



1974

*World Population Year*

**RECENT  
POPULATION  
MOVEMENTS  
IN JAMAICA**

C.I.C.R.E.D. Série

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## INTRODUCTION

Because this study is one in the series of demographic analyses of countries sponsored by CICRED, an explanation of its title is called for. The departure from the form adopted in this series is accounted for by the fact that a study bearing such a title has already appeared (G.W. Roberts, *The Population of Jamaica*, Cambridge, 1957), and to have another similarly designated would be undesirable.

Since the appearance of *The Population of Jamaica*, there have been two Censuses of Jamaica, one in 1960 and the other in 1970. In a way, therefore, the present work, prepared under the supervision of G.W. Roberts, may be considered as bringing the earlier one up to date. In fact the main demographic topics taken up here – fertility, mortality, working force and internal migration – cover essentially the period 1943 to 1970, or as near to the latter date as available material permits.

The authors of this study – G. W. Roberts, Dorian Powell, Sonja Sinclair, Barbara Boland and Linda Hewitt – are members of the Census Research Programme of the University of the West Indies. The Figures have been prepared by Sonja Sinclair. This Programme, which is supported by the United Nations Fund for Population Activity, is responsible for processing the data of the 1970 Census of the Commonwealth Caribbean countries, and is engaged in general demographic research.

G.W. ROBERTS



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## CHAPTER 1

### GROWTH OF THE POPULATION

The growth of the population of Jamaica exhibits many interesting examples of the inter-relationship between external migration and natural forces. Most of its history has been passed as a slave plantation colony and this regime determined much of its demographic and social structure. Two aspects of population policy may be distinguished during slavery: the first, implicit and extending over most of the period, relied on the slave trade to maintain the labour force of the plantations; the second, of much shorter duration, constitutes an interesting type of pro-natalist policy, which did not envisage mating as in any way involved in population increase. Following emancipation, Jamaica, in common with other West Indian countries, resorted once more to immigration as a means of maintaining its working force. Thus for most of its history immigration has been a dominant aspect of population growth. But the significance of emigration should not be minimised, although it has been spread over relatively shorter intervals of time.

In summarising population growth in Jamaica since the earliest settlement of the island it is instructive to do so in terms of two broad periods, the first covering slavery and the second covering the post-emancipation period.

#### Population Growth During Slavery<sup>1</sup>

Available evidence is that the indigenous population at the time of the conquest and settlement by the Spaniards was not large. Their early disappearance after European conquest may be due as much to their inability to withstand the new diseases brought to the island by the Europeans as to the policy of extermination which historians have ascribed to the Spanish settlers.

Early settlers could therefore not depend on the indigenous population as a source of labour and soon resort to the slave trade became the accepted policy. After the conquest by the English, recruitment of the plantation population through the Trade was greatly expanded. But clearly expansion called for recruitment of white as well as negro population and consequently in tracing the growth of these early populations it is essential to recognise the movement of the two streams — the white settlers and the black slaves they introduced.

<sup>1</sup>This discussion is based largely on G.W. Roberts, *The Population of Jamaica*, 1957.



Records of the growth of populations in these early periods are scanty and inadequate, but the works of historians are rich in population estimates. According to one series, given in Table 1.1, the white population expanded steadily

TABLE 1.1 GROWTH OF THE WHITE POPULATION

<u>Year</u>	<u>Population</u>
1658	4,500
1664	6,000
1670	8,000
1673	8,564
1677	9,000
1694	7,000
1722	7,100
1730	7,658
1734	7,644
1739	10,080
1746	10,000
1754	12,000
1762	15,000
1768	17,949
1778	18,420
1787	25,000

from 4,500 in 1658, to 7,000 by the end of the 17th century, to 10,000 by 1739 and to 25,000 by 1787. Various policies of attracting white settlers were resorted to. One of these centred around the Deficiency Laws, which sought to establish a ratio between white settlers and the stock of slaves in the island. These Laws, coming into force in the 1730s, continued with little success through the following half century. Attempts were also made to recruit convicts from England. Although some increases in the white population were achieved through these measures, it is generally acknowledged that their rates of increase fell far below the rates shown by the slave population.

For most of the long period of slavery planters depended on the slave trade to build up their stock of slaves. Although the very early accounts of the regime suggest that there was an attempt to secure equal numbers of male and female slaves, in the hope that equality between the sexes would ensure adequate reproduction, it was early brought home to the planters that high mortality made replacement of this population impossible. Consequently for most of the slave period the aim was to secure slaves through the Trade and since reproduction was no longer the aim, it proved to the advantage of the planters to secure a preponderance of males, who formed the major portion of the work force. Smaller numbers of females were, however, required to serve as domestic slaves and to perform lighter field operations.

Under the Asiento with Spain in 1713, Jamaica was chosen as the central depot for the supply of slaves to the Spanish colonies. They were brought to Jamaica and refreshed before being transported to the Spanish colonies. The historical records indicate that between 1702 and 1775 a total of 494,800 slaves were imported into the island, while re-exports totalled 135,600. Thus the vast majority (73 per cent) of the quantity imported were retained in the island. The planters claimed that too many of the slaves were exported and that those retained in the island were not of the best quality. The former claim is not borne out, as the total retained over the 73 year period from 1702 to 1775 (359,200) shows that the average annual re-exports over the period amounts to less than 2,000, whereas under the Asiento, the total number to be supplied to the Spanish colonies annually should have been 4,800.

It is evident that, if the available records of slave imports, re-exports and population growth are reliable, very high rates of expansion of the slave population obtained, despite the enormous wastage of life during the period. As will be seen from Table 1.2, the numbers of slaves in the island, small when the English took it over, increased rapidly, reaching nearly 10,000 by 1673 and 45,000 by 1703. The numbers reached 100,000 by 1739 and by 1787 there were 211,000 slaves in the island. This growth attests to a very high rate of importation, and, in conjunction with historians' estimates of net importations, it can be used to

TABLE 1.2 GROWTH OF THE SLAVE POPULATION, NET IMPORTATION OF SLAVES AND ESTIMATED RATES OF INCREASE

Year	Slave population	Net importation of slaves	Annual rate of increase in slave population (%)	Estimated rate of natural decrease (%)
1658	1,400	—	—	—
1673	9,504	—	—	—
1703	45,000	—	—	—
1722	80,000	55,536	0.7	3.7
1730	74,525	32,379		
1734	86,546	19,754		
1739	99,239	20,341	2.8	1.5
1746	112,428	36,510	1.8	2.8
1754	130,000	43,295	1.8	2.3
1762	146,464	54,908	1.5	3.0
1768	166,914	41,472	2.2	2.0
1778	205,261	54,951	2.1	2.1
1787	210,894	—	0.3	—

derive estimates of annual rates of natural decrease experienced by the slaves. It is estimated that rates of natural decrease were in general in excess of 2 per cent per year and at times this rate reached 3 per cent. This suggests extremely high mortality and very low fertility. Indeed the pattern of recruitment, in the face of the very low prices of slaves then prevailing, was to discourage biological replacement.

It was manifestly unrealistic, in fact it might have been impossible, to attempt to control levels of mortality, under prevailing plantation conditions. Diseases indigenous to the island, diseases brought from Africa as well as diseases introduced by the European elements combined to ravage the slave population, so that control of mortality would have proved impossible even if such a course had been attempted. With regard to fertility, pregnancy meant that the females were prevented from performing the duties expected of them and consequently in the heyday of the slave regime fertility was not encouraged. This policy of not seeking to stimulate reproduction among the slave population continued up to the late 18th century. It may be described as at once anti-natalist and indifferent to the level of mortality or to conditions of mating.

Towards the end of the 18th century, however, a series of developments combined to cause a shift in the policy of the plantation owners. Increased demand for slaves outside the Caribbean caused a marked rise in their market price and forced the planters to consider carefully the economics of slave rearing. It became clear to them that it was no longer economic to rely on the slave trade and that serious attempts should be made to stimulate the reproduction of their work force. In the same period the rise of humanitarian movements in England produced strong opposition to the slave trade. Indeed the view was expressed that if the Trade was stopped the slave population in the Caribbean would reproduce itself. Again slave uprisings in Haiti caused great apprehension among West Indian planters, lest further accumulation of slaves on their own plantations would lead to similar disturbances. These developments led to a re-assessment of the role of the slave trade in the recruitment of the plantation labour force.

The advantages of a policy of stimulating reproduction became clear. A law passed in 1792 aimed at ensuring some natural increase of the slave population, contained pro-natalist provisions differing basically from such programmes as developed in Europe, but which might have been more suited to existing plantation conditions. A major provision was the payment to overseers for every live birth occurring to slaves on the plantation to which they were attached.

There were also remissions of taxes with regard to such sums paid to overseers. With the aim of making childbearing more attractive to the slave woman, every female who gave birth to six children would be exempt from hard labour in the field and their owners would be exempt from taxes on such high fertility slaves. Two curious features of this pro-natalist policy may be noted: it was

directed wholly to the females and it did not attempt to increase mating among the slaves. This law contained no provisions for the improvement of health conditions, which was equally necessary to stimulate rates of reproduction. But several lines of action in this direction were introduced by the planters themselves, such as the setting up of hospitals on the plantations.

It is questionable whether these measures wrought any great change in the reproductive capacity of the slave population. From evidence made available from the Slave Registration Act, it is possible to trace more accurately than hitherto, the movements in the slave population after 1816, the year in which the first registration took place. Summarised in Table 1.3 are the movements of slave populations from 1817 to 1829. The steady decline throughout this period

TABLE 1.3 SLAVE POPULATION MOVEMENTS IN JAMAICA DURING SLAVE REGISTRATION

Year of registration	Slave population	Increase due to births	Decrease due to	
			Deaths	Manumissions
1817	346,150	—	—	—
1820	342,382	24,346	25,104	1,016
1823	336,253	23,249	26,351	921
1826	331,119	23,026	25,170	957
1829	322,421	21,728	25,137	1,117

is evident. The records of births and deaths do not correspond strictly to estimates of these vital processes taking place in the triennial periods; these terms are used to account for certain changes in the slave population and they underestimate the true levels of fertility and mortality. They are however sufficiently reliable to show the continued excess of deaths over births which, in view of the cessation of the slave trade in 1807, resulted in the falls in the slave population noted.

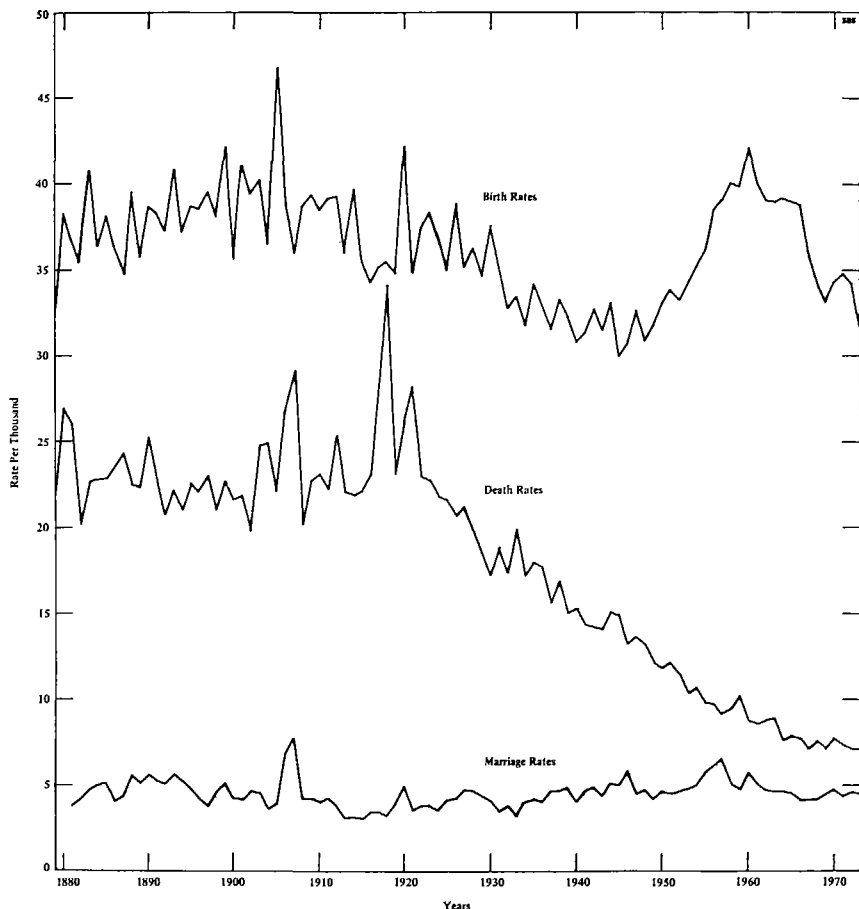
#### Growth in the Post-Emancipation Period

It is convenient to discuss population growth in the island after 1834 in terms of periods established on the basis of currents of external migration and census dates. The first population census of the island was taken in 1844 and subsequent censuses at 1851, 1861 and later decennial intervals provide the basis for tracing, in conjunction with available migration records and vital statistics, population movements up to 1970. These movements and components of growth during the successive intercensal intervals are shown in Table 1.4, while Figure 1.1 gives the vital rates over the whole period for which demographic records are available.

## GROWTH OF THE POPULATION

TABLE 1.4 SUMMARY OF POPULATION MOVEMENTS IN JAMAICA, 1844-1970

Year of census	Census Population	Intercensal increase		Births, deaths and natural increase during intercensal interval		Natural Increase	Migration balance	Rates per 1,000 population		
		No.	Annual rate %	Births	Deaths			Birth	Death	Natural Increase
1844	377,433	-	-	-	-	-	-	-	-	-
1861	441,264	63,800	0.92	275,400	224,400	51,000	+ 12,800	40	32	8
1871	506,154	64,900	1.38	184,800	127,900	56,900	+ 8,000	39	27	12
1881	580,804	74,600	1.38	208,200	139,200	69,000	+ 5,600	38	26	12
1891	639,491	58,700	0.97	224,200	140,700	83,500	- 24,800	36.7	23.1	13.6
1911	831,383	191,900	1.32	581,100	345,300	235,700	- 43,900	39.5	23.5	16.0
1921	858,118	26,700	0.32	320,200	216,400	103,800	- 77,100	37.9	25.6	12.3
1943	1,237,063	378,900	1.67	765,300	412,200	353,200	+ 25,800	33.2	17.9	15.3
1960	1,609,814	372,800	1.56	855,500	287,500	568,000	-195,200	35.3	11.9	23.4
1970	1,848,512	238,700	1.39	676,500	141,300	535,200	-296,500	39.1	8.2	30.9



**Figure 1.1—Crude birth, death and marriage rates for Jamaica, 1879 to 1973.**

The first broad period of historical growth can be put as extending from 1844 to 1881. During this period external migration constituted a sizeable component of population growth, although it never attained the prominence which it did for Eastern Caribbean countries. In fact the three intercensal intervals covered here all show net immigration consisting of both East Indians and liberated Africans but these are small by comparison with similar movements into the Eastern Caribbean. The birth rate estimated for the first intercensal interval amounts to 40 and in the succeeding two intercensal intervals to 39 and 38 respectively. For the first interval the death rate is very high (32) which conceivably may be influenced by two factors. In the first place it is possible that the high mortality rates of slavery were not altogether overcome. Secondly

the cholera epidemic of 1851, one of the most serious health disasters that the country has ever experienced, must have contributed to high mortality. Fairly high rates of natural increase are in evidence after 1851, when intercensal rates of 1.2 per cent are recorded.

The next broad interval, extending from 1881 to 1921 witnessed a change in the net emigration balance, showing a pronounced outflow. This markedly reduced the rates of population growth, which declined from 1.4 per cent during 1861-81 to just under 1 per cent in 1881-91 and then to 0.32 per cent in 1911-21, the lowest rate of growth ever experienced by the island. By far the most important element of this period was the outflow in response to the demand for labour that appeared as a result of work on the Panama Canal, the development of the banana industry in Costa Rica, and the expansion of the sugar industry in Cuba. All of these required substantial numbers of unskilled and semi-skilled workers and, with the easy communications between these areas and Jamaica and the relatively high levels of wages in these new fields, a considerable outflow from the island was assured. Another movement that developed in this period was the emigration to the United States which was helped greatly by the growth of the banana industry in Jamaica and the sea communications established in order to get this perishable fruit as quickly as possible to the North American market. Within the last decade of this period unfavourable conditions within Jamaica played a major part in augmenting this outflow of population, especially to North America. Between 1911 and 1921 net emigration was running at the rate of nearly 8,000 per year, equivalent to 74 per cent of the annual natural increase in the island, which greatly curtailed rates of population growth.

Since registered births and deaths are used in estimating birth and death rates in this period the apparent reductions in these rates probably derive from the low level of registration in these initial years. But the succession of hurricanes experienced between 1911 and 1921, together with the influenza pandemic of 1918, accounts for the high level of mortality witnessed in that decade.

The year 1921 can be taken as signalling two important changes in the demographic history of Jamaica. In the first place it marks the end of the era of unrestricted emigration to the United States and Latin America. The former's Quota laws effectively halted the migration from Jamaica, while there appears to have been a cessation of the movement to Latin America with the conclusion of the major construction and agricultural expansion programmes which up to then were attracting large numbers of Jamaican workers. In fact the period 1921 to 1943 witnessed a small net inward movement, representing probably the return of many who emigrated earlier in the century. Secondly it marks the emergence of an era of mortality control. Despite the introduction of many laws in the 19th century aimed at curbing rates of mortality, all these proved ineffective until the Public Health Act of 1926 conferred appropriate statutory authority.

on the Central Board of Health. A further contributing factor occurring at this time was the programme of the Rockefeller Foundation to educate the population in the control of a variety of infectious diseases.

As a consequence of the reduction in mortality and the cessation of emigration, there was a marked rise in the rate of growth. Between 1921 and 1943 the population of the island passed the one million mark, moving up from 0.858 million to 1.237 million. The resulting annual rate of growth (1.7 per cent) is the highest ever experienced by the island since 1844. While the small net inward movement that took place contributed towards this growth, a much more important determinant was the rise in the rate of natural increase, which appeared, despite the reductions in fertility. This amounted to 1.5 per cent per year, which was only slightly below the highest level so far experienced, that is 1.6 per cent in the intercensal interval 1891-1911.

