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Population Growth and Redistribution in Iraq *

THIS paper gives a brief sketch of population growth and redistribution in Iraq. Of special interest are regional migration differentials and the imbalance they generate in the regional distribution of residents. These phenomena are best understood from a comparison between the redistribution occurring in each region as a whole and the corresponding processes in the governorates in each region.

General Background

Iraq is located on the semi-arid zone of the Middle East. It has an area of 434,000 sq. kms, (excluding half of the neutral zone or 3,522 sq. kms.) of which 167,000 sq. kms. (38.5 percent of the total area) may be considered as desert. Approximately half of the remaining area is mountainous and hilly, and the other half is flat.

Climatically, Iraq is characterized by variations in regional temperature. Generally, it is dry and hot in summer and dry and relatively cold in winter. *In* the northern region, the highest yearly average temperature ranges from 26°C to 29°C in summer and 11°C to 14°C in winter. For the middle region the corresponding averages range from 29°C to 32°C and 15°C to 16°C; for

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the southern region the range is from 30°C to 33°C and 16°C to 18°C. It rains only in winter. During the period from 1970 to 1973, the average rainfall in the northern region was 310.65 millimeters (mm). The averages for the middle and southern regions were 150.55 and 122.10 mm. respectively (C.S.O., no date, Table 1, p. 11).

Iraq is endowed with two rivers—the Euphrates and the Tigris—which provide the main water resources of the country. The average water flow of each river per year for the period between 1960 and 1973 was roughly 34 and 35 billions cubic meters for the Euphrates and Tigris, respectively. The population is concentrated in the habitable areas around the two rivers.

Ecologically and administratively, Iraq is divided into three major regions: northern region; middle or central region; and southern region. The governorates located in each region are listed in Appendix table 1.

Between 1947 and 1957 the population of Iraq grew at an annual rate of 2.7 percent, or by roughly 1.5 million persons. Between 1957 and 1965 slightly over 1.7 million persons were added, representing an average annual rate of population growth of 3.1 percent during the eight years. The preliminary population count for 1970 put the Iraqi population at 9.2 millions, so growth rate was 2.8 percent. On 17 October 1977, a general population census was taken and its preliminary results showed that Iraq's population reached 12,029,760, thus recording an annual growth rate of 3.7 percent since the preliminary count of 1970.

Paralleling the continuing growth of population is an incipient, but increasing, drift of population toward big cities and urban settlements. This phenomenon is effected mainly by unbalanced development planning programs as well as by socio-economic transformation in the various administrative regions of the country.

Population Redistribution

The information on population redistribution is set forth in terms of the territorial size of each governorate. Accordingly, the concept of population concentration is measured in terms of the "clustering" of population within the delineated boundaries of each governorate (Gibbs, 1961, 236). This indicates that the distinction between two or more administrative regions will be explained by the relative size of their territories and populations, instead of

by population densities. If the population is distributed evenly among the governorates, one would expect to find that the percentage of the nation's population in a given governorate corresponds to the percentage of the governorate's territorial size in the total area of the country; that is, if the area of a given governorate is five percent of the total area of the country, it is expected to contain five percent of the total population.

An examination of the data presented in Appendix table 1 indicates that neither national population nor national territory is divided equally among the governorates, and that the percentage of the total population contained in a governorate seems to have no relation to the percentage of the governorate's land area. In other words, the population of Iraq is distributed unevenly among the different governorates; for example, the Baghdad Governorate represented in 1965 only 4.6 percent of the national land area but as much as over 25 percent of the nation's population.

In order to quantify these disparities, one may apply the concentration index (Hoover, 1941; Duncan, 1957; Gibbs, 1961), which determines the percent of the total population that would have to move out of one governorate into another in order to effect population concentrations that would be in balance with the relative size of the area of the governorate. Referring to the population percentage in the i th governorate and j 'th year by the letter PI and to the area of the j 'th governorate in 1965¹ by the letter A_i , the magnitude of concentration in the r th governorate is given by G , where $C_i = P_i^s - A_i$. The final calculations are presented in Appendix table 2. In 1965, for instance, approximately 21 percent of the total population of Baghdad would have to move elsewhere to balance the relative population size in this governorate with that of its land area. On the contrary, in desert governorates such as Anbar or Muthanna, a high percentage of Iraq's population in 1965 (28 and 15 for Anbar and Muthanna, respectively) would have to move into such governorates to equalize size with areal size. Between these two extremes one finds a gradient of indices, some of which tend to converge toward a balance: Nineveh and Maysan are such examples.

