
	f	1,54,975	28,875	14,500	45,525	29,775	19,750	9,450	4,575	2,100	250	175
6 ...	m	72,825	29,575	19,175	16,075	5,275	1,350	950	125	250	50	—
	f	57,875	27,425	17,400	8,750	2,875	875	325	125	75	—	25
7 ...	m	50,700	23,200	11,275	10,675	2,800	1,675	925	75	—	50	25
	f	40,600	23,875	8,550	5,800	1,575	350	300	75	50	25	—
8 ...	m	91,725	33,700	30,150	18,825	5,100	2,700	875	325	50	—	—
	f	73,425	29,000	24,400	13,025	4,500	1,575	650	250	50	—	25
9 ...	m	36,900	17,550	11,125	4,275	2,175	1,125	500	100	50	—	—
	f	27,775	17,250	6,950	2,300	800	300	50	25	25	25	50

m = Male

f = Female

Source: [4, Table 1.21].

	Both sexes	Male	Female
Grand total	1803175	999250	803925
0 — 99 years	1802050	998575	803475
100 years-and-over	550	325	225
No information	575	350	225

B.2 Measurement of Age Heaping

B.2.0 Examination of the reported age data by means of the "blended" method introduced by Myers is one of the several methods to measure age heaping[1] [6, p. 413]. This method has been employed to examine the accuracy of the reported ages of the population of Karachi. This method, like any other method, has its limitations, yet it is a useful indicator of age-heaping especially when single-year age data are available. By this method, the reported ages in single years are mixed in such a way that they produce ten harmonious totals in the age data. The "blended" method is expected to produce almost equal totals at each digit. Since there are ten digits in all, the expected total at each digit is 10 per cent of the grand total. The extent of preference or avoidance for each digit is, thus, measured from the deviation of the observed total at each digit from the expected 10 per cent. The extent of digit preference or avoidance for all the digits is measured by an index which is the sum of the absolute deviations from the expected 10 per cent at each digit. In-migration of male workers from other parts of Pakistan must have affected the age distribution in Karachi. Since single-year age data are being examined this need not have much effect on the index. Ordinarily, one would expect the true ages of the in-migrants to be distributed evenly among digits 0 to 9, and the deficiencies in their age-reporting would show up in the same way as for rest of the population. In other words, the misstatement of ages of the in-migrants within the working age groups will possibly be the same as for rest of the population. The examination by migrant status will, however, throw some light on this aspect.

B.2.1 Preference for Digits by Sex and Migrant Status: In Table B.2 the results obtained by the "blended" method for the total population, natives, in-migrants and immigrants from India are compared by sex. The observed per-cent distribution against each digit in this table, when compared with the expected 10 per cent, reveals the tendency of digit preference and digit avoidance in age reporting. The indices measure the overall digit preference and avoidance for each group of the

1. For details of other methods, *see* [11, pp. 40-43].

TABLE B.2

KARACHI: PER-CENT DISTRIBUTION AND INDICES OF PREFERENCES FOR DIGITS OF AGE REPORTING BY MIGRANT STATUS AND SEX, 1959

Digit of age reporting	PER CENT											
	All persons*			Natives			In-migrants			Immigrants—India		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
All digits	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0	33.5	32.2	35.2	39.1	39.2	38.9	31.1	29.9	33.8	33.0	31.7	34.7
1	2.3	2.6	1.8	1.6	1.6	1.7	2.7	3.1	1.9	2.3	2.7	1.8
2	9.7	10.2	8.7	7.8	7.6	8.0	10.6	11.0	9.5	9.7	10.5	8.7
3	3.5	3.8	3.2	2.7	2.6	2.7	4.3	4.3	4.1	3.5	3.3	3.1
4	4.5	4.6	4.5	4.2	4.1	4.3	4.3	4.5	3.8	4.6	4.7	4.6
5	25.4	24.8	26.3	27.0	26.9	27.2	24.9	24.7	25.5	25.3	24.6	26.3
6	5.8	6.0	5.5	4.6	5.2	4.0	5.7	5.7	5.9	6.1	6.4	5.8
7	3.7	4.0	3.3	2.9	3.1	2.8	3.9	4.1	3.5	3.8	4.2	3.3
8	8.9	8.7	9.2	8.1	7.4	8.8	9.5	9.5	9.6	8.9	8.8	9.3
9	2.7	3.1	2.3	2.0	2.3	1.6	3.0	3.2	2.4	2.8	3.1	2.4
Indices ...	**77.8**	**74.4**	**83.1**	**92.2**	**92.2**	**92.3**	**73.1**	**71.0**	**78.4**	**76.6**	**73.6**	**82.0**

Source: [4, Table 1.21] and unpublished data of the survey.

