

## GEOGRAPHIC VARIATIONS OF FERTILITY RATES IN ARAB COUNTRIES\*

By

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The countries covered in this study extend from the Atlantic Ocean to the Arabian Gulf. These countries are Morocco, Algeria, Tunisia, Libya, Egypt and Sudan in North Africa; Syria, Jordan, Iraq and Kuwait in South West Asia, altogether, ten in number. The ten countries together have a total area of about 9 million Km<sup>2</sup> and a population of about 90 million inhabitants and thus constitute 6.6½ of the land area of the world, but only 2.7½ of the total population of the world in 1965.

Sudan is the largest Arab country (2,505, 813 Km<sup>2</sup>) and Kuwait is the smallest (16, 000 Km<sup>2</sup>). Similarly Egypt is the largest in population size (29million inhabitants in 1965), and Kuwait is the smallest (less than ½ a million in 1965). The density of population also differs between these countries, with Libya having the lowest density (0.9) and Morocco the highest (29.9). The physiographic density reaches 30 persons per Km<sup>2</sup> in Morocco, Kuwait and Egypt and drops to 5 persons in Sudan, Algeria and less than one person per Km<sup>2</sup> in Libya. The density per sq. Km. of cultivated land shows a big difference; it reaches 748 persons in Egypt against 17 in Iraq, 59 in Syria and 26 in Algeria.

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\*This paper was a result of a joint-research between the author and M.W. Nouri from Syria under the supervision of Dr. K.G. Zachariah, an U.N. expert in Cairo Demographic Centre in 1970.

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In general, the fertility level in Arab countries is high, but the level varies somewhat from country to another. Many of the Arab countries cover vast stretches of land. Therefore, the level of fertility in one part of the country may be different from that in other. Fertility of a population varies according to its socio-economic status. On this account also one should expect variation in fertility level from one region of the country to another. A study of the extent of such variation in the 10 Arab countries is the object of this study.

## I. TYPE OF GEOGRAPHICAL UNITS

Aiming at showing the regional and other geographic variations in fertility in Arab countries, the study uses the following geographical units :

- a) *Countries* : Because of the lack of data for some of the Arab countries only 10 countries are included. The names of these countries have been mentioned early.
- b) *Regions Within Countries* : Every Arab country covered in this study was divided into major geographical regions. This division was based on the physiographic features and administrative boundaries. Accordingly, every main region distinguished with a certain physiographic landscape in a certain direction and limited by the boundaries of one or more governorate. For example, Morocco was divided into three regions : South-Western region, Central region and North Coastal region. Algeria also was divided into three regions : Internal region, North-Eastern Coastal region and

North-Western Coastal region. Tunisia was divided into Southern, Central and Coastal regions. Libya, into three regions, Western, Eastern and Southern regions. In case of Egypt, where the Nile Valley and the Delta are the principal inhabited area, the country was divided into Lower Egypt, which is Nile Delta, Middle Egypt and Upper Egypt, the last two comprising the Nile Valley. Sudan, as a vast country covering about 2.5 million sq. Km., is divided into three main regions : Southern region, with its unique human landscape, Mid-Central region, where agriculture is the main economic activity, and Northern Desert region. In the Asian region, Syria was divided into three regions : North Eastern region, North Western region, and Southern region, Jordan into two : Eastern Bank and Western Bank of River Jordan. Iraq was divided into three regions : Western region, Northern region and Southern region. Kuwait with its small area is divided into capital region and other areas.

- c) *Urban and Rural Units* : Rural and Urban areas of a country are not contiguous geographic units; the sub-areas in each are scattered all over the country. Although they are not contiguous units each rural or urban centre has a geographic boundary. We have therefore included them in our study of geographic variations in fertility rates.

The Urban-Rural variations in fertility are studied according to the local definition of Urban. This definition is not the same in all the Arab countries, and Urban is not explicitly defined in some of them. For Example, in Morocco, Algeria and Tunisia

populations are considered urban if they are living in centers having local self government. In Egypt and Syria, governorate and district capitals are considered urban.

Greater details of the differences in the definitions are given in the appendix.

- d) *Urban Centers by size* : In addition to the comparison of all urban areas with rural areas we tried to study variations within urban areas by size of the urban centres. However, it was not possible to include in this analysis all the towns :only a few are included. Selected towns in every country were arranged according to the size; in Morocco (10 towns), in Algeria (4), in Libya (3), in Egypt (12), in Sudan (3), in Syria (3), in Iraq (4) and in Jordan (3).
- e) *Variations within some big Cities* : The fourth type of geographic units is sub-areas within big cities. Fertility varies within large cities from one part to the other. A geographic pattern of variation may be discerned in some of the cities. However, in our study, we have taken for analysis only one city namely Cairo. This is the biggest city in the whole Arab World. The analysis may be taken as an example, (but need not typical) showing the type of fertility variations within big urban centres.

## II. AVAILABILITY OF FERTILITY DATA AND TYPES OF FERTILITY MEASURES

The ten countries vary considerably with respect to the availability of the data related to geographic variations in fertility. At one extreme there is the Sudan which has not yet taken a "census" in the strict meaning of the term "census". In 1955/56 a sample of the population of the country was enumerated over a period of fourteen months. Since then, a series of population and housing surveys were conducted in the urban areas of the northern provinces. The demographic data available for the Sudan consist of such fertility measures as crude birth rate and child-woman ratio by provinces and by mode of living as obtained in the 1955/56 census and the 1964/66 sample survey of towns. On the other extreme, there is Egypt with abundant census and vital statistics data. Since the relevant data of the latest census taken in 1966 are not available, fertility measures by regions were calculated according to the previous census of 1960 and the vital statistics of the same year.

Kuwait is an example of a country which has a recent census(1) and a vital registration system which provides fairly reliable information on the geographic variations in fertility. In the other African countries, measures have been derived mainly from census results. Morocco, Algeria, Tunisia and Libya, have census data on geographic variations in the years 1960, 1966, 1966 and 1964 respectively. In Algeria and Tunisia especially in the latter the birth registration is fairly complete (2).

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1) Kuwait has taken its latest census in 1970, but the data from this census were not available at the time of writing this report.

2) K.C. Zachariah, *The Demographic Measures of Arab Countries; a Comparative Analysis*, (unpublished), p. 3.

The sources of data for each of the countries are indicated below :

- Morocco : The age distribution from 1960 census of Morocco, fertility data from 1961—1963 demographic sample survey.
- Algeria : The age distribution from 1966 census of Algeria, birth registration data for recent years.
- Tunisia : The age distribution for 1966 census of Tunisia, birth registration data for recent years.
- Libya : The age distribution from 1964 census of Libya.
- Egypt : The age distribution for the 1960 census and birth registration data for the same year.
- Sudan : Population sample census of 1955 — 1956.
- Syria : The age distribution from 1960 census of Syria.
- Iraq : The age distribution from the 1965 census of Iraq.
- Jordan : The age distribution of 1961 census of Jordan and birth registration data for recent years.
- Kuwait : The age distribution of 1965 census of Kuwait and birth registration data for recent years.