What may be termed the modern phase, that is the period following World War II, is again marked by an important re-appearance of external migration. The three avenues of emigration were the United Kingdom, the United States and Canada. Increased contact with the United Kingdom during and following the war, heavy unemployment in Jamaica at the time, the post-war shortage of certain types of labour in the United Kingdom, the ease with which Jamaicans could enter the United Kingdom, and the availability of sea transport made possible this outflow. Relaxation of the restrictions against coloured immigration into Canada, again accompanied by shortage of labour, was at the basis of the emigration to that country. This movement, in contrast to the United Kingdom stream, was highly selective, and consisted for the most part of skilled and professional personnel. In the case of the movement to the United States, it was largely shifts in administrative procedures governing entry into the United States, rather than any fundamental changes in their Immigration laws that stimulated the considerable movement in this direction. These movements combined to produce a net loss to the island of 195,000 in the intercensal interval 1943-60. This was equivalent to one-third of the total natural increase during the period, thus representing an appreciable curbing of rates of growth. So that although for the first time in the island's history an intercensal rate of natural increase in excess of 2 per cent was recorded (2.3 per cent) the actual growth experienced in the period was slightly lower, at 1.5 per cent, than the corresponding value for the preceding intercensal interval. Even more arresting was the net outward movement occurring in the decade 1960-70. The annual volume of outflow of 28,000 was by far the largest ever experienced in the island, greatly exceeding corresponding losses due to mortality and equivalent to 53 per cent of the total natural increase in the decade. So that despite the high level of fertility in this period, with a birth rate of 40, the low death rate of 8 and a rate of natural increase which for the first time exceeded 3 per cent per year, the annual rate of increase experienced by the island (1.5 per cent) was slightly lower than it was during the preceding intercensal period.



But just as significant for the period of modern growth have been the developments noted in mortality and fertility. The course of these two will be discussed in later Chapters in this work. But it is of interest to note here that the marked falls in mortality, coupled with some increase in fertility have produced potentials of growth much higher than any obtaining in the past.

G.W. ROBERTS

## CHAPTER 2

### CHARACTERISTICS OF THE POPULATION

The three characteristics of the population discussed in this Chapter are age structure, sex composition and educational attainment.<sup>1</sup> In recent times the first two have been heavily influenced by external migration, but, as will be seen, not in the same way as during the years prior to 1921. In terms of educational attainment, one feature to the advantage of the island has been the establishment of the University of the West Indies, which probably contributes to its relatively favourable position, compared with other West Indian countries with respect to university trained personnel. Unfortunately, the evidence is that the material on educational status for 1970 is by no means as reliable as that of the two preceding Censuses.

#### Age Structure

Recent currents of external migration affecting the island have had several notable effects on its structure. In contrast to movements occurring before 1921, modern emigration has not been heavily sex selective although, as with earlier movements of this nature, it has been largely confined to the age range 15-44. Continued high rates of fertility have also played a dominant part in determining the age structure, although not so great as that played by external migration. Presented in Table 2.1 are the proportional distributions of the populations at the three Censuses 1943, 1960 and 1970, in terms of six broad age groups.

TABLE 2.1 PROPORTION (PER CENT) AGE DISTRIBUTION OF THE POPULATION BY SEX, 1943, 1960 AND 1970

Age group	Male			Female		
	1943	1960	1970	1943	1960	1970
0-4	13.1	17.4	16.5	12.1	15.9	15.4
5-14	24.8	25.6	31.1	23.1	23.5	29.3
15-29	26.5	22.6	21.1	28.2	24.6	21.9
30-44	20.1	16.0	12.7	19.3	17.0	13.6
45-64	11.9	14.7	13.6	12.5	14.1	13.8
65+	3.6	3.7	5.0	4.7	4.9	6.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

<sup>1</sup>For earlier discussions of these topics, see G.W. Roberts, *The Population of Jamaica*.

The marked rises in the proportion of the population under age 15 represent the combined effects of these two processes. In 1943 the proportion of the male population under age 15 stands at 38 per cent, which moves up to 43 per cent, in 1960 and to 48 per cent in 1970. The very high level at the last mentioned year is traceable more to external migration than to levels of fertility, although there is evidence of some upturns in fertility in the decade 1960-70. The considerable rise in the proportion of the population falling in the school age range is the outstanding aspect of change in the island's age structure. Between 1960 and 1970 the proportion of the total population within this age range (5-14) increases from just over one-quarter to slightly below one-third. At higher ages the effects of emigration are heavily in evidence. Thus in the age range 15-29, which covers the younger members of the working force, the proportion falls appreciably from 27 per cent to 23 per cent to 21 per cent in the case of males. Even more pronounced is the falling proportion which the age group 30-44 forms of the total. From 20 per cent in 1943, this declines to 16 per cent and then to 13 per cent in 1970. By contrast, at higher ages where external migration is not so pronounced, there tends to be a rise in the proportion which these age groups form of the island total, but these are minor. At ages over 65, representing the population past working age, the proportion increases slightly between 1960 and 1970, from 4 per cent to 5 per cent. In general the pattern of changing distributions noted for males is repeated among females.

Another aspect of changing age structure comes from rates of increase or decrease experienced by the six age groups during 1943-60 and 1960-70, which appear in Table 2.2. Perhaps the most striking movement is that shown by the population under 5. Whereas this age group shows a very considerable rise of 72 per cent between 1943 and 1960, in the case of males, the increase in the succeeding decade is only 7 per cent. On the other hand the expansion of the school age population has throughout been appreciable – 33 per cent between

TABLE 2.2 PERCENTAGE INCREASE OR DECREASE (—) IN AGE GROUPS OF THE POPULATION, 1943-60 AND 1960-70, BY SEX

Age group	Male		Female	
	1943-60	1960-70	1943-60	1960-70
0-4	72.4	7.1	70.3	7.0
5-14	33.1	37.8	33.7	37.1
15-29	10.5	5.6	14.2	- 1.9
30-44	3.0	- 9.6	14.9	-11.6
45-64	59.6	4.6	48.2	7.7
65+	32.0	53.4	36.5	34.5
Total	29.3	13.3	30.9	10.2

1943 and 1960, and 38 per cent in the following decade. From age 15 however the marked effects of heavy emigration become apparent. Rates of growth are much lower – in some cases these are replaced by rates of decrease – and decline over the two intercensal periods being examined. Thus among young adults the rise of 11 per cent between 1943 and 1960 is followed by one of only 6 per cent in the next decade. In the age interval 30-44 a small rise of 3 per cent in the first intercensal interval is replaced by a considerable reduction of 10 per cent during 1960-70. Even the age interval 45-64 shows a dramatic shift; whereas the population in this age group increases by 60 per cent between 1943 and 1960, the corresponding rise in the succeeding intercensal interval is only 5 per cent. Of interest however is the acceleration in growth rates for the population over 65, from 32 per cent to 53 per cent. While these movements are in general the same for females, the latter at some points show even more markedly the consequences of emigration. Thus whereas within the age range 15-44 females experience appreciable growth in numbers over the initial intercensal interval, this is converted to a marked decrease after 1960. It is convenient to summarise the changing age structure of the population at the three Censuses in terms of their median ages. These are as follows:

<u>Year</u>	<u>Male</u>	<u>Female</u>
1943	21.60	22.65
1960	18.96	20.87
1970	16.36	17.91

These clearly depict a gradual increase in the relative proportion of the young population, with the median age declining from about 22 years in 1943 to 17 years in 1970. While upturns in fertility since 1943 have probably contributed to these changes, it appears also that some of them must be ascribed to the considerable drain of the population of working and childbearing age, especially between 1960 and 1970.

An effective way of showing shifts in the island's age structure between 1960 and 1970 is by means of age pyramids, which form the subject of Figure 2.1. Their salient feature is the impact of emigration on the middle age ranges of the population. The extent to which the 1970 population falls below that of 1960, within the age range 15-54, is well emphasised, the difference in the case of females aged 25-29 being especially marked. Increases over age 64 during the decade are also brought out. Of equal significance is the considerable rise in the population of school age (5-14), which is in strong contrast with the shrinking size of the population under 5, a consequence of declining magnitude of recent birth cohorts.

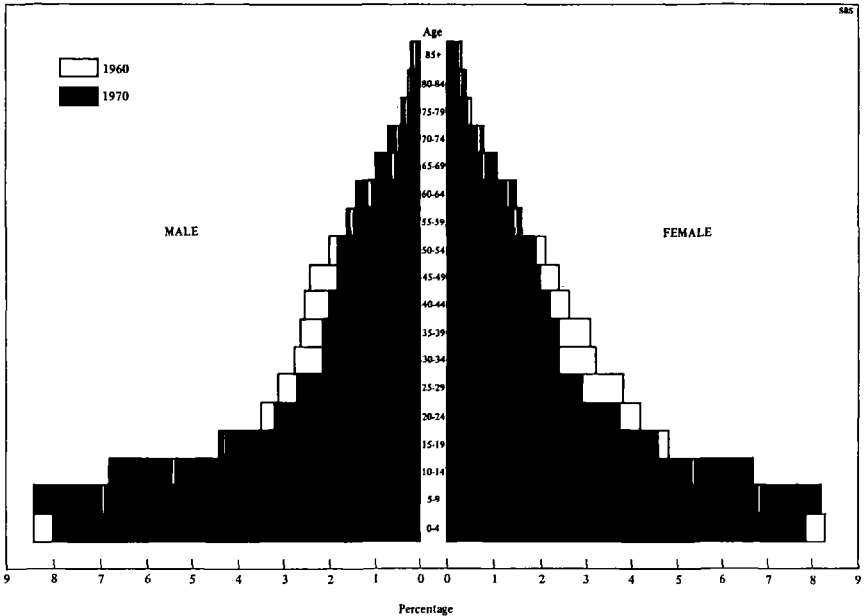


Figure 2.1—Age pyramid of Jamaica, 1960 and 1970.

### Sex Composition

Three factors determining the sex composition of the population are the sex ratio at birth, the sex differential in its mortality experience and the sex composition of external migration. As has been indicated in an earlier work, the low sex ratio at birth is a feature which Jamaica shares with many populations of negro descent.<sup>2</sup> Whereas in European societies sex ratios at birth of about 106 are usual, in the case of West Indian populations these are usually about 103 or less. This, coupled with the pronounced advantage of females over males with regard to the level of mortality, suffices to produce a preponderance of females, especially at higher ages. With regard to the third factor, external migration, this has had varying effects on the island's sex composition. Indenture immigration of the 19th century was heavily male in composition and tended to result in a high proportion of males in the age range 15 to 44, although this never attained the level of male preponderance witnessed in populations of the Eastern Caribbean. Later currents of external migration, which took the form of net outflows, tended to produce the opposite effect on the population. Its markedly sex-

<sup>2</sup>Loc. Cit.

selective nature tended to produce a shortage of males in the age range of reproduction, which was pronounced up to the Census of 1921. The cessation of external migration after this time redresses somewhat the sex imbalance of the population, and by 1943 the preponderance of females is no longer in evidence. The re-appearance of substantial emigration in the 1950's and 1960's does not materially disturb the balance between the sexes, because this movement is not sex-selective to any marked degree.

Recent sex composition of the island's population is depicted in Table 2.3, which gives sex ratios in terms of broad age groups. For the population as a whole the sex ratio of 937 in 1943 declines slightly to 925 in 1960 and then rises to 951 by 1970. In terms of the broad age groups, the pattern of a small preponderance of males at ages below 15 is evident, while at higher ages there is a considerable excess of females. Thus within the age range 15-29 the sex ratio is especially low in 1960, being 850, but moves up considerably by 1970 to 915. Indeed, except for the age group 45-64, there is a clear increase in sex ratios between 1960 and 1970 at higher ages. The fact that these changes have taken place in the context of substantial net outflows emphasises that these migratory movements have not been sex selective.

TABLE 2.3 SEX RATIOS (MALES PER 1000 FEMALES) BY AGE GROUPS, 1943, 1960 AND 1970

Age group	1943	1960	1970
0-4	1003.0	1015.2	1016.7
5-14	1008.2	1003.6	1008.8
15-29	878.2	849.6	914.9
30-44	972.6	872.8	891.3
45-64	897.9	966.8	939.2
65+	717.0	693.6	790.8
Total	936.6	924.8	950.6

It is interesting to compare the sex ratios of the actual population over a long period with corresponding figures for the stationary or life table populations, constructed on the basis of radices which are in the same ratio as the sex ratios at birth during the years covering the census dates. These are shown in Table 2.4. It is seen that in 1881, that is before heavy emigration commenced, that there is very little difference between the two ratios. But as heavy sex--

TABLE 2.4 SEX RATIOS (MALES PER 1000 FEMALES) IN STATIONARY AND IN ACTUAL POPULATIONS, 1881 TO 1970

Year	Sex ratio in stationary population	Sex ratio in actual population
1881	956	950
1891	991	917
1911	965	916
1921	972	881
1946	956	937*
1951	967	946
1960	940	925
1970	951	951

\*Ratio according to Census population of 1943.

selective emigration begins the sex ratio in the actual population is steeply reduced, reaching its lowest point of 881 in 1921, when the corresponding figure for the stationary population is 956. There is an appreciable redress in the imbalance at 1946 and 1951, so that at these two dates the gap between the two ratios closes. Renewed emigration in the 1950s, which must have involved slightly more men than women, introduces a slight fall in the ratio, but it is still substantial and by 1970 it is up again to exactly the level for the actual population, thus showing that by this time there are no serious sex distortions to be reckoned with, despite the profound changes undergone with regard to age structure.

### Educational Attainment

Up to 1921 the assessment of educational status in the Censuses of Jamaica has been in terms of the usual literacy-illiteracy dichotomy. While this was maintained in 1943 as well, it was considerably amplified to show, in addition, the population with various levels of schooling – primary, secondary, practical training and professional training. In view of the pronounced falls in the proportions of the population who have not attended school this extension is essential. At the 1960 Census the literacy-illiteracy dichotomy is again used in conjunction with a breakdown of the population in terms of schooling experience, but clearly the proportion without formal schooling constitutes a more satisfactory general measure of educational attainment than the traditional illiteracy proportion. Consequently the 1970 Census has dropped the old dichotomy and appreciably developed information on schooling experience.

### Schooling Experience

A summary of the changes in educational status of the population aged 15 years and over is given in Table 2.5. What emerges from this is a striking reduction in the proportion without formal schooling, especially between 1960 and 1970. This moves down from 25 per cent in 1943, to 16 per cent in 1960 and to under 4 per cent in 1970. Just as impressive is the improvement indicated in terms of functional illiteracy, that is the population with less than 4 years of formal schooling. This can be assessed for the years 1960 and 1970, and shows a

TABLE 2.5 SIZE DISTRIBUTION AND PROPORTION (PER CENT)  
DISTRIBUTION OF PERSONS AGED 15 YEARS AND OVER, BY EDUCATIONAL  
ATTAINMENT, 1943, 1960 AND 1970, BOTH SEXES

Level of education	Size distribution			Per cent distribution		
	1943	1960	1970	1943	1960	1970
Never attended school	198,000	152,600	38,100	25.2	16.0	3.9
Less than 4 years' schooling	—	225,200	84,300	—	23.8	8.7
All persons with primary schooling	553,200	728,700	800,800	70.5	76.9	82.7
All persons with secondary schooling	27,800	62,700	101,800	3.5	6.6	10.6
All persons with degrees and diplomas	2,000	3,300	9,600	0.3	0.5	1.0
Other	—	—	13,000	—	—	1.3
Not stated	3,500	—	5,100	0.4	—	0.5
Total	784,400	947,300	968,400	100.0	100.0	100.0

*Note:* The category, less than 4 years' schooling, includes persons with no schooling and is therefore not additive to the columns of this Table.

decline from 24 per cent to 9 per cent over the decade. Complementary to this seemingly considerable improvement in education at the lower level are equally impressive advances in secondary and university education. The population over 15 years who have been to secondary school has more than doubled between 1943 and 1960, increasing from 28,000 to 63,000, and by 1970 this number is up to 102,000. Whereas in 1943 the proportion of the country's adult popula-



tion with secondary schooling accounts for 3 per cent of the total, the corresponding proportion in 1970 is three times this (10 per cent). Just as dramatic has been the rise registered in the proportion of the adult population with professional and university training, which for the first time, in 1970, attains a level as high as 1 per cent, that is twice the corresponding level of 1960.

Improvements in primary school enrolment of the magnitude shown above raise the question whether the 1970 Census provides reliable data on this topic; for it is difficult to see how changes in the proportions who have not attended primary school could be as high as this Census suggests. Further light may be thrown on the position by examining the alterations in proportions without schooling for successive 5-year age groups of the population. These are shown in Table 2.6, which arranges the proportions to correspond approximately to the experience of age cohorts of 1943. Thus the 1960 proportion corresponding to

TABLE 2.6 COMPARISONS OF PROPORTIONS (PER CENT) OF 1943 AGE COHORTS WITHOUT SCHOOLING, ACCORDING TO CENSUSES OF 1943, 1960 AND 1970, BOTH SEXES

Cohorts of 1943		Per cent of 1943 age cohorts without schooling, according to Censuses of	
Age cohort	Per cent without schooling	1960	1970
		15-19	16.6
20-24	14.4	15.3	4.5
25-29	21.7	18.3	5.7
30-34	25.3	20.8	6.6
35-39	28.2	23.8	7.8
40-44	30.1	23.5	9.2

that of the age group 15-19 at 1943 is that of 30-34, while the 1970 figure corresponding to the age group 15-19 in 1943 is that of 40-44. Each line therefore roughly represents the educational status of a 5-year age cohort at the three census dates. There is a fairly good consistency between the material for the first two Censuses, especially for the younger age cohorts. The largest difference, in respect of the oldest age group in the Table, is 6.6 percentage points, but in general the differences are less than 4 percentage points. This essential consistency of the educational data is broken when we introduce values for the 1970 Census. It is clear that a substantial proportion of the population of 1970 who at earlier Censuses declare that they have no formal schooling are in fact recorded as having been to such schools. This is evident from the considerable rise at the latter period in proportions returned as having attended primary school.