The degree of population concentration for Iraq as a whole, in any of the

1. For purposes of distribution analysis, areas of governorates in all census years refer essentially to the governorates as now constituted, though there are a few problems in comparability that are associated with boundary changes. However, the changes in governorate boundaries do not represent a serious problem for this study.

considered four periods, is obtainable when the absolute total of the period is multiplied by one-half. This is a consequence of the fact that the out-migrants of any governorate are the in-migrants of other(s). In this case, the value of the index expresses the percent of the total population that would be redistributed among the governorates in order to eliminate the imbalance of the population distribution observed in the governorates. Here the observed indices are 45.0, 43.3, 43.9, and 43.9 for 1947, 1957, 1965, and 1970, respectively. This means that for every 1,000 residents there were in 1947, for instance, 450 persons would have to change their places of residence from one governorate to another to bring about an even distribution of population among the 16 governorates of Iraq.

Internal Migration and Population Change

The objective of this section is to delineate the relationship between internal migration on one hand and population redistribution and change on the other. Achievement of this objective necessitates an analysis of related census data. Shortcomings, omissions and limited information (particularly on internal migration) are the underlying characteristics of population censuses in many countries. The first population census in Iraq in the true sense of the word was taken in 1947, and was followed by two more censuses—in 1957 and 1965.*

2. Several population counts were undertaken before 1947, but these attempts could be considered as estimates rather than censuses. According to these attempts, the number and the average annual rates of growth of Iraq's population were recorded as follows :

<i>Year</i>	<i>Population Estimates</i>	<i>Average Annual Rate of Growth Period</i>	<i>Percent</i>
1867	1,280,000	1867-1890	1.5446
1890	1,826,000	1890-1905	1.3920
1905	2,250,000	1905-1919	1.6835
1919	2,848,000	1919-1927	0.5159
1927	2,968,000	1927-1930	-1.6578
1930	2,824,000	1930-1934	3.2276
1934	3,213,173	1934-1935	5.0774
1935	3,380,533	1935-1942	2.9798
1942	4,164,600	1867-1942	1.5730

According to these estimates, the population of Iraq had been growing at an average annual rate of growth of 1.6 percent during the period between 1867 and 1942 (Zeini, 1967, Table 1, p. 75). A general population census was taken on 17 October 1977, but to the date this author left Iraq (October 1978) the results were not published.

All the three censuses were taken in October. A preliminary population count was undertaken in July 1970. Appendix table 3 shows the percentage changes of population (1947 to 1965), the average annual rates of population growth (1947 to 1965), the redistribution index (1947 to 1965) and lifetime migration rates for each governorate in Iraq (1957 to 1965). The data indicate that the pattern of population change, growth, distribution and internal migration in Iraq has been altered significantly since 1947. A considerable range of variation among the governorates is reflected by the data. Some of the variations are in some degree related to non-demographic factors such as the Kurdish war, which affected the growth of population in the governorates of Arbil, Dhok, and Kirkuk, and the creation of new governorates. Thus, in contrast to the enormous population growth in the governorates of Dhok and Maysan during the intercensal period from 1947 to 1957, during the period between 1957 and 1965 the trend was reversed and there was a decline. On the other hand, while the national population grew at an average annual rate of 2.7 and 3.1 percent during these two intercensal periods, respectively, the populations of Baghdad and Basrah were growing more rapidly: 4.7 and 5.5 percent for Baghdad; 3.1 and 3.6 for Basrah. Between these two extremes, population in the remaining governorates increased, stabilized or declined in one (but not in both) of the two intercensal periods.

Considering the intercensal period from 1957 to 1965, it could be observed that while the populations of Qadissiya, Wasit, Maysan and Thi-Qar were thinning, those of other governorates were either swelling or stable. During the eight years from 1957 to 1965, six of the sixteen governorates—Arbil, Nineveh, Sulaimanya, Baghdad, Kerbela and Basrah—had a rate of population growth that exceeded the national rate.

Reflecting this differential growth among governorates, the population living in the nation's middle region grew at a rate of 3.05 and 3.70 percent for the two intercensal periods 1947 to 1957 and 1957 to 1965, respectively. These rates of growth for the middle region exceeded those for the nation (2.68 and 3.06 percent) and were followed by those for the northern region (2.46 and 2.59 percent) and the southern region (2.10 and 1.98 percent). This indicates that the greatest relative population growth occurred in the period between 1957 and 1965.