From the above description of the availability of fertility data for the Arab countries, it is evident that only

simple measures of fertility can be used in the analysis. The most widely usable measure is the child woman ratio, that is the ratio of children aged 0—4 or 5—9 years to women in reproductive ages (15—44) or 20—49 years).

In a few countries such as Egypt, Kuwait, Algeria and Tunisia it is possible to use the crude birth rate and similar measures that are calculated from current birth registration data.

Table (1) shows the availability of fertility measures for studying geographic variations of fertility in the 10 Arab countries covered in this study :

From Table (1) it is evident that the most widely used fertility measure is the child woman ratio. The limitations of the measure for fertility comparison are well known. This ratio is strongly influenced by deficiencies and irregularities in the census results. Although under-enumeration at the census may occur in any age group and, hence may affect both the numerator and the denominator of the ratio, it appears that in most censuses a greater proportion of young children is omitted from the count than of older persons. Moreover, the child-woman ratio is often greatly influenced by variations of infant and child mortality and by the effects of migration or population structure which are likely to be especially important in rural-urban comparisons. However, in this study child-woman ratio is used for comparison within a country at one census and therefore the effect of differential enumeration and differential mortality will be a minimum.

Table 1. Availability of Fertility Measures for Studying

| Country and Fertility Measure | Major Regions | Urban Rural | Urban by size | Within cities |
|-------------------------------|---------------|-------------|---------------|---------------|
| 1. Morocco (1961)<br>C.W.R.   | ✓             | ✓           | ✓             | *             |
| 2. Algeria (1966)<br>C.W.R.   | ✓             | ✓           | ✓             | *             |
| C.B.R.                        | *             | ✓           | *             | *             |
| 3. Tunisia (1965)<br>C.W.R.   | ✓             | ✓           | *             | *             |
| C.B.R.                        | ✓             | *           | *             | *             |
| G.F.R.                        | ✓             | *           | *             | *             |
| 4. Libya (1964)<br>C.W.R.     | ✓             | ✓           | ✓             | *             |
| 5. Egypt (1960)<br>C.W.R.     | ✓             | ✓           | ✓             | *             |
| C.B.R.                        | ✓             | ✓           | ✓             | *             |
| G.F.R.                        | ✓             | ✓           | *             | *             |
| 6. Sudan (1955/56)<br>C.W.R.  | *             | *           | ✓             | *             |
| C.B.R.                        | ✓             | ✓           | *             | *             |
| 7. Syria (1950)<br>C.W.R.     | ✓             | ✓           | ✓             | *             |
| 8. Jordan (1961)<br>C.W.R.    | ✓             | ✓           | ✓             | *             |
| C.B.R.                        | ✓             | *           | *             | *             |
| G.F.R.                        | ✓             | *           | *             | *             |
| G.R.R.                        | *             | *           | ✓             | *             |
| 9. Iraq (1965)<br>C.W.R.      | ✓             | ✓           | ✓             | *             |
| 10. Kuwait (1965)<br>C.W.R.   | ✓             | ✓           | *             | *             |
| C.B.R.                        | ✓             | ✓           | *             | *             |
| G.F.R.                        | ✓             | ✓           | *             | *             |

✓ Shows that the measure can be calculated

\* Shows not available data.

In case of measurements based on vital statistics, it is likely that the comparisons are affected by differential under or over-registration. This point is particularly significant in rural-urban comparison. Crude birth rate is also affected by age-sex distribution of the population. The effect of population composition is eliminated by calculating sex-age adjusted birth rate and general fertility rate.

### III. VARIATIONS OF FERTILITY BETWEEN COUNTRIES

As mentioned earlier the overall fertility level in Arab countries is high. However, there are some differences in their levels. Egypt, which is the biggest political unit in the region, seems to have the lowest fertility rates. At other end of the scale come countries like Morocco, Algeria, Sudan, Jordan and Iraq. The fertility measures from which the above conclusions are drawn are given in Table (2) and Figure 1. On the whole it was found that Asian Arab countries (Syria, Jordan, Iraq and Kuwait) have relatively higher fertility rates than the African Arab countries. If we consider these countries by their geographic locations we find that the C.B.R. decreases from west to east along the Mediterranean. It is 49.6% in Morocco, 49.5% in Algeria, 46.4% in Tunisia, 46.4% in Libya and 44.5% in Egypt. The pattern in Asia is just the opposite; the rate increases as one goes from west to east. The C.B.R. is 47.9% in Syria, 49.2 in Jordan, 49.5 in Iraq, then reaches 51.0% for the Kuwaitians in Kuwait. Thus, in the Arab world, Egypt is a zone of low fertility (relatively); as one goes further away from Egypt the C.B.R. increases.

Table 2. Some Fertility Measures in 10 Arab Countries (1965)\*

| Country                     | C.W.R. |      | C.B.R. | G.R.R. |
|-----------------------------|--------|------|--------|--------|
|                             | 0—4    | 5—9  |        |        |
| Kuwait (Kuwaitians) .. .. . | 1039   | 1048 | 51.0   | 3.67   |
| Algeria .. .. .             | 964    | 883  | 49.5   | 3.50   |
| Iraq .. .. .                | 934    | 893  | 49.5   | 3.48   |
| Syria .. .. .               | 937    | 890  | 47.9   | 3.46   |
| Jordan .. .. .              | 920    | 837  | 49.2   | 3.46   |
| Tunisia .. .. .             | 921    | 864  | 46.4   | 3.41   |
| Morocco .. .. .             | 896    | 835  | 49.6   | 3.40   |
| Sudan .. .. .               | 877    | 828  | 49.0   | 3.40   |
| Libya .. .. .               | 898    | 812  | 44.5   | 2.97   |
| Egypt .. .. .               | 803    | 751  | 44.5   | 2.97   |

\* C.D.C. Newsletter, June 1969, No. 1; the C.W.R. re calculated from original data.

#### IV. REGIONAL VARIATIONS WITHIN COUNTRIES

In all the countries we have analysed, fertility seems to vary from one part of the country to the other. The relevant measures are given in Table (3). For example, in Morocco it is observed that fertility is higher in South West region than in the Central and North Coastal region. The child-woman ratio (0—4) in the South West region is higher by 46 units (per 1000) or 5% when compared with the Central region, and by 71 units (per 1000) or 8% when compared with the North Coastal region. The index of fertility based on children (5—9) gives more or less the same type and extent of differentials.

In Algeria, it is observed that fertility in the Internal region and North Eastern Coastal region is higher than

that in the North Western Coastal region. The child-woman ratio (0—4) in the Internal region is higher by 25 units (per 1000) or 2.5 % when compared with N.E. Coastal region and the same degree of difference could be found between N. E. Coastal region on the one hand and N.W. Coastal region on the other. The fact, that the Internal and the N.E. Coastal regions have higher fertility than N.W. Coastal region can also be demonstrated by the child-woman ratio based on children (5—9). In the first two regions this ratio is higher by 11% than the third region, although there is no clear difference between the Internal and the N.E. Coastal region.