When we examine the experience of successive 5-year age groups by means of a more sensitive measure of educational attainment, namely, the relative importance of persons with less than 4 years of primary schooling, a lack of consistency between the data for 1960 and for 1970 is again manifest, as can be seen from Table 2.7. As is to be expected, the discrepancies are much smaller than those shown for the entire population with primary schooling, but they

TABLE 2.7 COMPARISONS OF PROPORTIONS (PER CENT) OF 1960 AGE COHORTS WITH 1 TO 3 YEARS' SCHOOLING, ACCORDING TO CENSUSES OF 1960 AND 1970, BOTH SEXES

Cohorts of 1960		Per cent of 1960 age cohorts with 1-3 years' schooling, according to Census of 1970
Age cohort	Per cent with 1-3 years' schooling	
20-24	6.6	4.6
25-29	7.2	5.2
30-34	7.7	5.6
35-39	8.1	5.7
40-44	8.5	6.2
45-49	8.7	7.0
50-54	9.6	7.4

remain sufficient to place in question the reliability of the 1970 Census data on educational attainment. Thus the proportions of the age cohorts of 1960 with this level of education in general range from 7.2 to 9.6, whereas the corresponding range for the estimated cohort values at 1970 is from 5.2 to 7.4, the differences being of the order of 2 percentage points. So that from the standpoint of functional literacy also it is difficult to conclude whether the country presents a better showing in 1970 than in 1960.

It is next necessary to consider whether this lack of consistency between 1970 and earlier Censuses extends as well to proportions of the population who have received secondary schooling. This can be examined from Table 2.8, which shows the cohort experience of 5-year age groups at the three Census dates. In contrast to the situation regarding primary schooling, the cohort experience here seems consistent. Rises for younger cohorts may be compatible with an extension of the period of school attendance, while the higher ages show sufficient consistency, with a general level of about 4 per cent having education of this type.

TABLE 2.8 COMPARISONS OF PROPORTIONS (PER CENT) OF 1943 AGE COHORTS WITH SECONDARY SCHOOLING, ACCORDING TO CENSUSES OF 1943, 1960 AND 1970, BOTH SEXES.

Cohorts of 1943		Per cent of 1943 age cohorts with secondary schooling, according to Censuses of	
Age cohort	Per cent with secondary schooling	1960	1970
15-19	5.6	6.8	6.0
20-24	4.8	5.6	5.2
25-29	4.9	4.9	4.2
30-34	5.0	4.9	4.9
35-39	4.2	4.3	3.8
40-44	3.9	4.2	3.2

*Note:* For 1943 this category includes persons with secondary education, those with practical training as well as those with pre-professional training.

Consistency between the 1960 and 1970 Censuses from the standpoint of secondary education certainly suggests that safer inferences can be made about movements in educational status from this type of material. But the uncertainty with regard to measures based on primary schooling, in terms of which the vast majority of the population must be assessed, makes it doubtful whether any overall statement about changes in educational attainment between 1960 and 1970 can be advanced with confidence.

### School Enrolment

Indications of change in educational status of a country can be obtained from proportions of children reported as attending school; such material for Jamaica in 1943, 1960 and 1970 are shown in Table 2.9. Very marked rises in these appear. In the case of children aged 5-14 the proportions move up from 66 per cent in 1943 to 84 per cent in 1960 and to 92 per cent in 1970. Even more

TABLE 2.9 PROPORTION (PER CENT) OF THE POPULATION AGED 5-19 ATTENDING SCHOOL, 1943, 1960 AND 1970, BOTH SEXES

Age group	Year		
	1943	1960	1970
5-14	66.4	83.6	92.0
15-19	8.0	15.3	38.9

impressive are the improvements with regard to the age group 15-19. Here the proportion nearly doubles between 1943 and 1960, to reach 15 per cent at the latter date, while by 1970 the figure rises to 39 per cent.

Of interest also are the proportions of children enrolled at different types of school, which can be studied from the data of the 1960 and 1970 Censuses. Proportions of the population of each sex, aged 5-14, at the different types of school are given in Table 2.10. A rise in the overall proportion attending school is reflected for all types, with the outstanding development being that 6 per cent of male and 5 per cent of female children are at secondary school in 1970, which are much higher than corresponding figures for 1960. But, as is to be expected, the majority of additional enrolment is accounted for by the large numbers at primary school, which in 1970 is equivalent to 70 per cent of all children, as compared with 67 per cent at 1960.

TABLE 2.10 PROPORTION (PER CENT) OF POPULATION AGED 5-14 ATTENDING DIFFERENT TYPES OF SCHOOL, BY SEX, 1960 AND 1970

Type of school being attended	Male		Female	
	1960	1970	1960	1970
Infant	12.8	15.7	13.2	16.2
Primary	66.7	70.9	67.3	69.9
Secondary	3.0	6.2	4.1	7.4
Other	—	0.3	—	0.3
None	17.5	6.9	15.4	6.1
Total	100.0	100.0	100.0	100.0

The movement of children from primary to secondary school has also to be considered in assessing schooling experience. A rough measure of this may be taken as the ratio of primary to secondary school children at successive Censuses. This ratio amounts to 20:1 in 1943, 12:1 in 1960 and 8:1 in 1970, thus suggesting an appreciable rise in the proportion of children continuing to secondary school. However, a measure of this nature is of reduced efficiency in recent times, when the child tends to move through the school system essentially on the basis of an age transfer process. Here also the limitations of the 1970 Census on educational status, to which attention has already been drawn, has to be recalled.

Answers to Census questions on school attendance give, in effect, information on children enrolled at school, and unless amplified by data on the

frequency of attendance may present an unduly favourable picture of the situation. For this reason information on regularity of attendance has usually to be brought into the picture in assessing schooling. Data of this nature are not available from the Censuses of 1960 and 1970, but to some extent this form of supplementary material is furnished for the population over age 15 by another range of Census data, which will next be discussed.

### Educational Qualification

For a better appreciation of shifts in the country's educational status, it is necessary to examine the qualifications obtained by persons aged 15 years and over who have had a secondary education. Table 2.11 compares the positions at 1960 and 1970 with regard to such qualifications. There are issues of comparability to be taken into account here, but it is believed that the material does permit some inference about changes in educational attainment over the decade after 1960.

TABLE 2.11 SIZE DISTRIBUTION AND PROPORTION (PER CENT) DISTRIBUTION OF POPULATION OVER 15 YEARS WITH SECONDARY EDUCATION, BY TYPE OF EXAMINATION PASSED, BOTH SEXES, 1960 AND 1970

Type of Examination passed	Size distribution		Per cent distribution	
	1960	1970	1960	1970
None	36,500	58,800	55.3	47.2
School certificate, senior Cambridge or GCE O and A level passes	26,200	29,000	39.7	23.3
Degree or diploma	3,300	12,400	5.0	10.0
Other	—	24,300	—	19.5
Total with secondary education	66,000	124,500	100.0	100.0

Although the total number of persons who have been to a secondary school almost doubles, moving up from 66,000 to 124,000 during the decade, most of this increase is accounted for by persons who have been to such schools, but who have not secured school certificates, GCE passes or university training. In fact the numbers who have secured such qualifications rise only from 26,200 to 29,000, that is by 11 per cent. It is possible that a portion of the indeterminate group — other — returned in 1970 may include some with GCE passes or the

equivalent. A striking improvement is recorded for those having university degrees and diplomas; here the increase is four-fold, from 3,300 to 12,400. Possibly because of the substantial growth in the numbers who attended secondary school without securing these qualifications, the proportions of the population who have secured them show a substantial decline, from 40 per cent to 23 per cent. On the other hand, the percentage with diplomas or degrees doubles, rising from 5 per cent to 10 per cent. While there is reason to believe that the presence of the University of West Indies in Jamaica has brought about a sharp increase in the numbers of persons with university qualification, it must also be recalled that some of this may be traceable to the altered definitions of this category in 1970 to include persons with diplomas as well.

It may be concluded that movements in respect of secondary and university training of the population suggest improvements in its general educational status. But the picture presented by the material on primary school attendance seems to grossly overstate such advances. In fact the latter form of data, in terms of which the vast majority of the population have to be assessed, is not sufficiently reliable to warrant closer analysis of the schooling and general educational experience of the island in 1970. Indeed for the population at large no reliable conclusion can be advanced as to whether educational status has improved or not.

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## CHAPTER 3

## INTERNAL MIGRATION AND URBAN GROWTH

In the study of internal migration in Jamaica, the division into 14 parishes, established in 1867, proves convenient. This treats the major urban centre, Kingston, as a parish, while the 13 other units were originally demarcated so as to secure areas not differing markedly among themselves with regard to area and population. Since 1867 differential rates of growth have resulted in considerable

TABLE 3.1 GROWTH OF PARISH POPULATIONS — 1921-1970

Parish	1921	1943	1960	1970
Kingston	63,700	110,100	123,400	109,800
St. Andrew	54,600	128,100	296,000	421,700
St. Thomas	42,500	60,700	68,700	71,200
Portland	49,000	60,700	64,500	69,300
St. Mary	71,400	90,900	94,200	100,400
St. Ann	70,900	96,200	114,400	122,700
Trelawny	34,600	47,500	56,100	61,900
St. James	41,900	63,500	83,000	103,100
Hanover	38,200	51,700	53,900	59,400
Westmoreland	68,900	90,100	109,600	115,800
St. Elizabeth	79,300	100,200	116,700	127,800
Manchester	63,900	92,700	111,800	122,900
Clarendon	83,000	123,500	164,000	178,300
St. Catherine	96,600	121,000	153,500	184,200
TOTAL	858,500	1,237,000	1,609,800	1,848,500

(All figures are rounded to nearest 100)

Source: Census Reports 1921, 1943, 1960, 1970.

changes from the proportional distribution of 1871, the major development being the growing concentration of population in the suburban area of St. Andrew. The growth of the population of the several parishes is shown in Table 3.1 while in Table 3.2 the proportional distributions are set out.

The extent to which population movements in St. Andrew dominate the picture of internal migration is evident. In 1921, that is before its rapid expan-

sion as a suburban area commenced, it supports 6 per cent of the island's population and is smaller in size of population than Kingston and eight other parishes. By 1943 however St. Andrew constitutes the largest parish, with 10 per cent of the total population, while the proportion in Kingston is just under 9 per cent. With the progressive concentration of population in St. Andrew, this parish supports, by 1960, 18 per cent of the island's population, that is more than

TABLE 3.2 PROPORTIONAL DISTRIBUTION OF POPULATION BY PARISH—1921-1970

Parish	1921	1943	1960	1970
Kingston	7.42	8.90	7.67	5.94
St. Andrew	6.36	10.36	18.39	22.81
St. Thomas	4.95	4.91	4.27	3.85
Portland	5.71	4.91	4.01	3.75
St. Mary	8.32	7.35	5.85	5.43
St. Ann	8.27	7.77	7.10	6.63
Trelawny	4.03	3.84	3.48	3.35
St. James	4.89	5.14	5.16	5.56
Hanover	4.46	4.18	3.35	3.15
Westmoreland	8.02	7.28	6.81	6.26
St. Elizabeth	9.24	8.10	7.25	6.91
Manchester	7.45	7.50	6.94	6.65
Clarendon	9.62	9.98	10.18	9.75
St. Catherine	11.26	9.78	9.54	9.96

*Source:* Percentages derived from figures in Table 3.1

twice the proportion in Kingston. In 1970 more than one-fifth of the total population (23 per cent) is located in the suburban parish. Accompanying this appreciable growth of St. Andrew has been a growth of the adjoining parish of St. Catherine, which although by comparison modest, promises to accelerate appreciably in the future as the suburban centre spreads westwards.

If we consider the 12 parishes excluding Kingston and St. Andrew, there appears to have been no fundamental change in their relative positions, with regard to rank order, between 1921 and 1970. Thus throughout the period the parish with the smallest population has been either Trelawny or Hanover, while many parishes maintained the same relative positions or showed hardly any change. A few small shifts in relative size should however be noted. For instance, as a consequence of the attractive force exercised by the tourist industry, the appreciable in-migration into St. James has meant that this parish, which in 1921 shows the third smallest population, stands in 1970 sixth in the ranking. A similar change occurs in the case of Manchester, the centre of the bauxite industry. By contrast St. Mary now supports a relatively smaller population, compared with its position in 1921.



### Components of Growth

Four components of growth have been operating to produce the absolute and relative changes in population of the 14 parishes. Two of these constitute natural processes: births provide increments to the parish populations and deaths represent decrements. The other two sources of gain or loss are internal migration and external migration. While the focus of analysis here is internal migration, it is necessary, in order to place this in proper perspective, to note as well the part played by natural increase and external migration in determining the sizes of the population of the several parishes. Tabulations from recent Censuses, based on place of birth, place of normal residence and length of time living in parish of normal residence, have made it possible to analyse internal migration in some detail. And estimates of internal migration, in conjunction with natural increase and intercensal changes in parish populations, have yielded estimates of external migration affecting the parishes.<sup>1</sup> These are best carried out for successive intercensal intervals. Data for analysing the position for the first two such intervals – 1911-1921 and 1921-43 – are available from the 1943 Census. Similar tabulations from the 1960 Census make possible the same type of analysis for the period 1943-60, while the 1970 Census tabulations provide the data necessary to study the decade 1960-70. Thus the three modern Censuses of the island provide material needed for detailed analysis of internal migration over the period 1911 to 1970. While changes due to natural increase are available for most of this period, in respect of the years following 1964 number of births and deaths are not as yet available corrected for usual place of residence. These corrections affect especially the parishes of Kingston and St. Andrew, as the majority of institutional deliveries and of deaths in institutions occur here. This means that estimates of external migration, which are obtained as a residual in the equations used, are for the interval 1960-70 subject to later revision. But these limitations do not apply to the estimates of internal migration, which is the main focus of interest of this Chapter.

It is instructive to consider in some detail the components of growth for the latest intercensal interval, 1960-70, although, as indicated above estimates of loss due to external migration are subject to some limitations. Entered in Table 3.3 are the components of growth for the 14 parishes during this decade. The extent to which movements in the population of St. Andrew dominate the situation is evident. Thus the overall increase in the island population amounts to 238,700 and of this St. Andrew accounts for an increase of 125,700, that is 53 per cent of the total. Two other parishes record substantial increases in population; St. Catherine increases by 30,700 and St. James by 20,100. The only loss is that recorded by Kingston, which experiences a substantial loss of 13,600. Of interest also is the relative stability of the population of the parish of St. Thomas, which incidentally adjoins Kingston.

<sup>1</sup>This approach is discussed in G.W. Roberts, *The Population of Jamaica*.

TABLE 3.3 MOVEMENTS IN PARISH POPULATION — 1960-1970

PARISH	Population		Intercensal Increase	Natural Increase	Internal Migration	External Migration
	1960	1970				
Kingston	123,400	109,800	- 13,600	50,200	- 28,000	- 35,800
St. Andrew	296,000	421,700	+ 125,700	132,200	+ 99,400	- 106,000
St. Thomas	68,700	71,200	+ 2,500	18,200	- 3,200	- 12,500
Portland	64,500	69,300	+ 4,800	16,800	- 4,500	- 7,500
St. Mary	94,200	100,400	+ 6,200	25,500	- 8,500	- 10,800
St. Ann	114,400	122,700	+ 8,300	32,300	- 11,900	- 12,100
Trelawny	56,100	61,900	+ 5,800	16,500	- 4,300	- 6,400
St. James	83,000	103,100	+ 20,100	30,400	+ 1,200	- 11,500
Hanover	53,900	59,400	+ 5,500	16,300	- 5,700	- 5,100
Westmoreland	109,600	115,800	+ 6,200	29,700	- 12,100	- 11,400
St. Elizabeth	116,700	127,800	+ 11,100	32,700	- 13,700	- 7,900
Manchester	111,800	122,900	+ 11,100	35,300	- 6,400	- 17,800
Clarendon	164,000	178,300	+ 14,300	45,100	- 5,900	- 24,800
St. Catherine	153,500	184,200	+ 30,700	49,600	+ 3,600	- 22,500
TOTAL	1,609,800	1,848,500	238,700	530,800	-	- 292,100

(Totals rounded to nearest 100)

Total natural increase during the decade amounts to 530,800. Because of the large proportion of institutional deliveries of births in Kingston and St. Andrew which are not corrected for usual place or residence, it is certain that the natural increase noted for these is overstated at the expense of the other 12. While the largest volume of natural increase is noted for St. Andrew (132,200) and Kingston (50,200), substantial increments of this nature also occur in St. Catherine (49,600) and Clarendon (45,100). Trelawny and Hanover, which are the smallest parishes in the island, account for the smallest volume of natural increase, about 16,000 each.

The pattern of internal migration summarised in the Table is simple. It is dominated by a massive drift into the suburban area of St. Andrew. This parish experiences a gain of 106,000 during the intercensal interval. The only other parishes which have shown net in-migration are St. Catherine (4,000) and St. James (1,000). The exodus from other parishes is heavy. The largest net loss is recorded by Kingston (28,000), which constitutes the shrinking centre of the metropolitan area. It is also possible that a substantial portion of out-migration from Kingston represents the passage of movers from rural parishes who settle in Kingston before moving on to the suburban areas of St. Andrew. Also in evidence is a strong movement towards the metropolitan area from the extreme west of the island. After Kingston, the next largest amounts of out-migration recorded are for St. Elizabeth (14,000) and Westmoreland (12,000). Of note also is the substantial loss experienced by St. Ann (12,000). The conclusion is that there is a considerable out-migration under way towards the suburban area and the only other parish that seems to be attracting any in-migrants is St. James, the centre of the tourist industry.

When we turn to estimates of loss due to external migration, this appears as the main source of decrement for the island as a whole. The total net loss due to this component (292,000) is more than twice the number of deaths during the intercensal interval (140,855) and is equivalent to more than half of the total natural increase for the period. Despite the fact that St. Andrew has experienced such a substantial growth, it still supplies the largest volume of emigrants, 106,000 or 36 per cent of the total. The second largest outward movement (36,000) comes from Kingston. Two parishes, Clarendon and St. Catherine experience losses in excess of 20,000 while even St. James, itself the centre of attraction for in-migrants, shows a substantial loss due to external migration. Of the four parishes showing losses of less than 10,000, three – Portland, Trelawny and Hanover – are comparatively small in terms of population, but the interesting point here is the comparatively small loss experienced by St. Elizabeth, which is one of the largest in terms of population. The general pattern is for losses due to external migration to exceed those due to internal migration; in some instances however the internal movement slightly exceeds the outward loss. But the marked exception to this is St. Elizabeth, which loses much more as a result of out-migration than it does from external migration. It can be concluded that external migration drastically curtailed the growth of all parishes.