Note: *Includes immigrants from countries other than India and persons with unknown migrant status.

population. If there were no deficiencies in the age reporting of these groups the deviation from the expected 10 per cent at each digit would be almost zero and consequently the sum of deviations would also have been close to zero.

The preference for reporting ages at digits 0 and 5 is noticeably high, the preference for 0 being more pronounced than that for 5. This is true for all the migrant-status groups irrespective of sex. The avoidance of odd digits is more pronounced, especially of digits 1 and 9, than of even digits. The indices, which are notably high for all the groups of population, reveal a greater amount of error in age reporting of the population of the metropolitan area than of other parts of the world. The preference of digits are more marked in the case of female than of the males among the migrants but there is no sex differential among the natives.

Table B.2 shows pronounced differences in misstatement of ages between the migrant-status groups. This occurs more among natives (having higher index than the rest) than among migrants, the latter being apparently more conscious of their ages. The event of migration is in itself helpful in calculating ages, especially of those who were born immediately before or after the event. Migrants are exposed to various formalities in order to get social and legal rights and privileges. Immigrants from India, however, tend to misstate their ages more than do the in-migrants.

It is surprising to note that, among the natives the indices of digit preference and avoidance are almost equal for both sexes. If sex differences in the misstatement of ages can be thought of not only as a product of the differences in the sex of the respondents, but also a function of sex differences in the educational attainments, than one could conclude that the sex differences in the field of education are larger among the migrants than among the natives. In all other migrant-status groups there are marked sex differences, as shown by their indices in Table B.2. More misstatement of ages is found for women than for men, or women tend to misstate their ages more than men. Preference on the part of migrant males for digit 2 is more pronounced than the natives, but it is not easy to see the immediate significance of this phenomenon.

TABLE B.3

KARACHI: MIGRANT STATUS AND SEX BY PREFERENCE FOR DIGITS IN AGE REPORTING: 1959

Reference for digits in age reporting	MIGRANT STATUS											
	All persons			Natives			In-migrants			Immigrants—India		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1st ...	0	0	0	0	0	0	0	0	0	0	0	0
2nd ...	5	5	5	5	5	5	5	5	5	5	5	5
3rd ...	2	2	8	8	2	8	2	2	8	2	2	8
4th ...	8	8	2	2	8	2	8	8	2	8	8	2
5th ...	6	6	6	6	6	4	6	6	6	6	6	6
6th ...	4	4	4	4	4	6	4	4	3	4	4	4
7th ...	7	7	7	7	7	7	3	3	4	7	7	7
8th ...	3	3	3	3	3	3	7	7	7	3	3	3
9th ...	9	9	9	9	9	9	9	9	9	9	9	9
10th ...	1	1	1	1	1	1	1	1	1	1	1	1

Source: [Table B. 2].

It is of interest to note that index of in-migrant males is the lowest. This shows that selective in-migration of male worker, who were either single or had left their families behind although they affect the overall age distribution, actually lower the index of digit preferences. This is so, because their age distribution among digits 0 to 9 is better than the rest of the population.

Table B.3 lists the order of magnitude of the preference for digits by sex and migrant-status groups. It is noted that the preference for digits 0, 5, 9 and 1 is exactly the same for all groups. Digit 2 is the third most preferred digit for all males whereas digit 8 is the third most preferred digit for all the females. The strong preferences at 0 and 5 may have—one would expect—come from the neighbouring digits, namely 9, 1 and 4, 6. Hence, it is gratifying to see the avoidance at 9 and 1. The attitude to 4 and 6 on the other hand seems to be quite neutral, they have the fifth and sixth place in preferences. Those which should be neutral as a result of the preferences at 0 and 5 and consequent avoidance at 9, 1 and 4, 6, namely 2, 3, 7 and 8 are not neutral. Psychology apparently enters the field and lifts 2 and 8 into the preferred lot and leave their odd sisters (3 and 7) among the avoided digits. These findings are generally in confirmation of findings elsewhere and should be used for delineating age-groupings when age distributions are required in fewer age groups than single years of age. Thus, differences in the digit preference for the six digits are obvious by migrant status and also by sex.

B.2.2. Conclusion: The force of attraction of certain digits, and the reasons for avoidance of others, cannot be determined from the data. However, it is generally observed in other populations that heaping of ages at digits 0 and 5 is commonly reported in censuses, and that the accumulation at 0 is generally higher [12, p. 19]. This has also been observed for the population of Karachi. In this country, where the level of literacy is low (less than 20 per cent), registration of births is inadequate, possession of a birth certificate is not legally required, and birthdays are not usually celebrated (and even if celebrated they would not fall regularly on the same date of the Gregorian calendar), age-reporting must suffer from many distortions.

It has been noted in many populations that there are more deficiencies in age-reporting of the females as compared to that of the males [1, pp. 195-222]. Such sex differentials have also been noted for the migrant population of the metropolitan area. The natives show insignificant sex differentials.