In Tunisia there are several evidences that fertility decreases from south to north direction. The Southern region has the highest fertility rate. Child-woman ratio (0—4) in the Southern region is higher by 3% when compared with the Central region which in turn has higher child-woman ratio when compared with the Coastal region (8%). The adjusted birth rate and general fertility rate show the same type of variation. In Southern region, the adjusted birth rate is higher by 7% and general fertility rate by 8% than the Central region. The two fertility indices are higher in the latter region than the coastal region by 6% and 5% respectively.

Although the CWR (0 — 4), the adjusted birth rate and general fertility rate show the same type of regional variations, the index of fertility based on children (5—9) differs to a certain extent, where Central region is higher than the Southern region by 2%. Since the difference is very small we may ignore this discrepancy. In the same time it corresponds with the other measures indicating that the Coastal region has the lowest level of fertility than the other two regions.

In Libya there is no evidence of clear geographic variations in fertility within the country. By using CWR (0—4) it is noticed that the Western region has higher ratio by 2% than the Southern region, and this latter region in turn, has higher ratio than the Eastern region by 5%. But a different conclusion could be reached if CWR (5—9) is used as a measure. On the basis of this index the Eastern region is less fertile than the Western region which in turn is less fertile than the Southern region.

In Egypt there is considerable evidence to show that fertility is higher in Lower Egypt than in Middle and Upper Egypt. The Child-woman ratio (0 — 4) in Lower Egypt is higher by 56 units or 7.6% than that of the Middle Egypt and by 14 units or 1.8% than that of Upper Egypt. The index of fertility based on children (5—9) gives the same type of geographic variations, where Lower Egypt is higher than Middle Egypt by 146 units (per 1000) or 21.4%, and by 96 units or 13.1% when compared with Upper Egypt. The adjusted birth rate and general fertility rate show the same type of variation between Lower Egypt on the one hand, and the other two regions on the other. The adjusted birth rate in Lower Egypt is higher by 10.5 % when compared with Middle Egypt and by 19.4% when compared with Upper Egypt. The corresponding percentage differences when the general fertility rate is used as the index are 10.6 % and 30.9% respectively.

In Sudan, fertility decreases from South to North. It is highest in the Southern region and lowest in the Northern region. Crude birth rate in the Southern region is higher by 7.2 units or 15% compared with the Mid-Central region. This latter region in turn, has a higher crude birth rate by 1.7 units or 4% when compared with

Northern region, which constitutes the largest area of the Sudan and is characterized by its nomadic mode of life.

In Syria, fertility seems to be higher in the North Eastern region than the North-Western region, which in turn has higher fertility than the Southern region, CWR (0—4) in N.E. region is higher by 113 units or 11% than the N.W. region. This latter region has a higher ratio and the difference is 56 units or 6% compared with the Southern region. The index of fertility based on children (5—9) shows the same pattern of variations within Syria. The N.E. region is higher by 105 units or 11% than the N.W. region, whose index is higher by 113 units or 13% than the Southern region.

In Jordan, all indicators show that fertility is higher on the Eastern bank of river Jordan, than on the Western bank of this river. CWR (0—4) is higher by 53 units or 6%; CWR (5—9) is higher by 99 units or 12%, the adjusted birth rate shows a small difference and general fertility rate is higher by 7 units (per 1000) or 3%.

In Iraq, the Western region seems to have the highest fertility followed by Northern region, and Southern region. The CWR (0—4) in Western region is higher by 136 units or 12% compared with the Northern region. The ratio of this last region is higher by 93 units or 9% compared with that of the Southern region. The index of fertility based on children (5—9) shows the same type of variation. It is higher in the Western region than in the Northern region (by 131 units or 13%). Also this latter region has higher ratio and the difference is 50 units or 5%.

Kuwait State is too small to be divided into broad geographic regions. But on the whole, it can be divided into two main regions: the capital region and the other areas. From Table (3) it is quite clear that fertility is higher in "other areas" than in the capital region. The CWR (0—4) in the "other areas" is higher by 198 units (per 1000) or 22 % than the capital region. Adjusted birth rate shows a big difference of 16.5 units per 1000 or 35%. The same type of difference could be seen in general fertility rate where the difference is 95 units (per 1000) or 45%.

The variations in fertility in Arab countries are illustrated in Fig. 1. The variations are large in some countries, but small in others. We have taken variations of 10% (table 4) or more in ASABR or GFR or average of CWR at ages 0—4 and 5—9 years as significant, and others are less significant. According to this criterion, regional variations in Kuwait, Iraq, Syria, Sudan, Egypt and Tunisia are significant, and those in Morocco, Algeria, Libya and Jordan are too small to be any real significance in fertility analysis. Among the countries which have significant variation, Kuwait-between the capital governorate and the other areas-is the most glaring. The variation between Upper Egypt and Lower Egypt is also very large and demographically significant.

## V. RURAL-URBAN DIFFERENCES

That urban people are less fertile than rural is one of the widely observed and widely-discussed phenomena in the field of fertility. It has often been suggested that urbanization is closely connected with the decline in fertility. The evidence that families are larger among rural than urban population has been cited in support of this contention.

Table 3. Geographic Variations in Fertility by Major Regions in Ten Arab Countries.

| Country and Region | Year    | C.W.R. |      | A.S.A.B.R. | G.F.R. |
|--------------------|---------|--------|------|------------|--------|
|                    |         | 0-4    | 5-9  |            |        |
| 1. Morocco         | 1961    |        |      |            |        |
| S.W. Region        |         | 945    | 859  |            |        |
| Central R.         |         | 899    | 846  |            |        |
| N. Coastal R.      |         | 874    | 811  |            |        |
| 2. Algeria         | 1966    |        |      |            |        |
| Internal R.        |         | 1056   | 960  |            |        |
| N.E. Coastal R.    |         | 1031   | 961  |            |        |
| N.W. Coastal R.    |         | 1006   | 865  |            |        |
| 3. Tunisia         | 1965    |        |      |            |        |
| Southern R.        |         | 1027   | 900  | 57.5       | 233    |
| Central R.         |         | 994    | 918  | 58.9       | 216    |
| Coastal R.         |         | 918    | 888  | 51.0       | 205    |
| 4. Libya           | 1964    |        |      |            |        |
| Western R.         |         | 949    | 871  |            |        |
| Eastern R.         |         | 886    | 885  |            |        |
| Southern R.        |         | 932    | 796  |            |        |
| 5. Egypt           | 1960    |        |      |            |        |
| Lower Egypt        |         | 792    | 829  | 49.3       | 199    |
| Middle Egypt       |         | 736    | 683  | 44.6       | 180    |
| Upper Egypt        |         | 778    | 733  | 41.3       | 152    |
| 6. Sudan           | 1955/56 |        |      |            |        |
| Southern R.        |         |        |      | 54.6*      |        |
| Mid-Central R.     |         |        |      | 47.4*      |        |
| N. Region          |         |        |      | 54.4*      |        |
| 7. Syria           | 1960    |        |      |            |        |
| North-Eastern R.   |         | 1154   | 1079 |            |        |
| North Western R.   |         | 1041   | 974  |            |        |
| Southern R.        |         | 985    | 861  |            |        |
| 8. Jordan          | 1961    |        |      |            |        |
| Eastern B.         |         | 900    | 921  | 52.7       | 217    |
| Western B.         |         | 847    | 822  | 52.5       | 210    |
| 9. Iraq            | 1965    |        |      |            |        |
| Western R.         |         | 1251   | 1143 |            |        |
| Northern R.        |         | 1115   | 1012 |            |        |
| Southern R.        |         | 1022   | 962  |            |        |
| 10. Kuwait         | 1965    |        |      |            |        |
| Other areas        |         | 1110   | 894  | 64.3       | 305    |
| Capital R.         |         | 912    | 910  | 47.8       | 211    |