### Internal Migration

We can divide the periods of internal migration in Jamaica into four important phases, each covering one of the census periods of 1911-21, 1921-43, 1943-60 and 1960-70. During the first period, that is prior to 1921, internal movements were overshadowed by external migration from the island to the South and Central American mainland and the United States of America. Internal movements were comparatively small in volume. According to G.W. Roberts,<sup>2</sup> the total number of persons moving was 49,600, being 23,200 males and 26,400 females. However, during this period, movements were characterised by specific trends. There was the dominance of the Kingston and St. Andrew areas, which exercised such a forceful pull, that migrants came from almost every parish in the country. A few parishes experienced distinct gains in population due to internal migration whilst others had significant losses, as a result of a series of forces largely demographic and economic. There were also movements between contiguous parishes, some of which finally led to the urban centres of Kingston and St. Andrew.

The second period of internal migration, namely that of 1921-43, represented the greatest volume of movement ever to be recorded up to this time. Several factors were responsible for this, chief of which was the growing importance of the major urban centres of Kingston and St. Andrew. These two areas not only continued to be of supreme attraction to migrants but also stimulated an interesting pattern of movement between parishes which eventually terminated at the urban centre.

Another significant factor which influenced movements was the development of tourism on the North Coast of the island and specifically, with the increasing importance of the Montego Bay area, a new direction was added to the pattern of internal movements in Jamaica. Evidence of this is the significant shift in the migration balances recorded by the parish of St. James, which swung from a record of constant population losses up to 1943 to appreciable gains in more recent times. Yet another factor was the development of the banana industry particularly in the parishes of Portland and St. Mary which in addition to providing employment, provided opportunities for migration from the island to countries with which contact was made through the exportation of bananas.

In the third period, 1943-60, internal movements were even more marked. The major destination of migrants continued to be the urban areas of Kingston and St. Andrew, but we see St. Andrew having the greatest attractive force. Economic factors further played an important part in influencing the directions which movements took. To the north, the hotel industry and the general activities attending the tourist industry offered opportunities which brought migrants from nearby parishes. The location of the major industrial complex, the bauxite industry, also was an important factor influencing movements.

<sup>2</sup>G.W. Roberts *op cit.*

The final period of movements extends from 1960 to 1970. An even greater number of persons are involved in movements than any other previous period. There is no significant change in the pattern of movements, in that major destinations continues to be the urban centres of Kingston and St. Andrew and in the North Coast area in the parish of St. James. A very important feature of migration in Jamaica observed during this period and other previous times is its selectiveness by sex; we find that, in the majority of cases, women predominate. Generally, movements to St. Andrew from all parishes show a composition of 58 per cent females to 42 per cent males. Notably, twice as many females as males moved from the parishes of St. Elizabeth, St. Thomas, Trelawny and Clarendon. Only with Kingston is the situation in the reverse.

Before analysing in detail internal migration during the decade 1960-60 it is instructive to summarise briefly the pattern of movement taking place between 1911 and 1960. Figures 3.1 and 3.2 indicate these movements, whilst Table 3.4 also shows other components of growth over this period.

### 1911-21

As mentioned before, the most significant movement during this period was external, but very significant also was the internal movement towards the urban areas of Kingston and St. Andrew. The number of persons moving to Kingston was approximately 1,000 annually whilst St. Andrew had been receiving a much smaller quota of 410. Migrants came primarily from Westmoreland, Manchester, St. Ann and St. Elizabeth.

Three other parishes recorded gains from internal migration at this time, namely, Portland, St. Mary and St. Thomas. The factors contributing to the differential pattern of internal migration were largely economic and demographic. The pull of the Kingston and St. Andrew area can be explained by the fact that their reputation as rapidly growing urban areas of economic and political importance greatly attracted migrants from rural areas who came in search of better opportunities than were afforded them by their local place of residence. Some parishes offered economic benefits. In Portland, St. Mary and St. Thomas the booming banana industry and external trade attracted migrants who came either to make a livelihood by banana cultivation or to embrace the opportunity to migrate, because communication with foreign lands was promoted by the shipment of bananas from these parishes.<sup>3</sup>

Out-migration from other parishes resulted from various factors, one of which was the decline in sugar cultivation. This was particularly so in the case of St. Ann. Another factor was the very high fertility prevailing in some parishes which exerted such high pressure on the land that relief was found only through migration.

<sup>3</sup>This account is based on G.W. Roberts, *op. cit.*

TABLE 3.4 COMPONENTS OF POPULATION GROWTH FOR PARISHES 1911-1970 — ANNUAL ESTIMATES

Parish of Birth	NATURAL INCREASE										Net Internal Migration					Net External Migration								
	1911-21		1921-43		1943-60		1960-70		1921-21		1921-43		1943-60		1960-70		1911-21		1921-43		1943-60		1960-70	
Kingston	130	1,280	3,460	5,020	+ 1,030	980	-1,240	-2,800	- 750	- 150	- 420	- 700	- 120	- 30	- 740	- 1,250	- 750	- 150	- 420	+ 700	- 120	+ 30	- 740	- 1,250
St. Andrew	180	490	4,890	13,220	+ 410	+ 2,160	+ 7,440	+ 9,940	- 420	- 700	- 120	+ 30	- 740	- 1,250	- 750	- 150	- 420	+ 700	- 120	+ 30	- 740	- 1,250		
St. Thomas	360	550	1,280	1,820	+ 80	+ 250	- 60	- 320	- 420	- 700	- 120	+ 30	- 740	- 1,250	- 750	- 150	- 420	+ 700	- 120	+ 30	- 740	- 1,250		
Portland	510	750	1,240	1,680	+ 130	- 140	- 410	- 450	- 70	- 80	- 1,300	+ 140	- 610	- 750	- 70	- 80	- 1,300	+ 140	- 610	- 750	- 70	- 80	- 1,300	
St. Mary	1,050	1,140	1,720	2,550	+ 90	- 400	- 920	- 850	- 1,300	+ 140	- 880	+ 170	- 490	- 1,210	- 1,300	+ 140	- 880	+ 170	- 490	- 1,210	- 1,300	+ 140	- 880	
St. Ann	1,370	1,630	2,550	3,230	- 470	- 650	- 980	- 1,190	- 880	+ 170	- 430	+ 10	- 450	- 640	- 880	+ 170	- 430	+ 10	- 450	- 640	- 880	+ 170	- 430	
Trelawny	380	710	1,300	1,650	- 40	- 130	- 350	- 430	- 390	+ 60	- 390	+ 60	- 570	- 1,150	- 390	+ 60	- 390	+ 60	- 570	- 1,150	- 390	+ 60	- 570	
St. James	470	920	1,730	3,040	- 30	-	- 10	+ 120	- 330	+ 10	- 330	+ 10	- 520	- 510	- 330	+ 10	- 330	+ 10	- 520	- 510	- 330	+ 10	- 520	
Hanover	490	790	1,190	1,630	- 80	- 190	- 540	- 570	- 500	-	- 500	-	- 450	- 1,140	- 500	-	- 500	-	- 450	- 1,140	- 500	-	- 450	
Westmoreland	860	1,330	2,310	2,970	- 120	- 360	- 720	- 1,210	- 650	+ 120	- 650	+ 120	- 440	- 790	- 650	+ 120	- 650	+ 120	- 440	- 790	- 650	+ 120	- 440	
St. Elizabeth	1,330	1,720	2,750	3,270	- 620	- 890	- 1,340	- 1,370	- 660	+ 320	- 660	+ 320	- 550	- 1,780	- 660	+ 320	- 660	+ 320	- 550	- 1,780	- 660	+ 320	- 550	
Manchester	1,050	1,450	2,380	3,530	- 510	- 460	- 710	- 640	- 480	+ 110	- 480	+ 110	- 1,180	- 2,480	- 480	+ 110	- 480	+ 110	- 1,180	- 2,480	- 480	+ 110	- 1,180	
Clarendon	1,280	1,880	1,990	4,510	+ 70	- 120	- 90	- 590	- 130	- 290	- 130	- 290	- 1,040	- 2,250	- 130	- 290	- 130	- 290	- 1,040	- 2,250	- 130	- 290	- 1,040	
St. Catherine	920	1,440	3,020	4,960	+ 60	- 40	- 70	+ 360	- 7,710	- 1,170	- 7,710	- 1,170	- 11,540	29,210	- 7,710	- 1,170	- 7,710	- 1,170	- 11,540	29,210	- 7,710	- 1,170	- 11,540	
TOTAL	10,380	16,080	31,810	53,080	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Note: The above estimates are calculated on a yearly basis.

Estimates for the entire intercensal period may be derived by multiplying the values by the number of years in the intercensal period.

All estimates are rounded to the nearest ten.

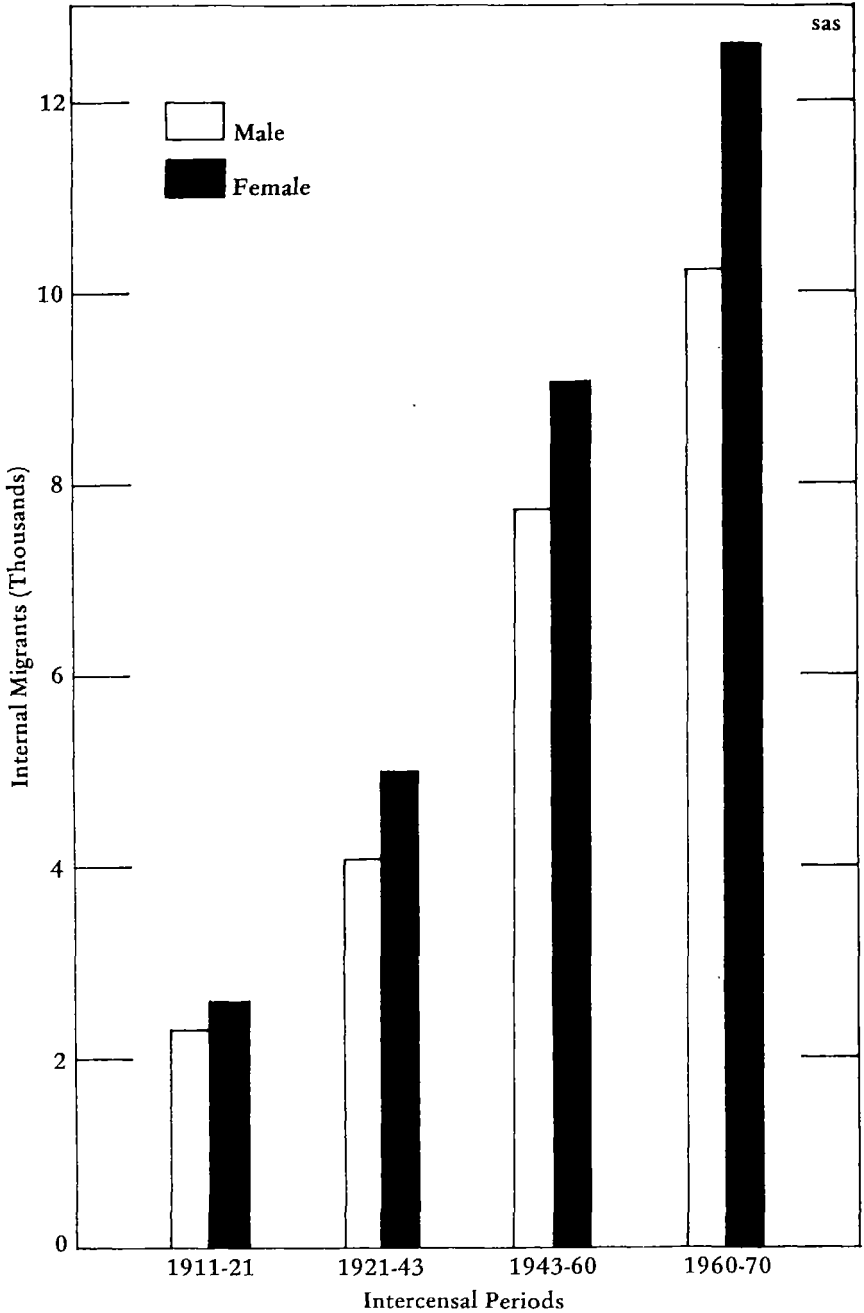


Figure 3.1 – Intercensal estimates of annual internal migrants by sex.

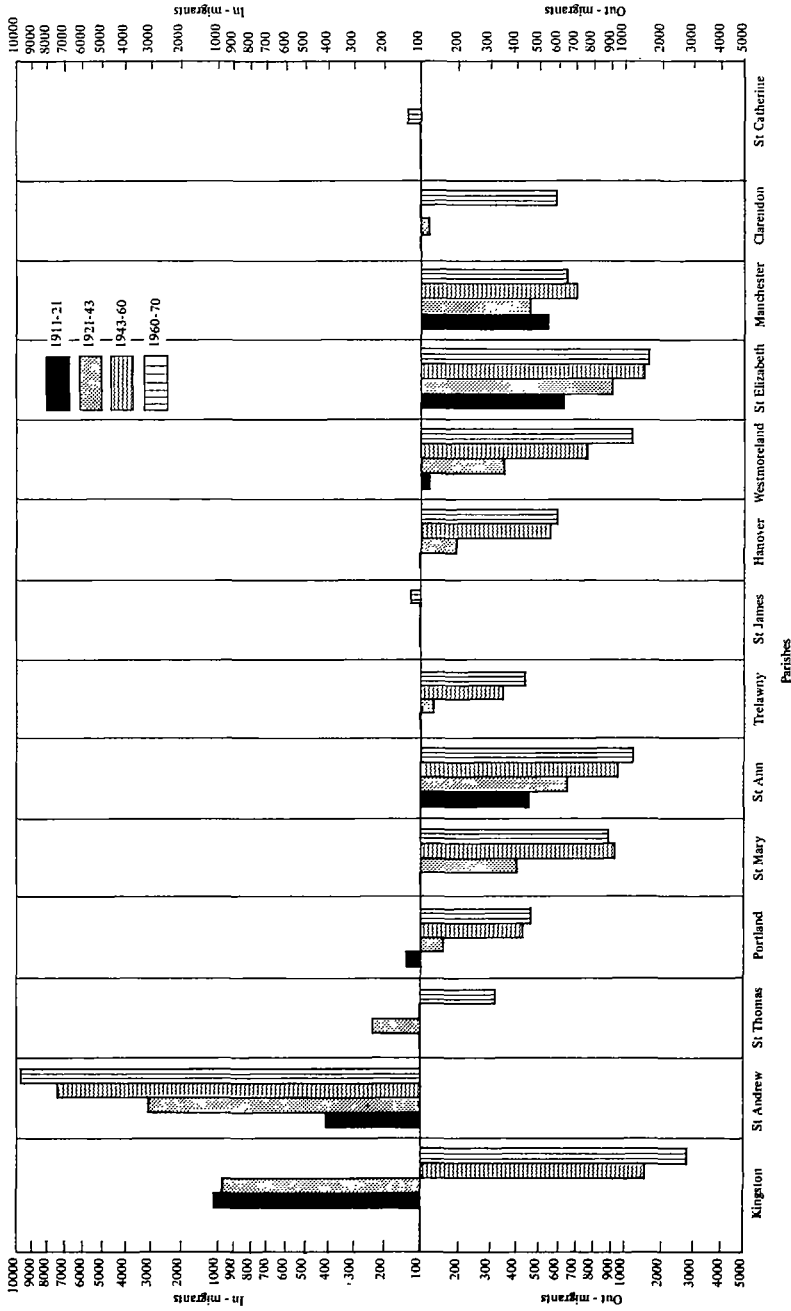


Figure 3.2 — Annual estimates of intercessal migration by parish, 1911-1970

Note: Horizontal index indicates 100 and under



**1921-43**

During this period, approximately one-fifth of the island's native population were involved in internal migration. A significant feature of the period was the growth of the main urban centres especially St. Andrew, which received a total of 53,500 in-migrants whilst the comparable number for Kingston was 43,500. Of the increase experienced by St. Andrew 64 per cent was attributable to in-migration, 20 per cent of which came from Kingston. Kingston therefore began a decline in growth during this period.

In-migrants continued to come to both urban centres primarily from St. Mary, St. Catherine, St. Ann, St. Elizabeth and Manchester. However, there was some outward movement from the centres. The actual gain to Kingston over the period was 21,500, indicating that there was some outward movement to the extent of 22,000 whilst for St. Andrew the recorded gain was 47,500 – with out-migration being only 6,000.

In general the volume of internal migration increased greatly. Apart from movements to urban centres, there were significant movements between contiguous parishes. So great was the acceleration of movements that only St. Thomas recorded any appreciable gains at this time. Significantly, all other parishes had losses of varying degrees. Suffering substantial losses were St. Ann, St. Elizabeth, Manchester, St. Mary and Westmoreland.

A significant feature of the inter-parish movements was that, in response to the pull of urban centres, in-migrants seemed to move in stages. This took the form generally of movements to contiguous parishes, each such movement taking the migrant nearer to the main urban centre. In this context St. Catherine, adjoining the Kingston St. Andrew region, occupied a unique position and showed consistently large in-migration, most of which it received from Clarendon and St. Ann.

**1943-60**

During this period, internal migration continued on an even larger scale. Altogether, 286,300 persons were involved in this movement – 131,200 males and 155,100 females. This represents an increase of 44 per cent over the previous period. A total of 95,000 persons – 40,400 males and 55,000 females 32 per cent of whom came from Kingston, went to St. Andrew alone. (Minimum estimates of movements for the period are shown in Tables 3.5 and 3.6).

Although Kingston experienced some in-migration, it continued to lose population – its total loss during the period was 8,900 males and 2,700 females. The choice of St. Andrew as the most favoured destination was well demonstrated in this period. Migrants came primarily from St. Mary and St. Ann – which together contributed approximately 18 per cent of the total migrants.