Preference of ages to a greater extent at the even digits than at the odd digits, has also been pointed out for other populations [10, p. 40; 2, p. 66]. The findings for the population of Karachi also affirm this.

It was pointed out earlier that the extent of preference and avoidance of digits for age-reporting observed for the metropolis is much higher as compared to some other parts of the world. The following indices provide a few examples:

Bengal	1901	62.6	for male population [11, pp. 41-44]
Russia	1897	20.5	
Brazil	1940	16.3	
Australia	1933	4.0	
Turkey	1945	39.3	
Sweden	1939	1.2	
United States	1880	20.8	for total population [10, p. 46]
United States	1950	4.4	

These indices compare with 77.9 for both sexes, 74.4 for males and 83.1 for females of Karachi. Similar indices computed by the author for Amman on the basis of single-year age data reported in a sample survey are 53.8 for both sexes, 49.1 for males and 58.4 for females [5].

The measurement of the accuracy of age reporting for Karachi by means of the "blended" method may not be free from some shortcomings but it successfully tests the age data. The application of this method to the age distribution reported in the 1961 Census could test these findings but availability of single years reported age data is prerequisite for this method. Unfortunately, such data have not been tabulated for 1961 (except for population 0-9 years of age). If such data were made available for the country as a whole, as well as for smaller units, a comprehensive examination of deficiencies in age-reporting

could be undertaken. However, it must be pointed out that this kind of investigation deals merely with digit preferences of the population *enumerated*. As age-selective deficiencies in the population *omitted* from enumeration can be expected the findings need to be modified, *e.g.*, if large numbers of infants aged zero were omitted as they probably were, the true extent of preference for digit zero is greater.

If large number of children aged one were omitted as they probably were, the true extent of avoidance for digit one is smaller. In any case, the indices provide a challenge to the producers and users of the demographic data of Pakistan. If the deficiencies in age-reporting in the country are at least of the same magnitude as found in the age-reporting of Karachi, they are not negligible.

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APPENDIX C

GLOSSARY

ASFR: Age specific fertility rate.

Age: Ages, as reported by the respondents at the time of enumeration, were recorded.

Age specific fertility rate: $ASFR_i$ $= \frac{\text{birth during 1958 to women in age group } i}{\text{women in age group } i \text{ on July 1, 1958}}$

where i is any of the seven intervals of five years age groups 15-19, 20-24, 25-29, 30-34, 35-39, 40-44 and 45-49.

CBR: Crude birth rate.

CDR: Crude death rate.

Children-women ratio:

i) $= \frac{\text{children under 1 year of age}}{\text{women 15-49 years of age}}$ (both on April 1, 1959) $\times$ 1,000

ii) $= \frac{\text{children under 5 years of age}}{\text{women 15-49 years of age}}$ (both on April 1, 1959) $\times$ 1,000

Crude birth rate $= \frac{\text{births during 1958}}{\text{Population on July 1, 1958}} \times 1{,}000$

Crude death rate $= \frac{\text{deaths during 1958}}{\text{Population on July 1, 1958}} \times 1{,}000$

Chunk: The area of Karachi was arbitrarily divided into manageable divisions named chunks for sampling purposes.

Dependency ratio: $\frac{\text{children under 15 years } \textit{plus} \text{ persons 65 and over}}{\text{population in age group 15-64}} \times 100$

Difference between ages of husband and wife:	The difference is taken by subtracting the reported age of the younger spouse from the age of the older spouse.
Density:	Population per square kilometre.
Divorced:	A person who was reported as divorced at the time of enumeration was recorded as such.
Ever-married women:	Includes all women who were reported as married, widowed, divorced and separated.
Extended family:	A family consisting of nuclear family (as defined) *plus* one or more other relatives (related either to the head or to the spouse) sharing economic and living arrangements.
Facilities in the household:	Includes electricity, running water, bathroom and latrine.
Family:	Has been loosely used to refer to any type of family (*see* primary family, nuclear family, extended family and joint family).
Family income:	Includes total of the personal income of all the individuals related to the head of the household by blood or marriage.
Family-type household:	A household containing at least one family as defined.
Fertility:	Refers to human reproduction and in the text has frequently been used as a synonym to birth rate.
GFR	General fertility rate.
GFR(W):	General fertility rate for all women 15-49 years.
GFR(WM):	General fertility rate for married women 15-49 years.
GFR(WMH):	General fertility rate for married women 15-49 years, husband present.
GRR:	Gross reproduction rate.

General fertility rate for women 15-49 years—

$$= \frac{\text{Births during 1958}}{\text{Women 15-49 years on July 1, 1958}} \times 1{,}000$$

General fertility rate for married women 15-49 years

$$= \frac{\text{Births during 1958}}{\text{Married women 15-49 years on July 1, 1958}} \times 1{,}000$$

General fertility rate for married women, husband present 15-49 years

$$= \frac{\text{Births during 1958}}{\text{Married women 15-49 years husband present on July 1, 1958}} \times 1{,}000$$

Gross reproduction rate— = Total fertility rate (TFR) $\times \frac{100}{205}$ where $\frac{100}{205}$ is the assumed ratio of female births to total births.