\*C.B.R., Source : Demeny, P., The Demography of the Sudan, "The Demography of Tropical Africa", p. 511.

Table 4. Percentage of Variations in Fertility Between Highest and Lowest Regions Within Arab Countries

| Country         | C.W.R. |      | A.S.A.B.R. | G.F.R. |
|-----------------|--------|------|------------|--------|
|                 | 0-4    | 5-9  |            |        |
| Morocco .. .. . | 8.1    | 5.9  | —          | —      |
| Algeria .. .. . | 5.0    | 11.1 | —          | —      |
| Tunisia .. .. . | 11.9   | 3.4  | 12.7       | 13.7   |
| Libya .. .. .   | 7.1    | 11.2 | —          | —      |
| Egypt .. .. .   | 7.6    | 21.4 | 19.4       | 30.9   |
| Sudan .. .. .   | —      | —    | 20.3*      | —      |
| Syria .. .. .   | 17.2   | 25.3 | —          | —      |
| Jordan .. .. .  | 6.3    | 12.0 | 0.4        | 1.4    |
| Iraq .. .. .    | 22.4   | 21.3 | —          | —      |
| Kuwait .. .. .  | 21.7   | 1.8  | 34.5       | 45.0   |

\* C.B.R.

Many social scientists believe that modern large cities have provided a particularly favourable environment for the development of attitudes motivating family planning and means to implement the motivations. Family life in urban areas is less cohesive and children are not regarded as an economic asset in the city as they are in the villages(1).

The process of urbanization in developing countries has not been quite similar to the corresponding process in the currently developed countries. One major difference is in the way of life of the new urban population. It has been suggested that in developing countries geographic mobility from the rural to the urban does not bring about any appreciable social mobility and the way of life of

1) U.N., The Determinants and Consequences of Population Trends, New York, 1953, p. 78.

the new arrivals in the city remain "rural" for a long time. If this is true we need not expect any significant decrease in the urban fertility level compared with the rural rate. In fact, it is observed in some studies that urban fertility is as high if not higher than the rural fertility. In the following paragraphs we shall examine the available data for the Arab countries with respect to rural-urban difference in fertility rates.

From Table (5), it is clear that the rural-urban differences in fertility is not the same in all the Arab countries. The fertility measures given in the table show that rural

Table 5. Rural-Urban Differentials in Fertility in Arab Countries

| Country  | C.W.R. |        | A.S.A.B.R. |        | G.F.R. |       |
|----------|--------|--------|------------|--------|--------|-------|
|          | 0-4    |        | 5-9        |        | Urban  | Rural |
|          | Urban  | Rural  | Urban      | Rural  | Urban  | Rural |
| Morocco  | 796    | 965    | 744        | 889    |        |       |
| Algeria  | 928    | 873    | 1049       | 1032   | 46.2*  | 42.3* |
| Tunisia  | 876    | 1024   | 877        | 914**  |        |       |
| Libya    | 958**  | 902*** | 845        | 897*** |        |       |
| Egypt(1) | 773    | 782    | 825        | 761    | 46.6   | 47.2  |
| Sudan(2) |        |        |            |        | 38.3*  | 52.8  |
| Syria    | 964    | 1083   | 868        | 998    |        |       |
| Jordan   | 905    | 851    | 873        | 874    |        |       |
| Iraq     | 956    | 1050   | 847        | 964    |        |       |
| Kuwait   | 1070   | 1010   | 842        | 934    | 49.9   | 62.8  |
|          |        |        |            |        | 239    | 284   |

\* C.B.R.

\*\* C.W.R. for Governorate Capitals

\*\*\* C.W.R. for Libya excluding Governorate capitals

(1) Excluding Frontier Governorates

(2) First population census of Sudan 1955/56, Final Report, Vol. I, p. 30.

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populations have high fertility rates in only six countries out of the ten Arab countries. In Morocco(1), Tunisia, Sudan, Syria, Iraq and Kuwait the child-woman ratio (0—4) is higher in rural than in urban populations. The differences are quite substantial in some of the countries: 116 units in Morocco, 148 units in Tunisia, 119 units in Syria and 94 units in Iraq. The child-woman ratio calculated from the age group (5—9) years on the whole supports the above conclusion. The rural ratios are higher by 145, 37, 130 and 117 units (per 1000) in these four countries. In the Sudan fertility as measured by the crude birth rate indicates very much higher rate for the rural population. The difference in the crude birth rate is as much as 14 units or 36%. In Kuwait also the available data indicate a higher fertility level in rural than in urban areas. The child-woman ratio (5—9), the adjusted birth rate and general fertility rate is higher in rural by 10.9 %, 25.9% 18.8% respectively than urban, although child-woman ratio (0—4) shows a slightly lower value for the rural populations.

In the case of the other countries, namely, Algeria, Libya, Jordan and Egypt, the rural-urban difference is either not very clear cut or opposite to what is found in the countries mentioned before. In the case of Algeria, the available data do not support a higher rural fertility. The child-woman ratios at (0—4) and (5—9) years and the crude birth rate all support a higher fertility rate for the urban population.

This exception in the rural-urban variations noted in Algeria may be due to deficiencies and irregularities in the

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1) A slightly difference showing an opposite situation in 1961/63 sample surveys was remarked, where the CBR was 4.5.6‰ in rural against 47.2‰ in Urban

census results. The age groups (0—4) and (5—9) seem to be under-enumerated in the census(1) Similarly the under-registration of births may be greater in the rural areas. For instance Mr. Karkoub estimated that the corrected crude birth rate is 48.5% in urban areas and 54.3 in the rural. In the case of Libya, data are limited and show contradicting patterns, with rural population showing low fertility when child woman ratio at ages(0—4) years is used and urban population showing low level when child-woman ratio (5—9) is used. On the other hand in Jordan the child-woman ratio on the whole is higher for the urban population suggesting a relatively higher urban fertility. In an earlier study made by the Department of Statistics in Amman, it was found that the number of children under five years per 1000 ever married women in childbearing age was larger in almost all towns than in the surrounding rural areas. In Jerusalem city for example this ratio was 13% higher than in Jerusalem district; In Irbid town it was 11% higher than in Ajlun district; and in Aqaba town it exceeded the ratio of Ma'an district by as much as 24%(2).