TABLE 3.5 MINIMUM ESTIMATES OF INTERNAL MIGRATION 1943-1960  
 MALES

Parish of Residence	Parish of Birth													
	Kingston	St. Andrew	St. Thomas	Portland	St. Mary	St. Ann	Trelawny	St. James	Hanover	Westmoreland	St. Elizabeth	Manchester	Clarendon	St. Catherine
Kingston	16,484	1,119	1,264	1,023	1,856	1,709	759	903	569	1,201	1,478	1,474	1,538	1,591
St. Andrew	43,889	—	1,323	1,712	4,375	3,298	1,291	1,329	776	1,918	2,935	2,947	2,454	3,728
St. Thomas	5,458	357	—	1,112	727	343	139	142	97	224	417	310	381	521
Portland	4,159	567	640	—	810	286	107	176	96	180	279	212	253	358
St. Mary	6,380	378	235	699	—	1,163	200	244	122	165	258	238	381	1,162
St. Ann	4,468	909	122	76	133	858	401	196	126	221	168	259	527	472
Trelawny	3,440	355	31	38	44	140	—	572	204	282	366	539	126	93
St. James	6,924	604	79	81	119	209	269	691	—	1,410	1,786	243	186	141
Hanover	2,203	187	46	13	45	49	84	557	—	755	222	62	69	40
Westmoreland	4,410	431	48	54	66	101	109	800	1,295	—	973	142	123	134
St. Elizabeth	3,137	518	69	96	94	101	120	306	115	575	—	691	238	145
Manchester	6,533	1,085	163	102	207	429	577	246	87	394	1,712	—	1,127	307
Clarendon	11,661	1,181	280	333	341	728	344	535	401	942	1,223	2,482	—	1,633
St. Catherine	12,085	1,937	602	439	485	1,659	372	466	249	598	1,036	1,002	1,991	—
TOTAL	131,231	25,400	3,489	4,689	5,950	11,813	10,918	5,219	6,472	9,241	12,173	10,601	9,394	10,325
Migration Balance	—	8,916	+40,400	+ 771	- 1,791	- 5,433	- 6,450	- 1,779	+ 452	- 3,344	- 9,036	- 4,068	+ 2,267	+ 1,760

Note: For discussions of the method on which this Table is based and of its limitations, see G.W. Roberts, *op. cit.*

## INTERNAL MIGRATION AND URBAN GROWTH

TABLE 3.6 MINIMUM ESTIMATES OF INTERNAL MIGRATION 1943-1960  
FEMALES

Parish of Residence	Total	Parish of Birth													
		Kingston	St. Andrew	St. Thomas	Portland	St. Mary	St. Ann	Trelawny	St. James	Hanover	Westmoreland	St. Elizabeth	Manchester	St. Catherine	
Kingston	23,887	-	1,366	1,833	1,498	2,434	2,528	1,169	1,292	843	1,739	2,329	2,193	2,394	2,269
St. Andrew	58,826	16,994	-	1,752	2,375	5,767	4,773	2,098	2,138	1,350	2,993	4,616	4,613	4,264	5,093
St. Thomas	5,323	788	394	-	1,321	552	222	124	134	79	175	344	279	419	492
Portland	3,929	569	212	686	-	850	232	98	141	97	132	176	128	218	390
St. Mary	6,636	1,120	369	206	834	-	1,196	185	201	116	155	273	243	357	1,381
St. Ann	4,898	979	99	88	127	940	-	467	219	117	208	164	295	662	533
Trelawny	3,400	317	38	37	35	131	728	-	719	162	198	335	497	123	80
St. James	7,858	597	102	71	111	198	299	737	-	1,891	2,031	1,230	237	195	159
Hanover	1,944	160	27	20	31	45	38	69	531	-	745	127	53	59	39
Westmoreland	4,602	440	43	57	53	76	84	151	764	1,654	-	922	132	122	104
St. Elizabeth	3,311	537	91	97	63	81	108	164	356	115	589	-	767	208	135
Manchester	7,342	1,094	157	85	105	185	435	714	250	126	375	2,159	-	1,361	296
Clarendon	10,732	1,133	281	295	263	519	1,196	319	375	304	654	1,143	2,595	-	1,655
St. Catherine	12,405	1,860	641	388	461	1,855	1,278	359	442	225	580	1,051	1,025	2,239	-
TOTAL	155,093	26,588	3,820	5,615	7,277	13,633	13,117	6,654	7,562	7,079	10,574	14,869	13,057	12,621	12,626
Migration Balance		- 2,701	+55,006	- 252	- 3,348	- 6,997	- 8,219	- 3,254	+ 296	- 5,135	- 5,972	-11,558	- 5,715	- 1,889	- 221

Note: See footnote to Table 3.5.

TABLE 3.7 MINIMUM ESTIMATES OF INTERNAL MIGRATION 1960-1970

## MALES

Parish of Residence	Total	Parish of Birth													
		Kingston	St. Andrew	St. Thomas	Portland	St. Mary	St. Ann	Trelawny	St. James	Hanover	Westmoreland	St. Elizabeth	Manchester	St. Catherine	
Kingston	7,879	-	457	723	495	702	819	448	374	283	650	706	714	711	
St. Andrew	43,621	11,462	-	1,683	2,014	3,966	3,681	1,726	1,758	1,057	2,515	3,317	3,232	4,010	
St. Thomas	2,836	700	209	-	465	273	113	62	57	44	127	178	128	237	
Portland	2,670	687	114	412	-	528	129	53	69	69	83	112	96	194	
St. Mary	4,390	1,369	282	163	412	-	611	115	93	64	104	152	115	209	
St. Ann	3,197	974	100	46	90	490	-	235	144	85	120	123	188	298	
Trelawny	2,777	570	51	23	30	84	591	-	417	167	235	158	266	79	
St. James	5,488	646	102	52	70	139	233	427	-	1,177	1,513	675	190	127	
Hanover	1,648	227	19	21	22	45	57	73	431	-	507	96	47	38	
Westmoreland	2,306	562	36	29	37	44	56	60	399	476	-	356	76	74	
St. Elizabeth	3,121	946	86	84	52	84	93	97	247	90	504	-	434	176	
Manchester	4,865	1,367	216	101	125	122	252	288	158	93	192	902	-	804	
Clarendon	5,963	1,197	197	184	164	236	456	187	192	190	398	542	1,125	895	
St. Catherine	10,153	2,652	839	327	356	1,118	870	277	314	188	474	612	674	-	
TOTAL	100,914	23,359	2,708	3,848	4,332	7,831	7,961	4,048	4,653	3,983	7,422	7,929	7,285	7,764	7,791
Migration Balance		-15,480	+40,913	-1,012	-1,662	-3,441	-4,764	-1,271	+ 835	-2,335	-5,116	-4,808	-2,420	-1,801	+2,362

Note: See footnote to Table 3.5

TABLE 3.8 MINIMUM ESTIMATES OF INTERNAL MIGRATION 1960-1970

## FEMALES

Parish of Residence	Total	Parish of Birth													
		Kingston	St. Andrew	St. Thomas	Portland	St. Mary	St. Ann	Trelawny	St. James	Hanover	Westmoreland	St. Elizabeth	Manchester	St. Catherine	
Kingston	11,480	—	581	996	649	993	1,181	685	575	445	1,034	1,197	999	998	
St. Andrew	61,518	12,280	—	2,527	3,042	5,368	5,602	2,690	2,460	1,793	4,153	5,502	4,968	5,858	
St. Thomas	2,833	713	216	—	600	211	107	62	64	32	94	165	102	197	
Portland	2,873	729	135	—	550	138	46	72	72	38	82	140	83	162	
St. Mary	4,601	1,352	294	184	493	—	629	104	107	74	118	161	122	242	
St. Ann	3,519	972	112	60	105	624	—	273	145	81	114	150	211	325	
Trelawny	2,557	508	33	25	25	62	562	—	464	121	172	144	234	106	
St. James	6,058	615	115	53	79	130	233	561	—	1,378	1,641	767	191	160	
Hanover	1,754	289	22	18	20	23	65	79	451	—	541	95	40	63	
Westmoreland	2,678	565	52	23	48	40	60	76	436	663	—	445	74	117	
St. Elizabeth	2,826	834	83	63	48	76	90	82	220	90	481	—	413	219	
Manchester	5,683	1,307	206	75	124	118	286	387	183	86	246	1,408	—	978	
Clarendon	6,657	1,171	240	210	147	221	570	197	209	167	436	711	1,423	—	
St. Catherine	11,401	2,682	890	324	348	1,253	1,148	340	347	179	563	840	758	1,729	
TOTAL	126,438	24,017	2,979	5,015	5,728	9,669	10,671	5,582	5,733	5,147	9,675	11,725	9,618	10,720	10,159
Migration Balance		-12,537	+58,539	-2,182	-2,855	-5,068	-7,152	-3,025	+325	-3,393	-6,997	-8,899	-3,935	-4,063	+1,242

Note: See footnote to Table 3.5.

Movements between contiguous parishes once more played a very important part. Most parishes suffered losses — greatly affected were St. Elizabeth which lost 20,500, St. Mary, 12,400, Manchester 9,800, St. Ann, Hanover and Westmoreland a little over 8,000 each over the period. The parishes recording gains were few in number. Apart from St. Andrew, gains for other parishes, which included St. Catherine 1,500, St. James 700, St. Thomas 500 and Clarendon 400, were negligible. The observed gains for these parishes can be explained by the fact that in the case of St. James, the growth of the tourist industry on the North Coast places the parish in a strategic position serving as a final destination of migrants from surrounding parishes who are attracted by the possible gains the industry has to offer. St. Catherine and Clarendon happen to be the parishes in which the mining of bauxite gained economic importance. The more commanding position of St. Catherine reflects the continued trend in urban drift, for Spanish Town, once the capital of the country and even now being the centre of some governmental administrative activity, is located in the parish and still retains some of its former attractions to rural migrants.

### 1960-70

The analysis of migration data for this period shows that a greater number of persons changed places of residence than over the previous period. Estimates of inter parish movements taking place during 1960-70 appear in Tables 3.7 and 3.8. The numbers moving are 101,000 males and 126,000 females or approximately 23,000 persons annually. The estimate for the previous period 1943-60 was 16,000 annually.

The data further reveal that whilst a few parishes record gains, many experience losses. St. Andrew continues to be the most favoured destination and during this period a total of 44,000 males and 61,500 females move to the parish. Out-migration from this parish is negligible, so that the overall gain stands at 99,500 of both sexes. The predominance of female movers is noted.

A high proportion of movements to St. Andrew originate from Kingston, from which 23,000 persons or 24 per cent of its total migrants come; St. Ann supplies 9,300, St. Mary 9,300, St. Elizabeth 8,800, St. Catherine 9,900 and Clarendon 8,500. It is clear that St. Andrew steadily gains population from every parish in the country.

Kingston on the other hand presents a different picture. We find that although it has recorded some gains through internal migration, its overall loss is considerable — 28,000 — the greater part of which moves to St. Andrew. A significant number of migrants also go to St. Catherine — the gain being 3,625. Gains from other parishes are negligible. (See Table 3.9).

The movement between contiguous parishes remains a very important phenomenon. St. Andrew draws the most migrants from contiguous areas — a

TABLE 3.9 ESTIMATES OF NET GAIN (+) OR LOSS (-) TO PARISHES AS A RESULT OF INTERNAL MIGRATION 1960-1970

Parish	Males						Females					
	Contiguous Parishes		Kingston	St. Andrew	Other	All Parishes	Contiguous Parishes		Kingston	St. Andrew	Other	All Parishes
Kingston	-		-	-11,005	- 4,475	-15,480	-	-	-	-11,699	- 838	-12,537
St. Andrew	+10,229	+11,005			+19,679	+40,913	+15,260	+11,699			+31,580	+58,539
St. Thomas	+ 53	- 23		- 1,474	+ 432	- 1,012	+ 143	- 283	- 2,311	+ 269	+ 269	- 2,182
Portland	+ 63	+ 192		- 1,900	- 17	- 1,662	- 86	+ 80	- 2,907	+ 58	+ 58	- 2,855
St. Mary	- 412	+ 667		- 3,684	- 12	- 3,441	- 584	+ 359	- 5,074	+ 231	+ 231	- 5,068
St. Ann	- 1,265	+ 155		- 3,581	- 73	- 4,764	- 1,415	- 209	- 5,490	- 38	- 38	- 7,152
Trelawny	+ 398	+ 122		- 1,675	- 116	- 1,271	+ 101	- 177	- 2,657	- 292	- 292	- 3,025
St. James	+ 2,298	- 272		- 1,656	- 79	+ 835	+ 2,776	+ 40	- 2,345	- 146	- 146	+ 325
Hanover	- 715	- 56		- 1,038	- 526	- 2,335	- 1,049	- 156	- 1,771	- 417	- 417	- 3,393
Westmoreland	- 1,293	- 88		- 2,479	- 1,256	- 5,116	- 1,119	- 469	- 4,101	- 1,308	- 1,308	- 6,997
St. Elizabeth	+ 809	+ 240		- 3,231	- 1,008	- 4,808	- 1,568	- 363	- 5,419	- 1,549	- 1,549	- 8,899
Manchester	+ 233	+ 653		- 3,016	- 290	- 2,420	+ 778	+ 308	- 4,762	- 259	- 259	- 3,935
Clarendon	- 78	+ 400		- 3,003	+ 880	- 1,801	- 84	+ 24	- 5,035	+ 1,032	+ 1,032	- 4,063
St. Catherine	+ 1,540	+ 1,941		- 3,171	+ 2,052	+ 2,362	+ 2,107	+ 1,684	- 4,968	+ 2,419	+ 2,419	+ 1,242
TOTAL	+10,242	+15,480		-40,913	+15,191	-	+15,260	+12,537	-58,539	+30,742		-

total of 25,000. The only other parish with an impressive pull of population is St. James. During the period, its overall gain is 5,100.

Notable losses to contiguous parishes have been experienced by St. Ann, Westmoreland and St. Elizabeth, which altogether lose 7,500 persons. These inter-parish movements are evidence of the multi-stage character of migration in Jamaica. Although it is not possible to determine the number of moves each individual migrant has made before reaching a final destination, there is sufficient evidence of inter-parish movements which eventually lead to the major urban centres of Kingston and St. Andrew. In this regard, the parish of St. Catherine is most strategically located, for in traversing the country to get to Kingston and St. Andrew, St. Catherine stands immediately contiguous to the parishes of Clarendon, St. Mary and St. Ann from which it gains a total of 3,600 migrants in addition to 4,500 from other parishes. Despite its considerable loss to St. Andrew – 8,100 – St. Catherine remains the only parish, next to St. Andrew, to record constant gains in population through migration, which amount to 3,600 during the period 1960-1970.

Generally with the exception of St. Andrew, St. Catherine and St. James, we find that all parishes have negative migration balances. Major losses are experienced by St. Elizabeth (13,700), Westmoreland (12,000), St. Ann (11,900) and St. Mary (8,500). The majority of out-migrants move to St. Andrew; for instance 76 per cent of the migrants who leave St. Ann settle in St. Andrew and similarly the proportion for St. Elizabeth is 63 per cent.

### Urban Concentration

The drift from rural to urban areas in Jamaica is evident when we look at the volume and direction of internal migration in the country over the years. A direct consequence of these internal movements of population has been the growth and development of urban centres the most significant of which have been the Kingston and St. Andrew and the Montego Bay areas.

In Jamaica, places having a population of 2,500 or more are considered as urban but these must meet minimum requirements which include the presence of certain facilities and services such as electricity, banks, post offices, health, education, law and recreational – in addition to roads and the presence of certain physical infrastructure. These criteria were adopted for the censuses in 1943, 1960 and 1970 in classifying places as urban areas.

In this Chapter, only places having population of 5,000<sup>4</sup> and over and bearing these characteristics have been included – and these include all Parish capitals, which together with the Kingston/St. Andrew area account for the population classifiable as urban in Jamaica.

<sup>4</sup>Following criteria previously employed by L. Broom in "Urbanization Research in the Caribbean: A Prospectus" *Social and Economic Studies*, Volume 1, 1953.



TABLE 3.10 URBAN POPULATION\* FOR JAMAICA AND PARISHES 1943-1970

Parish	1943	1960	1970	% Population Urban		% Population Urban		% Population Change		% Population Change 1960-1970
				1943	1960	1960	1970	1943-1960	1960-1970	
Kingston	110,000	123,400	111,900	100.0	100.0	100.0	100.0	12.2	9	9
St. Andrew	91,800	253,100	363,700	71.6	85.5	88.0	88.0	17.6	43.7	43.7
St. Thomas	-	7,300	15,100	-	13.6	21.7	21.7	-	106.8	106.8
Portland	5,500	10,600	13,800	9.0	16.5	20.5	20.5	92.7	30.1	30.1
St. Mary	-	7,600	17,900	-	8.1	17.8	17.8	-	135.5	135.5
St. Ann	-	13,600	23,000	-	13.1	19.2	19.2	-	69.1	69.1
Trelawny	-	5,300	7,700	-	9.4	12.7	12.7	-	45.2	45.2
St. James	11,500	23,600	43,800	18.1	28.4	43.5	43.5	10.5	85.6	85.6
Hanover	-	2,800	3,700	-	5.2	6.2	6.2	-	32.1	32.1
Westmoreland	-	9,800	16,600	-	8.9	14.7	14.7	-	69.4	69.4
St. Elizabeth	-	5,700	6,500	-	4.9	5.2	5.2	-	14.0	14.0
Manchester	-	12,800	25,600	-	13.9	21.2	21.2	-	100.0	100.0
Clarendon	6,000	21,200	39,100	4.8	15.4	22.5	22.5	253.3	84.4	84.4
St. Catherine	12,000	22,700	62,800	9.9	18.8	34.8	34.8	89.2	176.6	176.6
JAMAICA TOTAL	236,800	519,500	751,200	19.2	32.3	40.6	40.6	119.4	44.6	44.6

\* Computations of urban population for Jamaica exclude places with population of less than 5,000.

The earliest beginning of growth can be conveniently put at after 1921. At this time, there was marked acceleration in internal movements with major destinations being the Kingston and St. Andrew area. The general demographic conditions prevailing were high levels of growth which created serious imbalances in the land/population ratio thus forcing movements to ease the mounting pressure. Thus the development of Kingston and St. Andrew has been characteristically linked with these movements from rural parishes and has not taken place in response to some industrial development.