Internal Migration and Population Distribution. What is crucial here is not the magnitude of the rates of population growth but rather the relative imbal-

ance they produce, in the population distribution of certain governorates, in comparison with their resources and their essential public services and facilities. According to the 1965 population census the population in five of the sixteen governorates was 55.06 percent of total population in Iraq. The percentage share of each of the five governorates was as follows : Baghdad 25.42; Nineveh 9.23; Basrah 8.32; Thi-Qar 6.20; and Kirkuk 5.89.

In order to determine the amount of population which would need to be redistributed among the governorates to maintain the population size in a previous census—1957, the index of inter-governorate population redistribution was calculated. The results are given in Appendix table 3. For the period 1957-1965, the absolute total (disregarding the sign) is 13.28 percentage points. For the considered period, the inter-governorate index amounted to 6.64 percentage points, indicating the proportion of the nation's population as of 1965 that would have to be redistributed among the governorates to restore the population to its 1957 distribution.

The index can be also used to determine the percentage of redistribution that resulted from increases or decreases in the population shares of individual governorates or a group of them. The gaining and losing governorates in 1965 are as listed below :

<i>Gaining Governorates</i>		<i>Losing Governorates</i>	
Arbil	0.09	Anbar	-0.21
Baghdad	4.58	Babylon	-0.06
Basrah	0.33	Dhok	-1.34
Kerbela	0.16	Dial a	-0.30
Nineveh	0.39	Kirkuk	-0.28
Sulaimaniya	0.13	Maysan	-2.99
Thi-Qar	0.96	Muthanna	-0.27
		Qadissiya	-0.64
		Wasit	-0.55
Total	6.64	Total	-6.64

It is evident that over two-thirds (4.58 of 6.64 percent) of the net redistribution of population between 1957 and 1965 can be accounted for by gains in Baghdad governorate. The gain of Baghdad, the greatest gainer, roughly equaled the combined losses of three governorates, namely Dhok, Maysan and Mu-thanna, and in no governorate did the share of the nation's population decrease as much as it increased in Baghdad. The governorate worst off in this respect, Maysan, accounted, on the losing side, for 45 percent of the total net distribution.

A number of factors have doubtlessly contributed to this notable change in population distribution, which appear to effect the new imbalance in regional population growth. Important among these factors are (1) location of new industries; (2) location of major institutions for higher education; (3) preference of people for marginal and odd jobs over farming; (4) construction of model cities and public housing; (5) greater availability of means of recreation, leisure facilities and personal services in certain governorates than in others; and (6) agrarian reform and ensuing institutional changes that led to the freeing of farm labourers from the control of big landlords. The primary effect of these factors was to encourage population shift through internal migration. It seems logical, therefore, to analyze the redistribution process in relation to the regional net migration.

Unfortunately, the only available migration data pertain to lifetime migration, which indicates that the place of residence of a person at the time of the census differs from the place of his birth. **By** comparing the birthplace of a person with his place of residence at the time of the census, it is possible to classify the population into migrants and nonmigrants. This method has certain disadvantages of which the following are the most important (Bogue, 1969, 759; United Nations, 1969, 40):

1. Lifetime migration data indicate neither "duration of residence" nor "prior place of residence";
2. Lifetime migration provides neither information on the characteristics of migrants nor on place of migration (urban centers, national capital, or minor civil divisions);
3. Data on lifetime migration ignore the fact that many foreign-born persons become internal migrants after their admission to the country,

Despite these drawbacks, the present paper utilized the data on internal migration in the Iraqi population censuses in order to shed some light on the effect of one of the major demographic processes, whose assessment is greatly needed for the purposes of development planning in Iraq. Unfortunately, the 1965 internal migration data are not published to date. Given this limitation, it became imperative to rely on another source of data which provided lifetime **data** matrices for the total population in 1947, 1957, and 1965 (Hilmi and Associates, 1973).

Appendix table 3 shows rates of in-out- and net lifetime migration. Distribution of population by governorate of birth reproduces lifetime in-migrants whereas distribution according to governorate of residence of persons born in each governorate gives lifetime out-migrants. Lifetime net migration of "birth-residence index" is the difference between lifetime in-migrants and lifetime out-migrants. It represents the net balance between the persons living in a governorate and born in all other governorates and those born in the governorate and living in all other governorates (Lee and Associates, 1957, 57). The analysis is limited to lifetime net migration since it provides a good deal of information about the currents and balance of regional population flow in Iraq.