In the case of Egypt the age -sex adjusted birth rate indicates that urban fertility is slightly lower than rural fertility. The difference is only 0.6 births per 1000 population. This index, perhaps, measures correctly the nature of rural-urban differences in the country. The higher urban fertility as shown by child-woman ratio at age (5—9) may be mainly due to errors in the age distribution and/or the effect of migration of school children to urban areas.

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1) Karkoub, M. *Estimations des paramètres démographiques de la population Musulmane d'Algérie* (1954), N.A.D.C., 1965, p. 17.

2) The Hashemite Kingdom of Jordan, Dep. of Statistics. "Analysis of the population Statistics of Jordan", Vol. I, third report, Amman, 1966, p. 16.

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Other studies showed that the crude birth rates of all urban areas, where birth registration can be assumed to be nearly complete were definitely lower than those of rural areas before World War II. Since 1945, the rural crude birth rate has been generally smaller than those of Cairo and Alexandria or other urban communities until 1958/59 when it was virtually equal to the corresponding rates in the rest of the country except Alexandria. This observation ought to be taken with care, however, since it may only be due to a certain degree of under-reporting of births in rural areas(1).

From the results of the 1960 Census of Egypt, other studies have showed that fertility is higher in urban than in rural areas. This situation is mainly due to the fact that a large proportion of urban populations have rural roots and the urban milieu has had little effect upon them.(2).

## VI. FERTILITY DIFFERENCES BY SIZE OF TOWNS

The difference between urban areas and rural areas is only one aspect of the difference associated with population size of the locality (town or village). If fertility is lower than rural fertility, one should expect a decrease in fertility if the size of the town increases. To bring out such difference we give two tables. In table (6), the C.W.R. of urban areas is compared with the corresponding ratio of semi-urban areas. It is found that fertility in urban areas, which are mainly the governorate capitals, is lower than the semi-urban areas in Syria, Iraq and Kuwait. C.W.R. (0—4) in the urban is lower than that of the semi-urban by 53,75, 191 units (per 1000) or 5.6%,

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(1) El-Badry, M.A., "Trends in the components of population growth in the Arab countries of the Middle East, Demography, 1965 vol 2, p. 148.

(2) Zikry, A. Urbanism and its effect upon fertility of women in U.A.R. (in Arabic), N.A.D.C., 1964, p. 6.

Table 6. C.W.R. In Urban and Semi-Urban In 5 Selected Arab Countries

| Country | Urban(1) | Semi-Urban(2) | Total Urban |
|---------|----------|---------------|-------------|
| Egypt   |          |               |             |
| (0-4)   | 757      | 821           | 773         |
| (5-9)   | 871      | 719           | 825         |
| Syria   |          |               |             |
| (0-4)   | 955      | 1008          | 964         |
| (5-9)   | 860      | 907           | 868         |
| Jordan  |          |               |             |
| (0-4)   | 897      | 918           | 905         |
| (5-9)   | 879      | 862           | 873         |
| Iraq    |          |               |             |
| (0-4)   | 931      | 1006          | 956         |
| (5-9)   | 829      | 885           | 847         |
| Kuwait  |          |               |             |
| (0-4)   | 969      | 1150          | 1070        |
| (5-9)   | 832      | 850           | 842         |

(1) Governorates Capitals

(2) Other Urban Areas

8.1%, 19.7% respectively. The same pattern may be observed with C.W.R. (5-9) where the difference is 47, 56, 18 units (per 1000) or 5.5%, 6.8%, 2.2% in the three countries respectively.

We have mentioned before that variations in fertility between rural and urban is not clear-cut in some Arab countries like Egypt and Jordan. The same uncertainty could be observed in urban and semi-urban areas of these countries. There is no clear evidence that urban areas have lower fertility than semi-urban areas.

In table (7) the child-woman ratio of a number of towns in the Arab countries is given. The population size of the towns is also reproduced. The inverse relation

Table 7. Fertility Differentials in Urban Centres by Size (Main Cities)

| Country    | Cities      | Pop. Size | C.W.R. |      | C.B.R. | Av.No.of<br>children<br>everborn<br>for F.50+ |
|------------|-------------|-----------|--------|------|--------|---|
|            |             |           | 0-4    | 5-9  |        |   |
| 1. Morocco | Casablanca  | 965277    | 800    | 697  |        |   |
|            | Marrakech   | 243134    | 728    | 711  |        |   |
|            | Rabat       | 227445    | 698    | 660  |        |   |
|            | Fas         | 216133    | 720    | 766  |        |   |
|            | Meknas      | 175943    | 736    | 709  |        |   |
|            | Tanger      | 141714    | 634    | 604  |        |   |
|            | Aujda       | 128645    | 816    | 816  |        |   |
|            | Kanitra     | 105000    | 786    | 657  |        |   |
|            | Tatwan      | 101352    | 644    | 589  |        |   |
| Safi       | 100000      | 691       | 679    |      |        |   |
| 2. Algeria | Alger       | 943142    | 961    |      |        |   |
|            | Oran        | 328257    | 927    |      |        |   |
|            | Constantine | 253649    | 1003   |      |        |   |
|            | Boné        | 168790    | 987    |      |        |   |
| 3. Libya   | Tripoli     | 213506    | 956    | 823  |        |   |
|            | Benghazi    | 137295    | 986    | 807  |        |   |
|            | Zawia       | 111734    | 997    | 889  |        |   |
| 4. Egypt   | Cairo       | 3348779   | 749    | 793  | 49.5   |   |
|            | Alexandria  | 1516234   | 739    | 833  | 43.3   |   |
|            | Al-Giza     | 250532    | 656    | 711  | *      |   |
|            | Port Said   | 245318    | 756    | 895  | 34.7   |   |
|            | Suez        | 203610    | 933    | 942  | 64.3   |   |
|            | Tanta       | 184299    | 723    | 832  | 45.6   |   |
|            | El-Mansura  | 151192    | 735    | 849  | 42.2   |   |
|            | Assiut      | 127485    | 768    | 776  | 52.4   |   |
|            | Damanhour   | 126600    | 757    | 909  | 41.7   |   |
|            | Zagazig     | 124417    | 819    | 895  | 47.3   |   |
|            | Ismailia    | 116302    | 910    | 950  | 53.4   |   |
| El-Fayum   | 102064      | 772       | 766    | 48.3 |        |   |
| 5. Sudan   | Omdurman    | 113551    | 757    | —    | 44.97  |   |
|            | Khartoum    | 93103     | 806    | —    | 48.56  |   |
|            | El-Obeid    | 52372     | 802    | —    | 48.22  |   |
| 6. Syria   | Damascus    | 529963    | 919    | 797  |        |   |
|            | Alcppo      | 425467    | 924    | 884  |        |   |
|            | Homs        | 137217    | 1035   | 884  |        |   |
| 7. Jordan  | Amman       | 246475    | 914    | 875  | 6.7    |   |
|            | Zarqa       | 96080     | 1078   | 921  | 6.9    |   |
|            | Jerusalem   | 60488     | 876    | 857  | 5.6    |   |
| 8. Iraq    | Baghdad     | 668691    | 897    | 794  |        |   |
|            | Basra       | 208594    | 911    | 804  |        |   |
|            | Musul       | 194480    | 933    | 888  |        |   |
|            | Kirkuk      | 128038    | 984    | 841  |        |   |