Table 3.10 shows the shift in urban population for Jamaica for the years 1943-1970. Up until 1943, only the areas of Kingston and St. Andrew could be considered as large urban centres. Together, they contain 85.2 per cent of the country's urban population and the population for the area as a whole amounts to 202,000. There are only four other areas of urban significance — namely in the parishes of Portland (2.3 per cent), St. James (4.9 per cent), Clarendon (2.5 per cent) and St. Catherine (5.1 per cent).

By the end of the next intercensal period, 1943-1960, the number of areas classified as urban has grown and most parishes have centres with population of 5,000 and more. Of major importance are the parishes of St. James and St. Catherine. There is a decrease in the proportion of the total urban population located in Kingston/St. Andrew, although St. Andrew has expanded considerably during the period.

By the end of the next intercensal period, 1960-1970, every parish except Hanover has urban centres of 5,000 and over. St. James and St. Catherine increase their proportions whilst a further decline for Kingston is evident.

Despite the arbitrary element involved in the demarcation of urban areas, it appears that apart from Kingston/St. Andrew only four parishes support any sizeable proportion of the island's urban population. In fact the country's urban population is distributed among the 14 parishes as follows:

	%
Kingston/St. Andrew	63.3
Manchester	3.4
Clarendon	5.2
St. Catherine	8.4
St. James	5.9
Rest of the country	13.8
	100.0

TABLE 3.11 DISTRIBUTION (PER CENT) OF URBAN POPULATION BY PARISH 1943-1970

Parish	1943	1960	1970
Kingston	46.4	23.8	14.9
St. Andrew	38.8	48.7	48.4
St. Thomas	—	1.4	2.0
Portland	2.3	2.0	1.8
St. Mary	—	1.5	2.4
St. Ann	—	2.6	3.1
Trelawny	—	1.0	0.9
St. James	4.9	4.5	5.9
Hanover	—	0.5	0.5
Westmoreland	—	1.9	2.2
St. Elizabeth	—	1.1	0.9
Manchester	—	2.5	3.4
Clarendon	2.5	4.1	5.2
St. Catherine	5.1	4.4	8.4
JAMAICA TOTAL	100.0	100.0	100.0

The distribution of the urban areas in each parish appears in Table 3.11. The location of the areas is significant. The urban belt may be observed to be concentrated in the south and east of the island (Figure 3.3).

St. Elizabeth we observe to be the most rural of all parishes. On the northern part of the island, only St. James is of any urban significance — having 5.9 per cent of the country's urban population in 1970. All other parishes in this part of the island show relatively low concentrations of urban populations. Percentages Urban and Rural population for parishes may be seen in Figure 3.4.

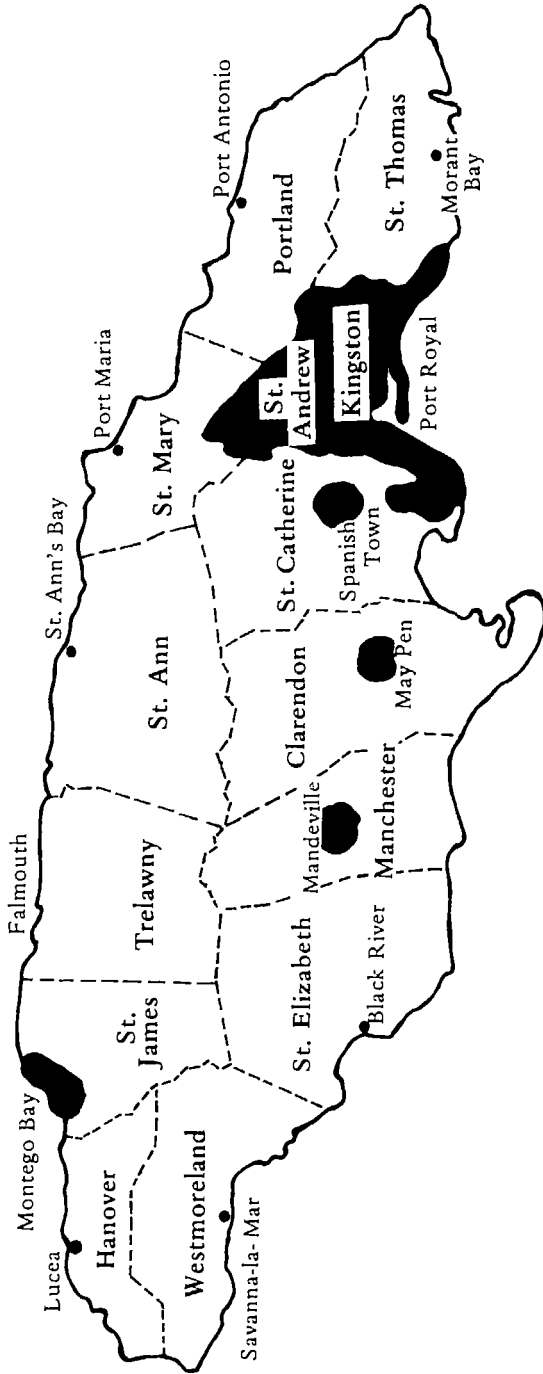


Figure 3.3 — Urban and urbanising areas, 1970

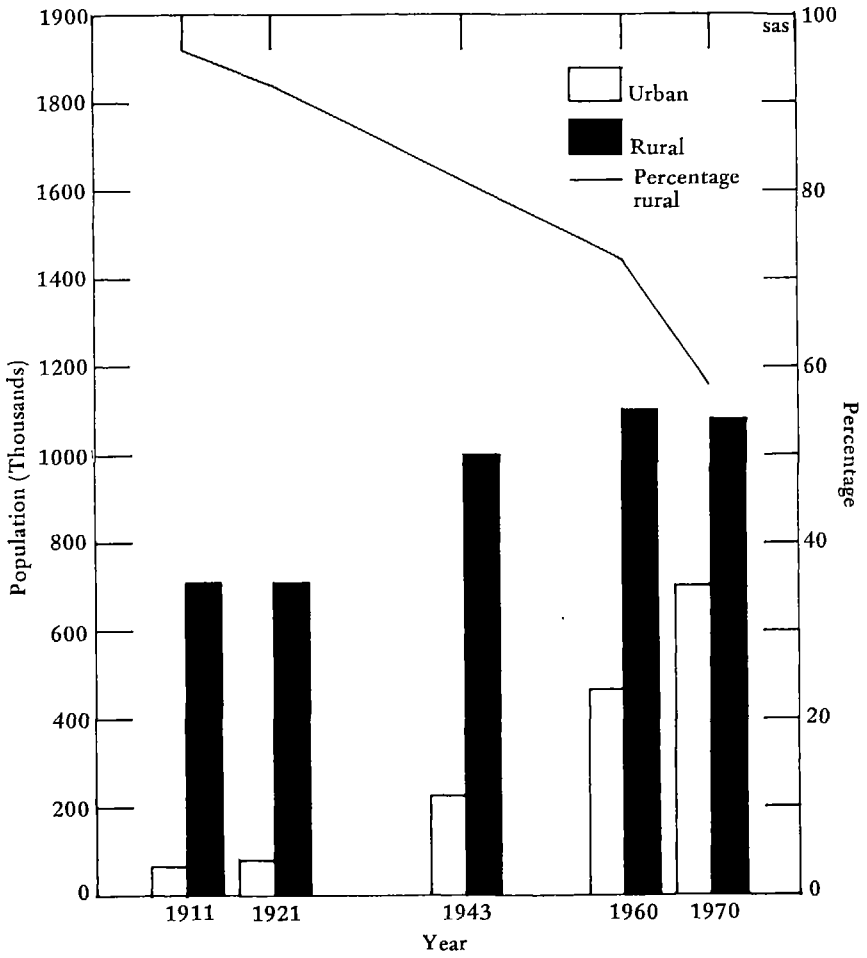


Figure 3.4 – Urban and rural population and percentage rural for census years, Jamaica, 1911-70

### **The Growth of Small Towns**

Small towns have played a significant part in the urban development of Jamaica. Although before 1943, major urban development meant the growth and development of the Kingston and St. Andrew areas, there existed small towns, some of which had sizeable populations. Many of these situated on the coast of the island sprung up as ports whilst some came into being as inland commercial and administrative centres. Today, at least six of these have populations of over 10,000 and another three have populations of over 5,000.

The census of 1943 for Jamaica, gave populations for 15 towns throughout the country, however, there were only five of these with population over 5,000. In 1960, the number of small towns for which populations were recorded increased to 22, but only 8 of these were over 5,000. The largest of these were Spanish Town (14,700) and May Pen (14,100). All of these towns may be observed to have grown over the intercensal period 1960-1970. If we look at the percentage change in the population for each of these towns (Table 3.12) we find very substantial gains for the majority of them.

However the percentage change over the period 1943-1960 is by far the greatest increase ever experienced. Mandeville, for example, in the parish of Manchester records a three fold increase in population. This can be attributed to the development of the bauxite industry in the area. May Pen in the parish of Clarendon also records a very large increase in population (135 per cent) whilst Montego Bay in St. James is in a similar position, recording a 105 per cent increase in population. It will be noticed from the Table that Black River in St. Elizabeth and Sav-la-Mar in Westmoreland also have very large increases in population signifying a tendency for population to concentrate in the main capitals of these parishes.

The rate of growth for all towns except Morant Bay in St. Thomas and Port Maria in St. Mary decreases during the period 1960-1970 and in some cases, is very slow indeed (See Table 3.12). This is a major effect of the increased rate of internal and external migration which takes place throughout the country during this period, affecting every parish.

### **Internal Migration and Urban Development**

Two facts about urban growth in Jamaica have emerged: first that it has meant a mere transfer of rural population throughout the country to urban centres and secondly that there have been marked changes in the urban population in particular areas. An examination of internal migration and of the development of urban centres indicates that urban development results in the particular parishes experiencing substantial in-migration. The relationship between these two can best be summarised in terms of an index showing the proportion of the parish population living in its urban areas. This relationship is demonstrated most clearly for the parishes of St. James and St. Catherine.

TABLE 3.12 PER CENT CHANGE IN POPULATION FOR PARISH CAPITALS 1943-1970

Parish and Capitals	1943		1960		1970		% Change	
							1943-1960	1960-70,0
St. Thomas - Morant Bay	3,700	5,100	7,500	37.8	47.0			
Portland - Port Antonio	5,500	7,800	10,500	41.8	34.6			
St. Mary - Port Maria	3,200	4,000	5,300	25.0	32.5			
St. Ann - St. Ann's Bay	3,100	5,100	7,200	64.5	41.2			
Trelawny - Falmouth	2,600	3,700	3,900	42.3	7.7			
St. James - Montego Bay	11,500	23,600	43,800	105.3	85.6			
Hanover - Lucea	1,800	2,800	3,600	55.6	28.6			
Westmoreland - Savanna-la-mar	4,000	9,800	11,800	145.0	20.4			
St. Elizabeth - Black River	1,300	3,100	2,700	138.5	-12.9			
Manchester - Mandeville	2,000	8,400	14,400	320.0	71.4			
Clarendon - May Pen	6,000	14,100	26,100	135.0	85.1			
St. Catherine - Spanish Town	12,000	14,700	40,700	22.5	176.8			

Montego Bay in St. James records an increase of 105 per cent over the 1943-1960 period and a 86 per cent increase over the period 1960-1970. These changes result in the transformation of the parish from an index of urban concentration of 28 per cent in 1960 to one of 44 per cent in 1970. Spanish Town in St. Catherine increases in population by 10,700 from 12,000 in 1943 to 22,700 in 1960 and further to 40,700 in 1970. So great has been the change in this parish that its urban population has expanded more than three-fold and the index of urban concentration has risen from 19 per cent to 35 per cent between 1960 and 1970.

The general change in urban concentration for the country as a whole from 35 per cent to 41 per cent during the period 1960-1970 is reflected in the changing patterns for the various parishes, the most important being that of St. Andrew, St. James, St. Catherine and to a lesser extent, Manchester and Westmoreland. These follow closely the proportions gained through internal migration by the various parishes, which attests to the fact that when we view internal movements of population in Jamaica, we are to a large degree viewing a process of urbanization, which is in this case a mere transfer of rural population to urban areas. There has been some internal movement in response to industrial development in the past, notably to tourist resort areas. This is accelerating with the establishment of bauxite industry in various parts of the island and the establishment of industrial complexes in the Kingston/St. Andrew area. (See Figure 3.5).

The future course of internal migration will undoubtedly parallel the movements characteristic of the decade 1960-1970. But to an increasing degree future shifts in population will be determined by economic and social planning. In particular, policies for siting new industries and for locating private and public housing schemes may impose new directions of internal migration and influence the size of prevailing streams of migration. (Figures 3.6, 3.7 and 3.8 show the direction of migration streams 1921-70). In recent times careful planning of urban development has assumed great prominence and the recognition of this, along with the earlier forces, becomes imperative in many situations today. Many countries have now incorporated urban planning into their National Development plans and this departure can be seen to influence the direction and volume of internal migration and also, the development of new urban areas. Whereas in previous times populations moved largely in response to economic and demographic conditions, in recent times, deliberate efforts to influence the course of urban development have been among the range of activities of the various Town Planning agencies. Decisions to site roads and highways, to create housing settlements and to provide basic physical infrastructure now play an increasing role in governing the movements of people from one place to another.

Such developments are now taking place in Jamaica, with the existence of both a Town Planning Agency and an Urban Development Corporation. In addition the role of private land developers must also be considered, especially in the provision of housing facilities and other amenities which will in time greatly affect movements of population throughout the island.