Only three governorates had been, and continued to be, attractive to population before and after the first Iraqi Revolution, which took place in 1958. These governorates include Baghdad, Basrah and Kirkuk, with Baghdad's net in-migration exceeding one-half-million persons in 1956 (26.4 percent) and approximately one-third of a million in 1957(23.2 percent). This made Baghdad the greatest gainer of the three gaining governorates, and Kirkuk and Basrah followed in this order. The other governorates were all losers in the censuses of 1957 and 1965.

Among governorates characterized by net out-migration, the highest net out-migration rate occurred in Maysan, amounting to 39.8 and 47.6 percent in 1957 and 1965, respectively. This made Maysan the greatest loser. The governorate with the smallest loss was Sulaimaniya in 1957; Arbil had the smallest loss in 1965. These contrasting tendencies have resulted in significant differences among the governorates with respect to the effect of internal migration on the growth and composition of their populations in particular, and the variation in the regional redistribution of the nation's population in general.

On the regional level, lifetime migration data showed the middle region to have had net migration of 197,956 persons in 1957 (6.0 percent) and 249,984 persons in 1965 (5.7 percent). In contrast, the other two regions had net migration losses which amounted to 41,569 (2.4 percent) and 65,555 (3.1 percent) in the northern region, and 156,387 (12.1 percent) and 184,429 (12.2 percent) in the southern region in 1957 and 1965, respectively.

Appendix table 4 gives the correlation coefficients between net migration rates and percentages of population change and average annual rates of population growth in the 16 governorates in Iraq from 1947 to 1965. Because of the magnitude and significance of the associations obtained, it became obvious that the imbalance in regional population distribution, especially during the intercensal period of 1957 to 1965, was largely due to, and linearly associated with, a rapidly increasing rate of internal migration. It is true that government leaders and pro-natalist promoters in Iraq, whose creed is as popular as anti-natalist policies in many parts of the world today, feel the country will not develop properly if the natural increase of the Iraqi population diminishes. But neither this pro-natalist advocacy nor the natural increase differentials revealed by a recent national sample survey³ could be solely responsible for the recent observed imbalance of population distribution.

Conclusion

In conclusion we bring together the major findings and provide some recom-

3. Birth registration in Iraq is greatly deficient. In order to meet the needs of development planning, a national sample survey was carried out in 1973/1974 to provide data on the vital events. The preliminary results of the first round (carried out in January 1974) yielded crude rates (per 1,000 population) of births, deaths, and natural increase of 47, 12, and 35, respectively. Similar data on regional levels (not corrected for sampling error which tends to deflate the results) were :

	<i>North</i>	<i>Middle</i>	<i>South</i>
Birth rate	46	42	38
Death rate	12	9	9
Natural increase	34	33	29

These results seem to be consistent (regarding the natural increase) with the estimates provided by Zachariah(1970: 38) for the period 1947 to 1957: birth rate 51.6, death rate 23.2, and natural increase 28.4 (figures per 1,000 persons).

recommendations and guidelines for future research. The descriptive statistics, coupled **with** the application of correlation analysis, have indicated that net in-migration **was** characteristic of only three governorates (Baghdad, Basrah and Kirkuk) and that Baghdad's net in-migration in 1965 exceeded a half million. Moreover, about seven-tenths (4.6 of 6.6 percent) of the net redistribution of population between 1957 and 1965 was accounted for by gains in Baghdad governorate alone. On the other hand, the correlation coefficients between net migration and population change or annual rate of population growth for the period between 1957 and 1965 are positive and significant at the one-percent level. The coefficient of determination indicated that net migration accounted for 64 percent of the variability in the 1957 to 1965 population change in sixteen governorates, and 54 percent of their average annual rate of growth. The statistical insignificance of the correlation coefficients for the decade between 1947 and 1957 implied that population mobility exerted no effect on the process of population change and growth. This plausible interpretation is acceptable, because the increase in population shift was a probable occurrence in the period that followed the revolution.