\*C.B.R. included in Cairo

between the urban size and fertility is observed in Syria and Iraq only. Damascus is the largest city in Syria and has the lowest fertility. Baghdad is the largest city in Iraq and has the lowest fertility when compared with all other towns in the country. Such a pattern is not observed in the other Arab countries shown in the table. There is no clear relation between urban size and fertility in all the other countries including Morocco, Algeria, Libya, Egypt, Sudan and Jordan.

## VII. FERTILITY VARIATION WITHIN CITIES

Cities have business districts and residential areas, slum areas and well-to do areas. Fertility patterns within cities vary considerably by these types of areas in a manner that may be generalized for many cities.

Cairo, as largest urban center in the Arab countries may be taken as an example. With an area of 214.2 Km<sup>2</sup> and a population of 3.5 million (1960), fertility variations within cities could be illustrated with this example. However, it is not assumed that the pattern will be similar in other cities.

On the whole, it is clear that eastern and southern Cairo has higher fertility compared with northern and western Cairo, as shown in the following figures :

| <i>Child-woman ratio within Cairo City</i> |       |       |
|--|-------|-------|
|  | (0—4) | (5—9) |
| Southern districts                         | 815   | 809   |
| Northern districts                         | 778   | 784   |
| Eastern districts                          | 735   | 846   |
| Western districts                          | 706   | 768   |
| Total                                      | 749   | 793   |

The lower level of fertility is observed in the western districts where child-woman ratio (0—4) is less by 109 units (per 1000) than the southern, and by 72 units than the northern and by 29 units than the eastern districts. Child-woman ratio (5—9) shows also that pattern to a great extent.

The western districts having low level of fertility are distinguished with certain characteristics. Within these districts, the central business area is situated where it contains few residents, some of whom live in hotels. Fertility tends to be low in the business districts (1).

Aiming at showing the relationship between fertility variations in Cairo districts and some socio-economic indicators, Table (8) is given as well as figures 4 and 5. The city is divided into three groups according to fertility level by using child woman ratio (5—9) years.

According to the occupational status of the population in Cairo two groups could be chosen as economic indicators as follows :—

1. Scientific and technical professions; teachers, engineers, physicians etc.
2. Craftsmen, production process workers, porters etc..

The first group includes 10 districts and is distinguished by high fertility where C.W.R. is more than 800 per 1000. In the districts of this group, populations seem to have low standards of living. About 2/3 of women in the reproductive age are illiterate and 7% of women are participating in active life, and moreover

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1) Kiser and others, Fertility of American woman, New York, 1958, p. 95.

2.4 of economic active population are working in professional and technical occupations, whereas about 1/5 of the population are working as craftsmen and production process workers.

On the other extreme, fertility in the districts of the third group, comprising of only 4 districts, is low. C.W.R. is less than 700 per thousand. These districts seem to have the highest level of living compared with the other districts. Districts of these groups are distinguished with some socio-economic indicators as high proportion of literacy of women in the reproductive age and a high participation of females in the economic activities. Moreover, a higher proportion of professional and technical occupations, and a low proportion of craftsmen and production process workers.

Education appears to be a most significant variable in the fertility of urban Egyptian women(1) A positive correlation of + 0.77 between child-woman ratio (5—9) and percentage of illiteracy among women in the reproductive age, was found in Cairo districts.

The correlation coefficient between the other socio-economic indicators and fertility in Cairo, was calculated as the following figures show :

|  | Coefficient correlation |
|--|-------------------------|
| — Percentage of scientific and professionals             | —0.91                   |
| — Percentage of craftsmen and production process workers | + 0.88                  |
| — Percentage of economic active females                  | —0.81                   |

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(1) Abou-Lughod, J., The Emergence of Differential Fertility in Urban Egypt. The Milbank Memorial Fund Quarterly, Vol. X LIII April 1965, Par I, p. 235 — 253.

Table 8. Fertility Levels in Cairo Districts and Their Relations to some Socio-Economic Indicators.

| Districts                            | C.W.R.<br>(5-9) | % of illiterate women<br>in the<br>productive age | % of working<br>population |      | % of economic active<br>females |
|--------------------------------------|-----------------|---|----------------------------|------|---------------------------------|
|                                      |                 |   | I                          | II   |                                 |
| <i>1. High Fertility Districts</i>   |                 |   |                            |      |                                 |
| Bab El-Sharia                        | 880             | 68.4  | 1.8                        | 20.9 | 8.5                             |
| Gamalia                              | 872             | 74.8  | 1.3                        | 20.9 | 5.4                             |
| Darb El-Ahmar                        | 871             | 63.5  | 2.6                        | 19.3 | 7.4                             |
| Khalifa                              | 859             | 68.0  | 2.4                        | 22.1 | 7.5                             |
| Mataria                              | 853             | 73.3  | 2.1                        | 14.7 | 5.7                             |
| Boulak                               | 840             | 76.3  | 1.3                        | 20.7 | 5.7                             |
| El-Sahel                             | 836             | 61.5  | 3.8                        | 16.9 | 7.0                             |
| Mousky                               | 820             | 60.5  | 1.9                        | 16.4 | 9.0                             |
| Helwan                               | 819             | 68.6  | 3.3                        | 23.2 | 6.2                             |
| Shoubra                              | 802             | 68.0  | 2.6                        | 18.0 | 6.5                             |
| Average                              | 843             | 68.4  | 2.4                        | 19.1 | 6.8                             |
| <i>2. Medium Fertility Districts</i> |                 |   |                            |      |                                 |
| Maadi                                | 797             | 71.8  | 2.6                        | 15.9 | 7.3                             |
| Rod El Farag                         | 796             | 56.2  | 4.4                        | 15.2 | 8.9                             |
| Old Cairo                            | 792             | 61.5  | 4.6                        | 15.6 | 10.8                            |
| Saida Zeinab                         | 784             | 53.5  | 4.7                        | 13.4 | 12.5                            |
| Zaytoun                              | 781             | 58.6  | 4.3                        | 13.1 | 10.3                            |
| Wayli                                | 770             | 61.8  | 4.0                        | 14.3 | 9.5                             |
| El Zaher                             | 711             | 36.9  | 6.2                        | 8.7  | 14.9                            |
| Average                              | 779             | 57.5  | 4.4                        | 14.1 | 9.5                             |
| <i>3. Low Fertility Districts</i>    |                 |   |                            |      |                                 |
| Abdin                                | 689             | 48.5  | 4.8                        | 12.7 | 13.8                            |
| Azabakia                             | 684             | 61.7  | 4.7                        | 12.6 | 13.2                            |
| Helipolis                            | 585             | 61.5  | 9.1                        | 4.8  | 21.9                            |
| Kasr El-Nil                          | 428             | 36.3  | 10.9                       | 4.1  | 30.2                            |
| Average                              | 646             | 41.9  | 6.8                        | 7.9  | 19.1                            |