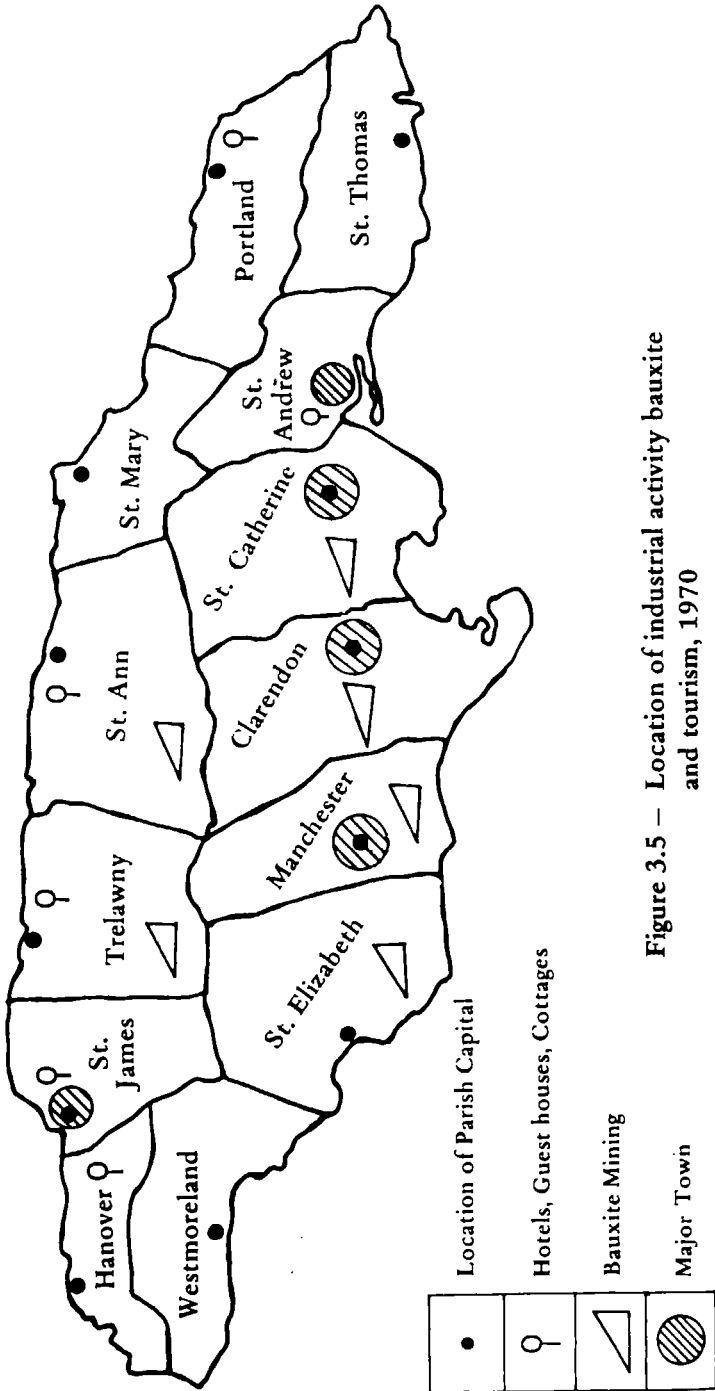


Figure 3.5 — Location of industrial activity bauxite and tourism, 1970

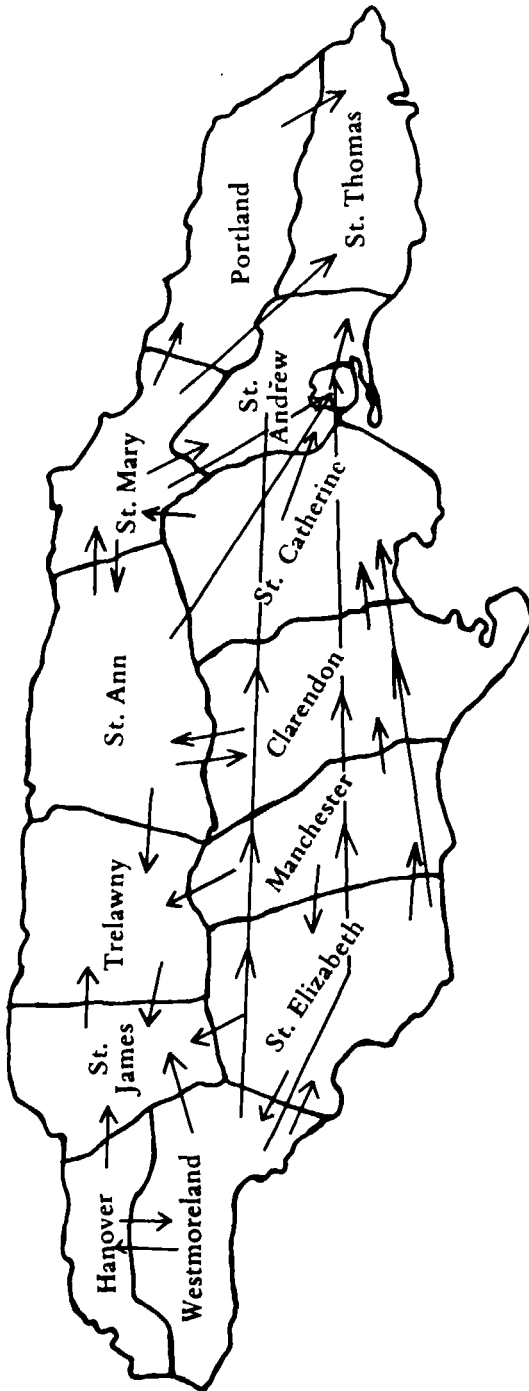


Figure 3.6 — Directions of internal migration streams, 1921-43

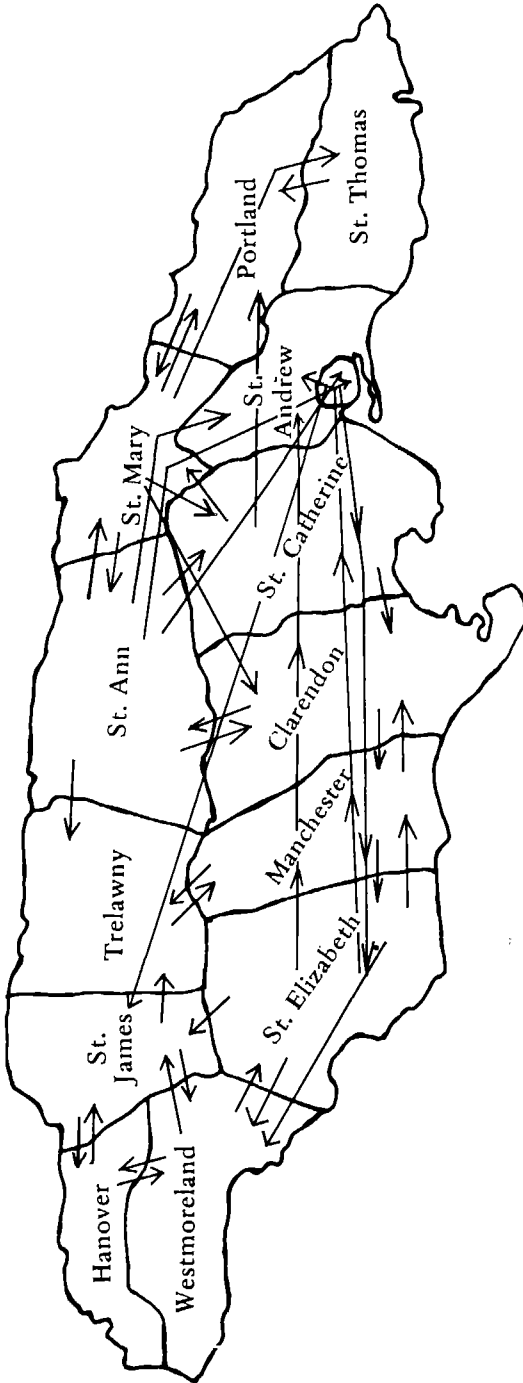


Figure 3.7 — Directions of internal migration streams, 1943-60

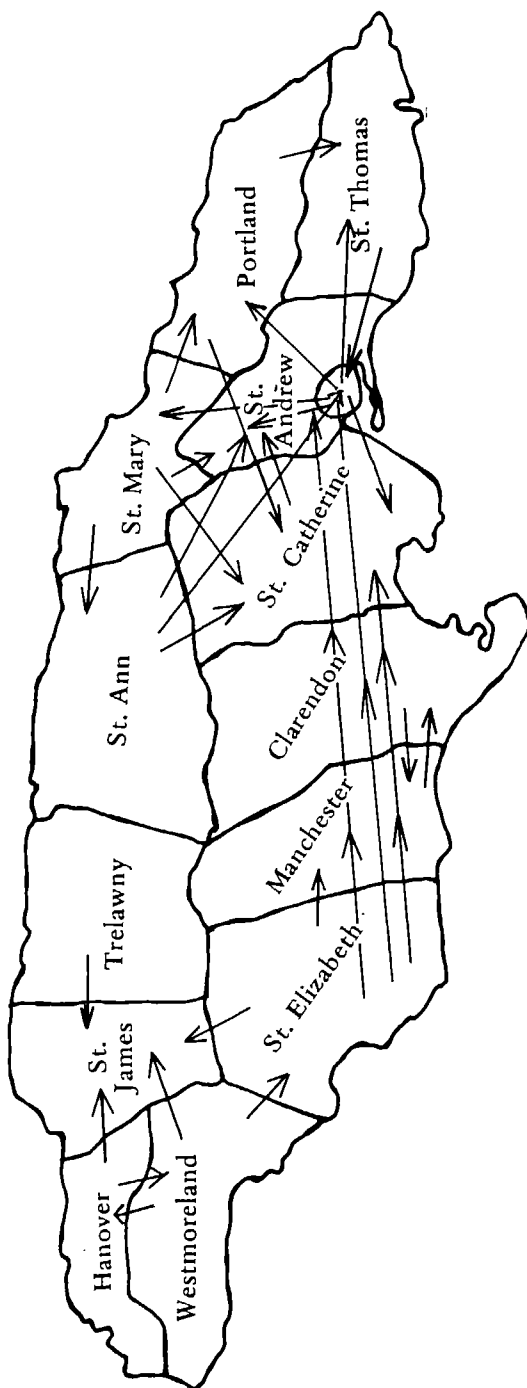


Figure 3.8 — Directions of internal migration streams, 1960-70

To date there are at least five projects being undertaken by the Jamaica Urban Development Corporation which will probably have implications for determining the continuing flow of migration and urban development in the country in the future.<sup>5</sup> These are

1. Redevelopment of the Kingston Waterfront
2. Redevelopment of Ocho Rios
3. Development of the Negril area – Western Jamaica
4. Development of the Hellshire Hills
5. Development of the Montego Bay Waterfront

Two of these development plans will affect Kingston, and this is significant, because in recent times Kingston has been losing population very rapidly, so that, it was feared that the area was fast approaching a state of urban decay. However, the redevelopment of the Waterfront area, which is now in progress, will surely help the city to recapture some of its former attractions. In addition the Hellshire Hills development plan aims at creating two new towns, adjacent to the city – Manatee Bay and Hellshire Bay. These will further add to the regeneration of the city, and further extend the Kingston area to accommodate an additional 45,000 to 60,000 population.<sup>6</sup> The redevelopment of Ocho Rios in the parish of St. Ann and the development of Negril in Hanover will probably have the effect of creating a wider urban area in the north west and east of the island which as can be seen from Figure 3.3 is the least urbanised section of the country. Hanover is the only parish without an urban centre of population 5,000, so that the development of Negril may have some possible effect in improving the growth of the area. The Ocho Rios area in St. Ann has in recent times been growing rapidly and the plans for development in the area can be seen as further enhancing this growth.

Montego Bay is another area for which redevelopment is being undertaken. This may accelerate the growth of the area, which at present is very rapid indeed.

There are other plans the most important of which concern the parishes of St. Catherine and St. Elizabeth which must also be given recognition. In many ways St. Elizabeth merits attention. It is the third largest parish having the fourth largest population. But from as early as 1911, the parish has been recording very high rates of loss due to migration<sup>7</sup> and in addition urban growth has been negligible. Black River, the parish capital has a population of 2,700 in 1970, and this represents a reduction in population over the previous period.

<sup>5</sup>Urban Development Corporation – *Report*.

<sup>6</sup>*Ibid.*

<sup>7</sup>For further report on St. Elizabeth see Harris, R.N. and Steer, E.S. – *Demographic – Resource Push in Rural Migration – Social and Economic Studies* Volume 17, No. 4, 1968.

Therefore the decision to site a new and large industrial complex in the parish – the Luana Oil Refinery – may very well influence the trend in internal migration and urban growth for the parish as a whole.

St. Catherine appears to be the parish with the greatest potential for future urban development. During the period 1960-1970 the percentage change in its urban population was 76 per cent. In the previous period it was 8.9 In addition to its being adjacent to the major urban areas of Kingston and St. Andrew, St. Catherine has recently become the site of expanding industrial activity – and the building of the modern Spanish Town Highway has facilitated increased communication and movements between the parish and Kingston.

Governmental intervention through the Ministry of Housing will also bring benefits to the area. A massive housing scheme costing millions of dollars is to be undertaken in the area<sup>8</sup> in addition to a few other schemes undertaken by private Land Developers. The net result of these activities in addition to the already existing industrial activity connected with the mining of bauxite, will no doubt be to accelerate the rate of urban expansion of the area. It will be interesting to see what possible lengths will be reached by St. Catherine in the future.

Linda HEWITT

<sup>8</sup>Reported in the Daily Gleaner – July 10, 1974.

## CHAPTER 4

### LABOUR FORCE

As is to be expected, one of the aspects of the population of the West Indies which has been most clearly dominated by slavery and the plantation tradition is their working force. The conditions of slavery made every adult the subject of work. These conditions changed only slightly under indenture, at least on the plantations themselves. Throughout the 19th century the heavy involvement of adult males and females is evident. The gradual reduction in proportion of females in the working force is an important aspect of 19th century demography of the island.

Although there was no explicit definition of the working force in the Censuses of Jamaica up to 1921, it implicitly connotes the gainfully occupied, a category treated in great detail in terms of occupation in these early Censuses. The first attempt to define the working force explicitly was taken at the Census of 1943, when this was clearly defined in terms of the gainfully occupied. “. . . a gainful occupation is one by which the person who pursues it earns money, performs a service or assists with the production of goods.<sup>1</sup> Children working at home on general household duties or chores or at odd times at other work, are not considered as being gainfully occupied. Similarly, women doing housework in their own homes without salary or wages were returned as home-makers, and not considered as being among the gainfully occupied”. Further the gainfully occupied population consisted of persons “who at the time of the census had some occupation whether or not they were then employed. Persons who had not, up to the time of the census, been employed, even though they were desirous of obtaining employment, were not included among the gainfully employed”.

Considerable elaboration was done at the 1960 Census, which treated main activity in terms of two reference periods, the week preceding enumeration and the year preceding enumeration. It sought to identify the classifiable labour force and to divide it into two sections, employed and unemployed. The classifiable labour force, it was stated “has become associated with the labour force based

<sup>1</sup>Because at the 1943 Census a very large proportion of the unpaid category consisted of persons whose occupation was given as domestic worker, the approach adopted in *West Indian Census, 1946, Part A*, was to treat this group as not gainfully employed. This for instance was the procedure followed in calculating participation rates for Jamaica for 1943 (op. cit. p. 46). It was also followed in G.W. Roberts, op. cit. However, such adjustments can be made only to total working force figures, and not at finer levels. So that for other discussions in this chapter, 1943 values for the labour force include workers described as unpaid in domestic service.

on the year as reference period and includes the following persons: (1) Those who worked for most of the year and were described as working persons, (2) Those who did some work during the year apart from home duties, (3) Those who did no work during the year, or only home duties, but really wanted work, and were not seeking their first job". It is difficult to reconcile the inclusion of the last category with the statement appearing elsewhere in the 1960 Census Report that the gainfully occupied concept of the 1943 Census was "practically the same as the classifiable labour force" concept of the 1960 Census. For it is not at all clear whether those wanting work and available were included in the gainfully occupied at the 1943 Census. Moreover, one of the problems in comparing working force data for these two Censuses lies in the fact that although, according to the text of the 1960 Census Report, the classifiable labour force included persons wanting work but who were not first seekers, this category is not identified separately in the tabulations based on the year as reference period.

### **Movements in the Labour Force, 1943-70**

Movements in the Labour Force are, to a large degree, functions of movements in the population as a whole, in particular functions of the population of working age, that is those aged 15-64. Changes in the sizes of the whole population, of those aged 15-64 as well as in the labour force itself are depicted in Table 4.1, while the percentage changes appear in Table 4.2. Considerable increases have been recorded in the population aged 15-64, the potentially economically active elements of the population. Between 1943 and 1960 this sector of the population increases by one fifth for both sexes. During the following intercensal interval however there is hardly any increase, with males moving up by 3 per cent and the females showing a loss of 1 per cent. Shifts in the size of the labour force parallel those in the population aged 15-64, with one marked exception – the decrease recorded between 1960 and 1970 in the case of economically active females.<sup>2</sup> Thus during the period 1943-60 males in the labour force move up from 320,000 to 380,000, that is by 18 per cent, while the increase in the case of females – from 164,000 to 224,000 – is equivalent to 36 per cent. As a consequence of the considerable emigration during 1960-70, this period has witnessed falls in the size of the labour force. For males, the reduction is small, from 380,000 to 368,000 or by 3 per cent; by contrast, a pronounced reduction of 16 per cent, from 224,000 to 188,000, is recorded for females.

Also of interest are movements in the labour force of the 14 parishes of the island, shown in Table 4.3. Kingston, the shrinking centre of the capital city, shows only slight increases between 1943 and 1960, whereas in the succeeding intercensal interval it experiences sharp reductions in the case of males and females. In the decade following 1960, males in the Kingston labour force decline from 29,000 to 22,000, that is by 23 per cent; in the case of females the reduction, from 26,000 to 18,000, amounts to nearly one-third. By far the most

<sup>2</sup>See note 1.



TABLE 4.1 COMPARISON OF NUMBERS IN TOTAL POPULATION AND LABOUR FORCE 1943-1970

Population or Labour Force	According to Censuses of								
	1943			1960			1970		
	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes
Total Population	598,300	638,800	1,237,100	773,400	836,375	1,609,800	886,000	927,800	1,848,500
Total Population Age 15-65	349,606	383,100	732,700	412,300	465,345	877,600	427,200	466,800	894,000
Total Labour Force	320,300	163,900	484,300	379,800	223,800	603,600	368,100	187,600	555,700

TABLE 4.2 PERCENTAGE CHANGE IN POPULATION AND  
LABOUR FORCE 1943-1970

Population	1943-1960		1960-1970	
	Male	Female	Male	Female
Total Population	+29.3	+30.9	+14.5	+10.9
Population aged 15-69	+18.2	+21.7	+ 2.8	- 0.8
Total Labour Force	+18.5	+36.5	- 3.1	-16.2

important aspect of changes in the labour force of the parishes is the considerable rise registered for the suburban parish, St. Andrew, a reflection of the marked in-migration into that parish from all others in the island. Between 1943 and 1960 the male labour force for this parish more than doubles, moving up from 33,000 to 70,000. Other parishes showing appreciable increases in their labour force during 1943-60 are St. James (by 24 per cent), Clarendon (by 23 per cent) and St. Ann (by 14 per cent). By contrast the three parishes in close proximity to the urban centre, St. Thomas, Portland and St. Mary, show small decreases in the size of their labour force between 1943 and 1960. Over the same period, females experience a much greater rise in the parish of St. Andrew than males, from 26,000 to 58,000, or by 125 per cent. The second highest percentage rise is shown by the parish of St. Catherine (20 per cent), while others showing appreciable increments are St. James (33 per cent) and Clarendon (12 per cent). Of the three parishes near to the capital, St. Thomas has a slight increase of 2 per cent, whereas in Portland and St. Mary the female labour force is down by about 6 per cent. The outstanding feature in the rural parishes is the considerable contraction of the female labour force in the parish of St. Elizabeth; here the number falls from 24,000 to 14,000, that is by 42 per cent.

During the succeeding intercensal interval 1960-70, the situation is dominated by effects of external migration on the labour force of all parishes. In the case of males the only parish showing an appreciable increase in size is St. Andrew and here the movement, from 70,000 to 84,000 is only one-fifth, that is much lower than in the preceding intercensal period. St. James records a small rise of 4 per cent, while a slight rise of 1 per cent occurs in St. Elizabeth. But elsewhere the decline produced by substantial emigration is obvious. By far the greatest relative reduction in the male labour force occurs in the parish of Kingston, where it amounts to 23 per cent, that is from 29,000 in 1960 to 22,000 in 1970. Other parishes showing marked reductions in their labour force are St. Thomas

TABLE 4.3 CHANGES IN LABOUR FORCE BY PARISHES 1943, 1960 AND 1970

Parish	Total Labour Force						Percentage Change			
	Male		Female				Male		Female	
	1943	1960	1943	1960	1970	1943-60	1960-70	1943-60	1960-70	
Jamaica	321,637	379,775	183,455	223,820	187,647	+ 18.1	- 3.1	+ 22.0	-16.2	
Kingston	28,771	28,803	25,791	26,068	17,819	+ 0.1	-22.9	- 1.1	-31.6	
St. Andrew	33,095	70,143	25,906	58,440	63,734	+111.9	+20.3	+125.6	+ 9.1	
St. Thomas	18,637	17,621	7,910	9,214	6,079	- 5.5	-17.3	+ 1.6	-34.0	
Portland	16,791	15,399	14,132	7,125	6,269	- 8.3	- 8.2	- 5.7	-12.0	
St. Mary	24,760	22,980	20,335	12,377	11,564	- 7.2	-11.5	- 6.6	-21.5	
St. Ann	22,900	26,079	23,905	10,837	12,113	+ 13.5	- 8.3	+ 11.8	-33.7	
Trelawny	12,327	13,451	12,809	6,958	4,874	+ 9.1	- 4.8	+ 5.1	-30.0	
St. James	16,241	20,052	20,860	11,609	10,684	+ 23.5	+ 4.0	+ 16.9	- 8.0	
Hanover	12,880	12,310	11,116	7,534	4,583	- 4.4	- 9.7	- 16.2	-27.4	
Westmoreland	23,000	25,281	21,636	13,232	12,489	+ 9.9	-14.4	- 5.6	-35.9	
St. Elizabeth	23,659	25,040	23,659	13,830	9,582	+ 5.8	+ 1.5	- 41.5	-30.7	
Manchester	22,502	26,079	24,715	11,710	12,379	+ 15.9	- 5.2	+ 5.7	-26.0	
Clarendon	32,710	40,124	35,939	16,670	13,630	+ 22.7	-10.4	+ 12.4	-18.2	
St. Catherine	32,925	36,413	36,029	19,045	16,121	+ 10.6	- 1.1	+ 19.8	-15.4	

(17 per cent), Westmoreland (14 per cent), and St. Mary (12 per cent). Declines in the case of females in these parishes are considerable. Apart from a small upturn of 9 per cent appearing in St. Andrew, all parishes record substantial reductions. These are greatest from St. Thomas and St. Ann (34 per cent each), St. Elizabeth (31 per cent), Trelawny (30 per cent) and Hanover (27 per cent). The smallest reduction (8 per cent) is that of St. James.