It is felt that much population research and analysis must be undertaken if the Iraqi government wishes to reap the fruits rather than the bushes of her national development plans. It is true that the new factor of oil—of little importance until recent decades—has brought a rich source of revenues to the nation for use in her national development plans.⁴ But to use these revenues effectively, there should be a reliable data base, including a new census and the construction of a reliable vital statistics system. Data on the internal migration and vital statistics should be on the "nahya", or smallest civil division, level. Urban and rural classification of the data is a *must*. In the meantime, the data should be provided in such details as to enable the study of return migration, socio-economic characteristics of migrants, migration differentials, and the relation of migration to social and economic changes. Availability of such data will aid in the study of migration and behaviour of migrants. The planners and policy makers will then be able to base their plans, decisions, and policies on reliable foundations.

Finally, in order to check the flow of migrants and the ensuing imbalance

4. The share of crude oil accounts for approximately 37 percent of the gross product in 1971 (504 million Iraqi Dinar). Moreover, the oil revenues had financed about 87 percent Of the nation's "Five-Year Development Plan of 1970-1974". (Ministry of Planning, 1974,18.)

between population and distribution of goods and services, it is recommended that the government should adopt regional development planning with an integrated and comprehensive approach based on the identification of viable economic, administrative and socio-cultural units. As a starting point, the plan may constitute the following:

1. Development of a number of medium-sized regional towns and market centres as links between the large cities and the rural communities;
2. Organization and restructuring of the rural community;
3. Establishment of a population council to undertake the duties of regulating human reproduction and bring it in balance with economic production and social welfare.

Future research should check on the findings of the present analysis and investigate the effect of natural increase differentials on population redistribution. Data from the 1974-75 Vital Statistics Sample Survey, the 1977 Population Census, and the on-going Internal Migration Survey, when published may provide meat for interested demographers. Also, since the size of population directly affects the size and type of institutions serving it (Hawely, 1941 : 633 and 1959 : 379) investigators are urged to explore this phenomenon in the future by extending the present research to include the changes (growth or decline) in functions of these institutions.

References

1. Bachi, Roberto, 1961, Some methods for the study of distributions of internal migrations, *Proceedings of the International Population Conference* (September), New York.
2. Bogue, Donald J., 1969, *Principles of Demography*, Wiley, New York.
3. **Duncan, Otis Dudley, 1957, The measurement of population distribution, *Population Studies*, 11,27-45.**
4. Eldridge, H. T. and Thomas, D. S., 1964, *Population Redistribution and Economic Growth*, United States, 1870-1950, Vol III, Demographic Analysis and Interrelations. Philadelphia : The American Philosophical Society.
5. Gibbs, Jack P., 1961, Spatial distribution, pp. 235-251. In: J. P. Gibbs (ed.), *Urban Research Methods*, D. Van Nostrand Company, Inc., Princeton.
6. Hawley, Amos H., 1959, Population composition, pp. 361-382. In : P. M. Hauser and O. D. Duncan (eds.), *The Study of Population*, Chicago University Press, Chicago.
7. **____, 1941, An ecological study of urban service institutions, *American Sociological Review*, 6, 629-639.**

8. Hilmi, Waleed A. and Associates, 1973, *Internal Migration in Iraq : Trends and Values 1947-1965*, Directorate General of Planning and Engineering, Baghdad. Mimeographed.
9. Hoover, Edgar M., 1941, Interstate redistribution of population, 1930-1940, *Journal of Economic History*, 1, 199-205.
10. Central Statistical Organization, 1973, *General Population Census of 1965*, C.S.O. Press, Baghdad.
11. ———, 1972, *Summary of the Preliminary Results of the 1970 Population Count (in Arabic)*, mimeographed.
12. ———, n.d., *Annual Abstract of Statistics, 1973*, C.S.O. Press, Baghdad.
13. Ministry of Planning, 1974, *Al-Taqaddom Phi Thel At-Takhtit* (Progress by Means of Planning), No. 4, C.S.O. Press (in Arabic), Baghdad.
14. Lee, Everett S., Miller, A.R., Brainerd, C.P. and Easterlin, R.A., 1957, *Population Redistribution and Economic Growth, United States 1870-1950, Vol. I, Methodological Considerations and Reference Tables*. The American Philosophical Society, Philadelphia.
15. Zachariah, K.C., 1970, Use of census data for estimating demographic measures of Iraq, pp. 27-53. In : Cairo Demographic Center, *Demographic Measures and Population Growth in Arab Countries*, Cairo Demographic Center, Cairo.
16. Zeini, Abde -Jussef, 1967, Population of Iraq in a century, 1867-1967, *Al-Iqtessady* (The Economist), 1, 70-94, University of Baghdad, Iraq (in Arabic).