I. Scientific and Technical professions etc. ...

II. Craftsmen and Production Process workers etc. ...

## SUMMARY AND CONCLUSION

In the previous sections the limited data that are available are used to analyse geographic variations of fertility rates in ten Arab countries. The analysis showed that fertility rates vary somewhat from country to country and from region to region within a country, between rural and urban areas, among urban centers by size agglomeration and within large cities. The extent of the differences is not large in many cases. One important broad geographic variation has Upper Egypt as the area of minimum fertility. The level of fertility varies in a U-shape manner, from South to North (from Southern Sudan to Nile Delta) and from West to East (from Morocco to Kuwait). In the case of regional variations, the significant differences are noted in five countries, namely, Kuwait, Egypt, Iraq, Sudan and Syria. On the other hand, there were probably no significant regional differences in Morocco, Algeria, Libya, Jordan and Tunisia. Rural-Urban difference was minimum in Libya, Jordan and Egypt.

The fertility measure widely used in this study is the child-woman ratio. The deficiencies of this measure has already been mentioned. Very little can be done to assess the magnitude of the errors caused by under or over-enumeration of children. We can only hope that since comparisons are done within a country at a fixed period, the enumeration errors will be similar in all parts of a country. If this is not true, our comparisons will be affected.

Child-woman ratio is affected by differences in mortality level. For example, if urban mortality level is lower than the rural mortality level, the child-woman ratio of the urban population will be higher even when its fertility level is the same as that of the rural population.

The extent of this error depends on the extent of mortality differences. For example if in Egypt (or any other country) the urban expectation of life at birth is 50 years and the rural expectation of life at birth is 47.5 years the effect of this difference on child-woman ratio (0—4) years is approximately 1—2 percent and a childwoman ratio (5—9) years is approximately 2—3 percent(1).

There is yet another factor which affect comparisons of fertility on the basis of child-woman ratio. This is the distribution of women within childbearing period. Except in the case of Kuwait or the comparison within various districts of Cairo city, the effect of age composition of woman is unlikely to be serious.

Taking these points into consideration we may conclude that some of the regional differences in fertility as revealed by the present analysis may be to a large extent real. The rural-urban differences showing higher fertility in rural may be real to a great extent. On the other hand, if the urban child-woman ratio is higher, this may also be interpreted as due to relatively better enumeration and low mortality level in urban areas. In such situation more accurate are required to establish the higher urban fertility.

The aims of the present study do not include analysis of the factors associated with the regional variation in fertility. Yet one may speculate on some of these factors. In this connection, one result of our analysis which requires special mention is that the regional variations in fertility rate are far more important than rural-urban or intra-urban differences. For example, rural-urban difference is practically negligible in Upper and

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1) The calculation was based on the South Family of Princeton Model life tables.

Lower Egypt, but these two regions differ in their fertility rates by as much as 19.4 percent\*. One may therefore speculate that in Arab countries at the present time, "the mode of life" (as it is referred in the Sudanese census) through its effect on age at marriage, fecundity impairment, abstinence etc. is far more important than the use or nonuse of modern contraceptives in explaining fertility differences between Arab countries and within them. This explanation may not apply to fertility variation within the same city.

### APPENDIX

Definitions used in the estimation of "Urban" population as nationally defined and their percentage of the total population (around 1960) (1).

|  | %    |
|--|------|
| — Morocco 117 urban centres.   | 32.3 |
| — Algeria Fifty-five most important communes having local self-government.   | 29.3 |
| — Tunisia Localities having self-government  | 40.1 |
| — Libya Total population of Tripoli and Benghazi plus urban parts of Baida and Derna                                 | 24.6 |
| — Egypt Cities, including the largest cities which are governorates and capitals of other governorates and districts | 37.8 |

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\* ASABR

(1) U.N., Growth of the World's Urban and Rural Population, 1920—2000, New York, 1969 pp. 81 — 84, and the Percentages are calculated from the national censuses.

|          |   |      |
|----------|---|------|
| — Syria  | Governorate and district capitals   | 36.9 |
| — Iraq   | Cities and towns  | 39.2 |
| — Jordan | District headquarters, i. e. localities of 10,000 or more inhabitants (excluding Palestinian refugee camps in rural areas) and those localities of 5000—9000 inhabitants and the suburbs of Amman and Jerusalem | 43.9 |
|          | Cities in which two thirds or more of the economically active males are not engaged in agriculture.   |      |