Habitation: Any structure or any space used by a household as a living place.

Household: A household or a family or a group of families or a group of persons living together and eating from the same kitchen.

Infant mortality rate: $\frac{\text{Deaths of children under 1 year of age in the calendar year}}{\text{No. of births in the same calendar year}}$

Inmigrant: Migrant (as defined) whose original place of residence is Pakistan, excluding Karachi.

Immigrant: Migrant (as defined) whose original place of residence is outside Pakistan.

Joint family:	Consists of nuclear family (as defined) *plus* one or more subfamilies (as defined) with or without other relatives sharing economic and living arrangements.
Juggie:	A dwelling made of straw, bamboo, canvas, sacks or mats and some mud plaster.
Karachi:	*See* metropolis.
Karachi District:	An area of 3,515 square kilometres consisting of Karachi (metropolis) as covered in the survey *plus* 37 villages (*see* Section 1.1 of Chapter 1).
Labour force:	All persons who were gainfully employed or were actively seeking job at the time of enumeration and also unpaid family workers.
Major divisions:	Chunks were grouped into eight major divisions so as to obtain a more general idea about the pattern of spatial distribution of various characteristics of the metropolis.
Married:	A person reported as married at the time of the enumeration whether the first time or whether remarried after having been widowed or divorced and excludes widowed, divorced and separated.
Married couples:	A husband and his wife in monogamous union or a husband and his first wife in polygynous union.
Masculinity ratio:	Number of males per 100 females.
Metropolis:	The area of 2,102 square kilometres covered in the survey as shown in map on pages (*ii*) and (*iii*) is consistent with the former Federal Capital Area (later called Federal Territory), is greater than the City but smaller than the district of Karachi. In the text this term has frequently been used as a synonym of Karachi.

Migrant:	A person whose family's original place of residence is not Karachi. (In the survey, the migrant status and the original place of residence were recorded on each schedule for the entire family and not against each individual. Therefore, the head and all persons who were related to the head were given the same migrant status as shown on the schedule. Thus, children born to migrant families in Pakistan and natives moved into the migrant families by marriage were also classified as migrants.)
Monogamy:	The practice of being married to one at a time. It refers here to a male who has one wife only.
Mortality:	Refers to frequency of deaths and is sometimes used in the text as a synonym of death rate.
Native:	A person whose family's original place of residence is Karachi.
Nuclear family:	A primary family (as defined) is a nuclear family if it consists of one of the following three types: *i*) husband, wife and never-married child/children. *ii*) husband and wife, *iii*) one parent and never-married child/children.
Occupational group:	The reported occupations were grouped into broad categories more or less resembling the International Standard Classification of Occupations.
Partnership household:	A household containing more than one person related or unrelated, but no family.
Personal income:	A sum of individual's income (earned and received from other sources such as pension, rent) in the month preceding the month of enquiry.

Persons not in labour force:	Persons who were neither working nor seeking work. Students, pensioners, retired persons and housewives, are included in this category.
Polygamy	A form of marital union in which a person is married to several persons at the same time.
Polygyny:	A form of marital union in which a man has two or more wives at the same time.
Primary family:	A multiple persons' household of an independent character when the members of the household are all related to the head by blood or marriage, such that at least there is one nucleus, excluding servants and lodgers.
Principal earner:	Income is the main criterion for determining a principal earner in a household. From all earners in a household, the one whose earnings are greatest is selected as a principal earner. In cases in which income is not reported or two earners have the same income or a household has zero income, a person who has a better occupation or appears to be the one who is likely to earn more than other members of his household is selected.
Pucca:	A dwelling with all its walls and roof made entirely of bricks, stone or concrete.
Segment:	A chunk was divided into clusters each of about 48 households on the average, called segments. It was a sampling unit selected at random and enumerated completely.
Semi-pucca:	A dwelling made partly of pucca material and partly of mud (*see* Pucca).
Separated:	A spouse who was reported as separated was recorded as such. The separation may not necessarily be a legal separation.

Single-person household: A household containing one person only.

Subfamily: A married couple and their never-married children, if any, or a parent with one or more never-married children, related to the head or spouse of the head of primary family and sharing economic and living arrangements.

TFR: Total fertility rate:

$$= 5 \sum_{1}^{7} \text{ASFR}_i \times 1{,}000 \text{ (}\textit{see}\text{ ASFR)}$$

Unemployed: All persons who were not working but claimed to be looking for work at the time of enumeration.

Widowed: Persons reported as widowed at the time of enumeration.

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