APPENDIX

TABLE 1— POPULATION AND AREA BY REGION AND GOVERNORATE IN IRAQ, 1947 TO 1970

Region and Governorate	1947		1957		1965		1970		Area in 1965 ^a	
	Number	Pet.	Number	Pet.	Number	Pet.	Number	Pet.	Sq. Km.	Pet.
<i>I</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>
<i>North</i>	1,347,371	27.98	1,722,564	27.34	2,118,288	26.33	2,494,853	27.10	97,732	22.52
Arbil	239,776	4.98	273,383	4.34	356,293	4.43	401,697	4.36	15,315	3.53
Dhok"	150,820	3.13	198,502	3.15	145,834	1.81	243,113	2.64	9,754	2.25
Kirkuk	286,005	5.94	388,839	6.17	473,626	5.89	520,717	5.66	19,543	4.50
Nineveh	444,370	9.23	556,945	8.84	742,767	9.23	870,699	9.46	41,127	9.48
Sulaimaniya	226,400	4.70	304,895	4.84	399,768	4.97	458,627	4.98	11,993	2.76
<i>Middle</i>	2,421,127	50.27	3,284,394	52.15	4,415,331	54.86	5,049,642	54.85	285,849	65.86
Anbar	192,983	4.01	253,023	4.02	307,012	3.81	316,169	3.43	137,969	31.79
Babylon	261,206	5.42	354,779	5.63	448,168	5.57	509,487	5.53	6,889	1.59
Baghdad	817,205	16.97	1,313,012	20.84	2,045,375	25.42	2,470,630	26.84	19,922	4.59
Diala	272,413	5.66	329,836	5.24	397,363	4.94	468,340	5.09	15,742	3.63
Kerbela	274,264	5.69	255,676	4.06	339,854	4.22	375,841	4.08	7,170	1.65
Muthanna*	113,352	2.35	129,038	2.05	143,136	1.78	155,305	1.69	73,984	17.05
Qadissiya	264,766	5.50	353,131	5.61	400,092	4.97	416,664	4.53	9,359	2.16
Wasit	224,938	4.67	295,899	4.70	334,331	4.15	337,206	3.66	14,814	3.41

Appendix Table 1 (contd. on page 26)

<i>I</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>
<i>South</i>	1,047,687	21.75	1,292,018	20.51	1,513,796	18.81	1,661,874	18.05	50,419	11.62
Basrah	368,799	7.66	503,330	7.99	669,479	8.32	752,536	8.17	18,022	4.15
Maysan	307,021	6.37	458,848	7.28	345,467	4.29	367,449	3.99	17,945	4.14
Thi-Qar	371,867	1.12	329,840	5.24	498,850	6.20	541,889	5.89	14,452	3.33
Total	4,816,185	100.00	6,298,976	100.00	8,047,415	100.00	9,206,369	100.00	434,000	100.00

a. Due to the relative stability in the area of each governorate, it is assumed that the 1965 figures hold for all censuses.

b. Before July 1969, the governorates of Dhok and Muthanna were parts of the governorates of Nineveh and Qadissiya, respectively. 1947 population figures for Dhok, Nineveh, Muthanna and Qadissiya are estimates.

c. Exclude Iraqi population abroad.

SOURCE : Iraq, Central Statistical Organization (C. S. O.) Annual Abstract of Statistics, no date. Table 14, page 47 (for 1947 to 1965 population). C.S.O., 1972. Summary of the 1970 Preliminary Population Count, Comparative Table (mimeographed in Arabic) for 1970 population. C. S. O., General Population Census of 1965, Table 2, page 36, for areas.