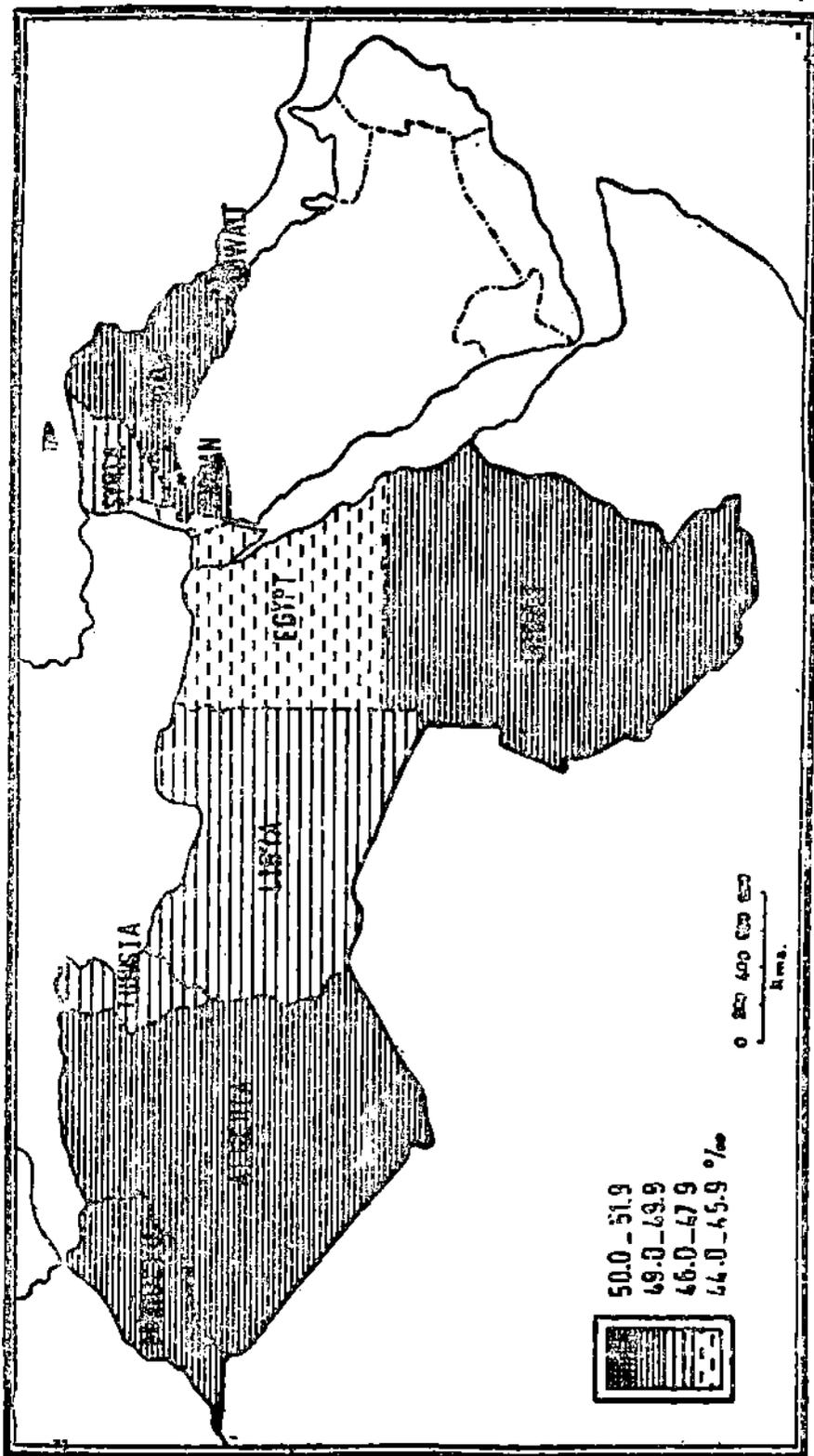


FIG. 1 CRUDE BIRTH RATES IN THE ARAB COUNTRIES 1965

**NAMES OF CAIRO  
DISTRICTS , 1960.**



**FIG. 2**

CHILD-WOMAN RATIO  
IN  
CAIRO DISTRICTS, 1960

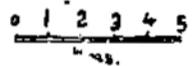
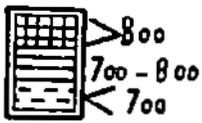


FIG. 3

PERCENTAGE OF ILLITERACY  
AMONG WOMEN IN THE  
REPRODUCTIVE AGE IN  
CAIRO DISTRICTS, 1960

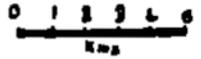
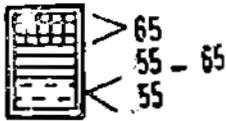


FIG. 4

PERCENTAGE OF CRAFTSMEN AND WORKERS IN  
CAIRO, 1960.

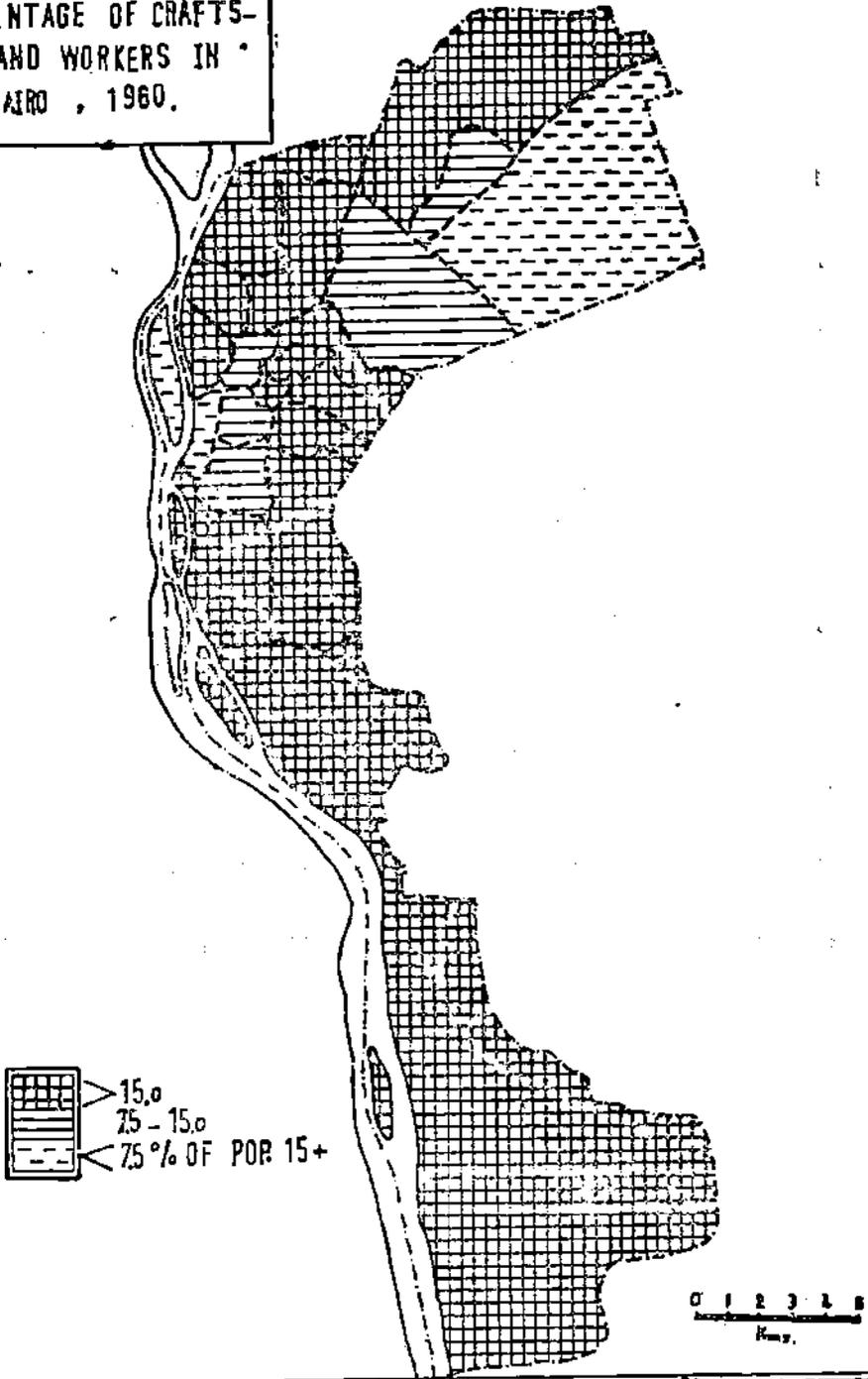


FIG. 5

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