TABLE 2—DIFFERENCES IN PERCENTAGE POINTS BETWEEN POPULATION AND AREA OF GOVERNORATES IN IRAQ, 1947 TO 1970

<i>Governorate and Region</i>	$P_2^{47} - A_1^{65}$	$P_2^{57} - A_1^{65}$	$P_1^{65} - A_1^{65}$	$P_1^{70} - A_1^{65}$
<i>North</i>	5.46	4.82	3.81	4.58
Arbil	1.45	0.81	0.90	0.83
Dhok	0.88	0.90	-0.44	0.39
Kirkuk	1.44	1.67	1.39	1.16
Nineveh	-0.25	-0.64	-0.25	-0.02
Sulaimaniya	1.94	2.08	2.21	2.22
<i>Middle</i>	-15.60	-13.72	-11.01	-11.02
Anbar	-27.78	-27.77	-27.98	-28.36
Babylon	3.83	4.04	3.98	3.94
Baghdad	12.38	16.25	20.83	22.25
Diala	2.03	1.61	1.31	1.46
Muthanna	-17.05	-15.00	-15.27	-15.36
Kerbela	4.04	2.41	2.57	2.43
Qadissiya	5.69	3.45	2.81	2.37
Wasit	1.26	1.29	0.74	0.25
<i>South</i>	10.14	8.90	7.20	6.44
Basrah	3.51	3.84	4.17	4.02
Maysan	2.24	3.15	0.16	-0.14
Thi-Qar	4.39	1.91	2.87	2.56
Absolute Total	90.16	86.82	87.88	87.76

SOURCE : Computed from Table 1 above.

TABLE 3—POPULATION CHANGE, GROWTH AND REDISTRIBUTION INDEX AND LIFETIME
MIGRATION IN IRAQ : 1947, 1957 AND 1965

Governorate	Percent of Population Change ¹¹		Rates of Growth ⁰		Redistribution Index ⁰		Rates of Lifetime ¹¹					
	1947-57	1957-65	1947-57	1957-65	1947-57	1957-65	In-migration		Out-migration		Net Migration	
							1957	1965	1957	1965	1957	1965
Arbil	14.02	30.33	1.31	3.31	-0.64	0.09	3.85	10.05	6.71	10.56	-3.06	-0.57
Dhok	31.62	-26.53	2.75	-3.85	0.02	-1.34	8.23	8.72	21.75	31.45	-17.28	-33.16
Kirkuk	35.96	21.81	3.07	2.47	0.23	-0.28	8.24	15.05	6.20	8.50	2.17	7.16
Nineveh	25.33	33.36	2.26	3.60	-0.39	0.39	8.23	6.44	9.16	11.17	-1.02	-5.33
Sulaimaniya	34.41	31.38	2.96	3.39	0.14	0.13	4.25	11.26	4.70	13.31	-0.53	-2.37
Anbar	31.11	21.34	2.71	2.42	0.01	-0.21	6.31	5.83	11.01	25.16	-5.28	-25.83
Babylon	35.82	26.32	3.06	2.92	0.21	-0.06	5.00	4.44	13.20	11.02	-9.45	-7.40
Baghdad	60.67	55.78	4.74	5.54	3.87	4.58	26.43	28.92	4.17	3.41	23.22	26.42
Diala	21.08	20.47	1.91	2.33	-0.42	-0.30	4.60	5.71	12.50	16.07	-9.03	-12.35
Muthanna	13.84	10.93	1.30	1.30	-0.30	-0.27	6.75	3.32	10.91	12.54	-4.66	-10.55
Kerbela	-6.78	32.92	-0.70	3.56	-1.63	0.16	9.45	3.14	10.79	11.63	-1.50	-9.61
Qadissiya	33.37	13.30	2.88	1.56	0.11	-0.64	6.75	6.28	9.39	14.01	-2.92	-8.98
Wasit	31.55	12.99	2.74	1.53	0.03	-0.55	12.53	7.65	16.40	18.63	-3.43	-13.50
Basrah	36.48	33.01	3.11	3.57	0.33	0.33	16.14	10.17	3.59	4.62	13.02	5.81
Maysan	49.45	-24.71	4.02	0.58	0.91	-2.99	2.73	2.99	37.41	34.30	-39.82	-47.66
Thi-Qar	-11.30	51.24	-1.20	1.04	-2.48	0.96	2.09	3.90	9.79	14.02	-11.88	-11.77
Total	30.79	27.76	2.68	3.06	11.72 ^a	13.28 ^b	—	—	—	—	—	—

a. Computed from Table 1 above.

b. Compiled, adjusted and computed from population censuses of Iraq and Hilmi and Associates, 1973.

c. Absolute total.

TABLE 4—CORRELATION COEFFICIENT BETWEEN NET MIGRATION RATES
AND PERCENTAGE OF POPULATION CHANGE AND ANNUAL RATE OF
GROWTH IN IRAQ

<i>Period</i>	<i>Population Change</i>	<i>Annual Rate of Growth</i>
1947-1957	0.134	0.122
1957-1965	0.803	0.732"

SOURCE ; Computed from Table 3 above.

'Significant at .01 level.