In general the changes between 1943 and 1970 point to a mounting concentration of the island's labour force in St. Andrew, while the only other parish evidently attracting migrants is St. James, and here the net gains are confined to the years prior to 1960. The heavy losses recorded in rural parishes are the consequences of two aspects of migration: internal migration which pulls populations from rural into the main urban centre of St. Andrew and external migration which has affected most heavily rural parishes during the decade 1960-70. The degree to which the labour force of the island is being concentrated within the Kingston-St. Andrew area may be illustrated from the mounting proportion of the total located in these two parishes. In 1943 19 per cent of the male labour force is located here; this proportion moves up to 26 per cent in 1960 and to 29 per cent in 1970. Even greater concentration in the urban centre characterises the female labour force; the proportion located here in 1943 is 28 per cent, which rises to 38 per cent in 1960 and to 43 per cent in 1970.

#### Components of Growth in the Labour Force, 1960-70

In view of the considerable impact of emigration on the island's labour force during this period,<sup>3</sup> it is instructive to examine its role in relation to all elements affecting growth of the labour force. Such an analysis is best confined to the experience of males. For this purpose, estimates of decrements due to emigration and mortality are made as well as of the levels of accessions over the decade. Estimates of emigration are obtained by ageing ten-year age cohorts from 5-14 to 45-54 in 1960 ten years to 1970, by means of survival ratios calculated from the 1950 life table for Jamaica and comparing these populations with corresponding age groups from the 1970 Census. In this way the following losses due to external migration are derived:

<u>Age cohort of 1960</u>	<u>Losses due to emigration, 1960-70</u>
5-14	55,200
15-24	34,100
25-34	13,700
35-55	8,900
45-54	6,100
Total	118,000

<sup>3</sup>G.W. Roberts, "Working Force of the Commonwealth Caribbean at 1970, a Provisional Assessment", mimeograph, 1974.

Differences between the original age cohorts of 1960 and their survivors to 1970 yield estimates of loss due to mortality. Male accessions to the labour force are derived by noting that the average age at entry into the labour force is, according to material contained in the 1970 Census, about 19 years, so that consequently survivors of male births in 1946 represent the average annual number entering the working force at the mid point of the decade. After a small allowance is made for emigration, the resulting annual figure, multiplied by 10, is taken as the total accessions over the years 1960-70. Estimates of decrements due to retirement arise as a residual, as can be seen from Table 4.4.

TABLE 4.4 COMPONENTS OF GROWTH IN THE LABOUR FORCE  
FROM 1960-1970

<b>Male Labour Force, 1960</b>		380,000
Decrements (1960-1970) due to		
Net emigration	118,000	
Mortality	23,000	
Retirement	41,000	
Total decrements	182,000	
Total accessions (1960-1970)		170,000
<b>Male Labour Force, 1970</b>		368,000

Accessions to the labour force during the decade 1960-70 amount to 170,000, while decrements from all sources total 182,000, thus giving a net reduction of 12,000. By far the most important source of decrement is net emigration (118,000), which accounts for 65 per cent of losses from all sources. The fact that this volume of net emigration amounts also to 69 per cent of estimated accessions points to its dramatic role in inducing reductions in the male labour force. In fact, were it not for this outward movement, net additions to the labour force would have been of the order of 106,000, which means that the 1970 labour force would have been 474,000, that is representing an increase of one-quarter within the decade. The extent to which emigration has influenced the labour force is thus obvious. It also follows that, in the absence of emigration on this scale in the near future, very considerable net accessions to the working force can be counted on.

#### Sex Ratio of the Labour Force

Sex ratios for the island's labour force at the three years reveal appreciable changes. These are shown for the population as a whole and for age groups in Table 4.5, which also affords a comparison between these and sex ratios for the

entire population. Over the period 1943-60, sex ratios decline from 1,757 males per 1,000 females to 1,694 in 1960 then rise to 1,960 in 1970. This general pattern of a fall in 1960 and a subsequent rise in 1970 follows the pattern for the total population aged 15-75.

It is also instructive to analyse the sex ratio by age groups. Here the principal feature is the increase in the proportion of males to females entering the labour force within the age group 15-19. The sex ratio in this youngest age group increases from 1,346 males per 1,000 females in 1943 to 1,599 in 1960, and even higher to 1,629 in 1970. It is to be noted that this pattern is in direct contrast to that for the total population which shows an appreciable decline in the sex ratio between 1943-60 before rising again in 1970. On the other hand, this pattern need not represent an increase in the number of males entering the labour force. In fact, this trend probably reflects the pattern observed in the age-specific participation rates for the age group 15-19 where, between 1943 and 1960, virtually no change in the male participation was accompanied by substantial decreases in the rates for females. Hence, the pattern is probably one of declines in the number of females entering rather than an increase in the proportion of males.

TABLE 4.5 SEX RATIOS FOR LABOUR FORCE AND TOTAL POPULATION BY AGE GROUP

Age (Group)	Males per 1,000 Females					
	Total Labour Force			Total Population		
	1943	1960	1970	1943	1960	1970
15-19	1,346	1,599	1,629	903	894	939
20-24	1,453	1,457	1,445	859	835	882
25-29	1,649	1,479	1,710	872	809	917
30-34	1,945	1,509	1,860	961	839	900
35-39	2,006	1,625	1,883	960	840	865
40-44	2,057	1,736	2,039	1,001	950	911
45-49	2,054	1,901	2,135	976	996	926
50-54	1,858	2,023	2,374	872	979	922
55-59	1,789	2,114	2,722	860	961	986
60-64	1,985	2,290	3,128	846	898	929
65-69	2,095	2,761	4,065	809	809	932
70-74	-	-	-	769	-	856
Total	1,757	1,694	1,960	905	880	914

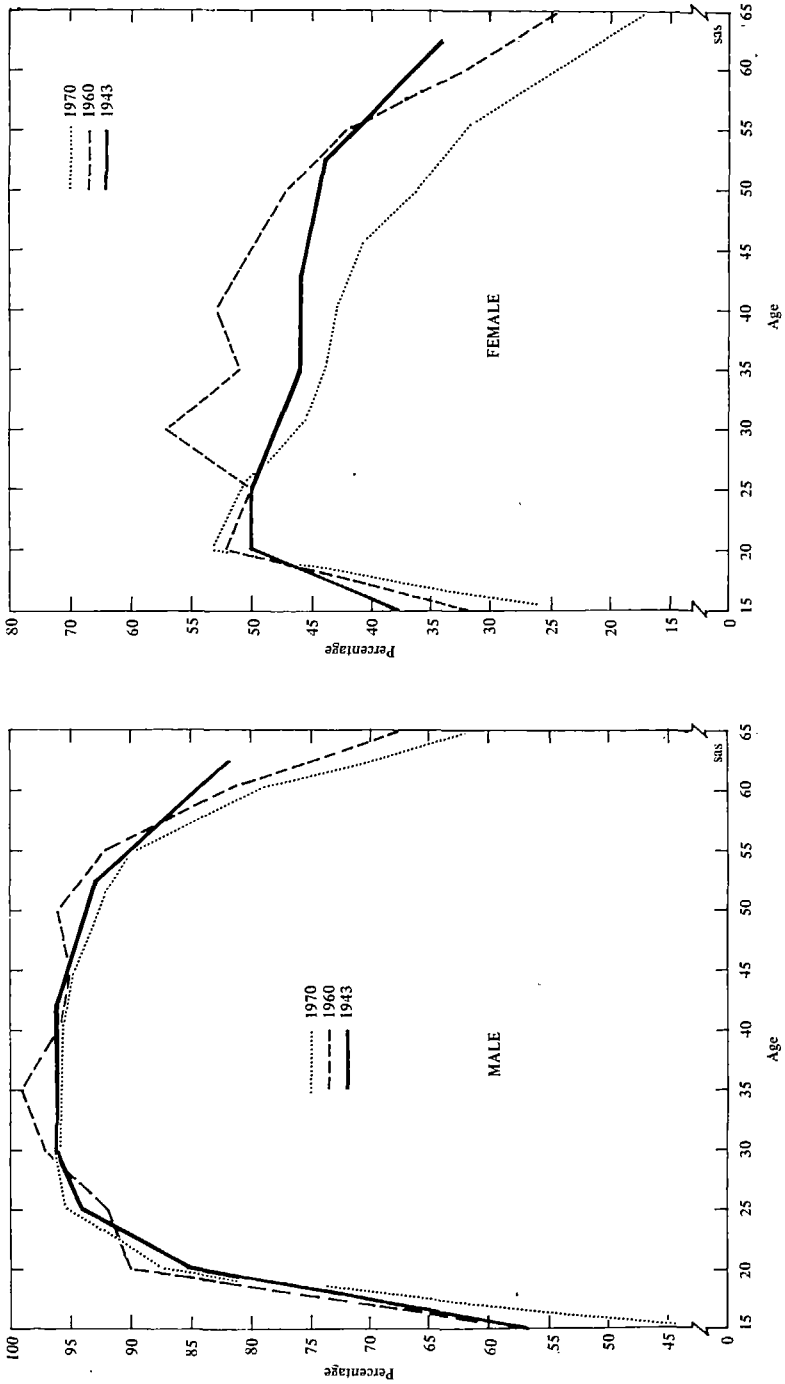


Figure 4.1 — Male and Female labour force participation rates, Jamaica 1943, 1960 and 1970.

However, after age 20-24, this imbalance of sexes is appreciably redressed over the period 1943-60, with the ratio declining from 2,006 to 1,625 within the age group 35-39. Nevertheless, the proportion of working males to females drops again by 1970, the declines being more marked within the age interval 25-40 – the age span when women are withdrawing for the purpose of marriage and childbearing as well as emigration.

The pattern after age 50 is in keeping with the experience of other countries; here the sex ratio increases rapidly from 2,095 males per 1,000 females at age 65 in 1943, to twice this ratio in 1970, thus reflecting the fact that the females retire at an earlier age.

### **Participation in the Labour Force**

As can be seen from Table 4.6 and Figure 4.1, there have been small movements in participation rates over the 27-year period under review, affecting for the most part, ages under 25 and over 55. Whether changes in the educational status of the population occurring between 1943 and 1970 have affected economic activity at very young ages is not clear, but it is essential to note the form these have taken. Within the age interval 15-19, a marked rise takes place between 1943 and 1970 in the proportion attending school, the proportion for both sexes rises from 8 per cent in 1943 to 15 per cent in 1960 and still further to 32 per cent in 1970. Between 1943 and 1960 the educational system operates in favour of the females. Over the following decade, 1960-70, however the reverse pattern appears, with the proportion of males aged 15-19 attending school increasing from 19 per cent to 33 per cent, as against 25 per cent and 27 per cent respectively for females.

The foregoing changes in school attendance among the population under 20 does not seem to play a dominant part in determining participation in the working force. Thus between 1943 and 1960 there is in the case of males a small rise of from 55 per cent to 57 per cent, which is succeeded by a marked decline to 44 per cent by 1970. The peak age of participation for males at all three Censuses centres around 35-39, where approximately 97 per cent are in the labour force. This level continues until age 50-55, after which economically active proportions begin to decline. Thus at age 65-69 the proportion in the labour force of 1943 amounts to 68 per cent, while it stands at 67 per cent in 1960 and is down to 59 per cent in 1970.

In keeping with the experience of all countries, rates of participation for females differ basically from those of males. Within the age interval 15-19, a slight decline to 32 per cent in 1960 is followed by a more pronounced fall to 25 per cent in 1970. At higher ages there is a general rise between 1943 and 1960, while the general reduction after the latter date means that for ages over 30 participation rates are either within the same or much lower than those of 1943. In fact the outstanding feature of female participation rates is that at ages over



TABLE 4.6 TOTAL LABOUR FORCE PARTICIPATION RATES 1943-1970  
BY AGE GROUP

Age Group	Males			Females		
	1943	1960	1970	1943	1960	1970
15-19	55.4	57.2	43.5	29.5	32.0	25.1
20-24	85.1	90.3	87.3	44.4	51.7	53.3
25-29	94.5	91.9	95.0	45.8	50.3	50.9
30-34	96.2	97.1	96.2	44.1	57.3	46.4
35-39	96.5	98.8	96.4	43.6	51.1	44.2
40-44	95.2	96.1	95.8	42.0	52.5	42.7
45-49	96.6	95.0	95.3	45.9	49.8	41.5
50-54	94.8	96.3	92.6	39.6	46.6	35.9
55-59	90.1	91.9	89.6	41.8	41.8	32.4
60-64	75.4	81.8	79.3	28.7	32.1	23.5
65-69	68.2	67.2	59.3	19.9	23.9	16.0
Total	79.3	88.3	80.1	38.1	45.9	38.4

35 there is a considerable reduction from 1960 to 1970, which contrasts with the general rise over the preceding intercensal interval.

#### Average age at entry into labour force and period spent within labour force

An effective way of summarizing the working experience of members of the labour force is by means of life table applications. By applying the worker rates to appropriate life table functions the changing pattern of participation can be studied from several angles. Three useful measures can be derived in this manner: (a) the average age at entry into the labour force, (b) the average number of years spent in the labour force, and (c) the proportion the latter forms of the complete expectation of life of the worker at age 15. These values are shown in Table 4.7 and Figure 4.2 for the three census years.

In 1943 the average age at entry amounts to 16.4 years. This rises to 17.8 in 1960 and to 18.3 in 1970. Two factors have combined to increase the average worker's participation in the labour force between 1943 and 1960, an appreciable improvement in mortality and a rise in rates of participation. Although there has been some improvement in mortality between 1960 and 1970 this has not sufficed to offset the appreciable falls in rates of participation in this decade, so that the average worker's period spent in the labour force has fallen by nearly two years. As the working life table has its radix placed at age 15, it is instructive to compare the average length of working life with the complete expectation of

TABLE 4.7 AGES OF ENTRY INTO LABOUR FORCE, YEARS SPENT IN LABOUR FORCE AND EXPECTATION OF LIFE OF WORKER AT TIME OF ENTRY

	1943	1960	1970
Average age of entry into labour force	16.4	17.8	18.3
Average number of years spent in labour force	39.7	44.3	42.5
Average number of years of life remaining to persons entering labour force at age 15	46.2	54.0	55.2
Years in labour force as per cent of remaining years	85.9	82.0	76.3

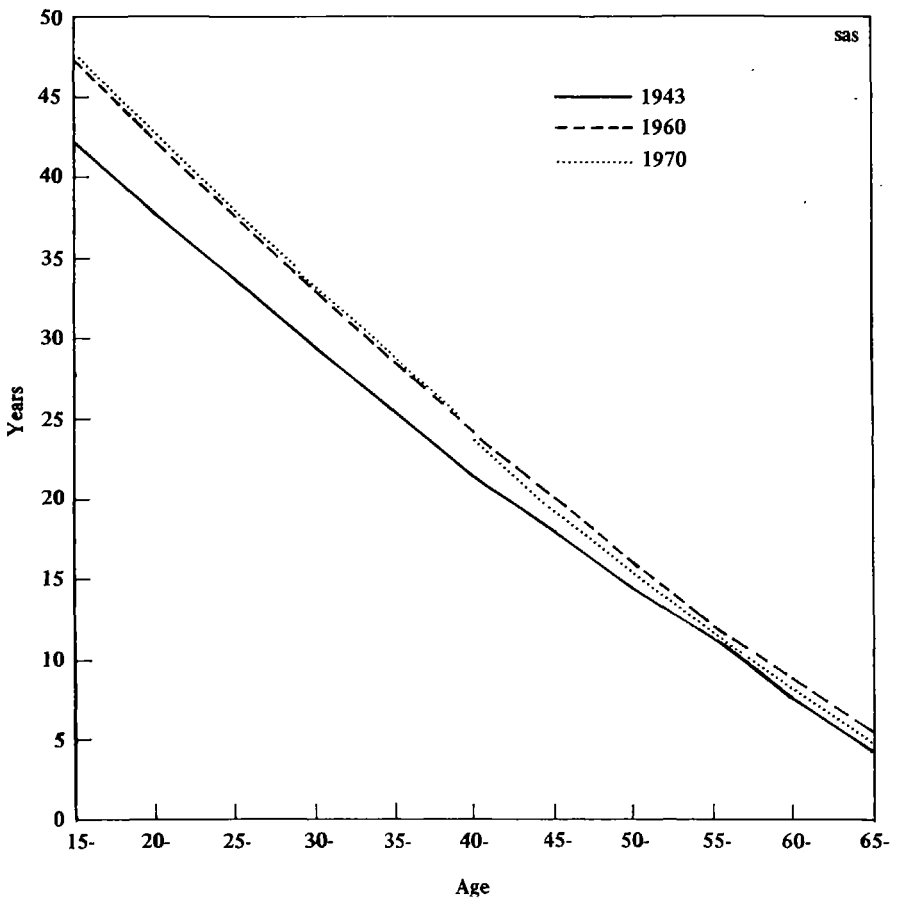
life at age 15. The latter shows a marked rise from 46 to 54 years between 1943 and 1960, and a more modest rise to 55 years by 1970. When the average working life is expressed as a percentage of the completed expectation of life at age 15, the figure stands at 86 per cent in 1943, then moves down to 82 per cent by 1960, falling more appreciably in 1970 to 76 per cent. One possible interpretation of these falls in percentages is that they indicate a reduction of time spent in labour force. These are however particularly influenced by movements in overall rates of participation and any conclusion we may be tempted to draw must take into account the possibility of some exaggeration in the levels of participation shown in 1960.

Two recent developments may have appreciable effects on worker participation in the near future. The first is the widening of the base of free education to include free education at the secondary level as well as at the university level under certain conditions. The second is the two-year period of National Service for school leavers under age 18. But what form these effects will take will depend largely on how these two programmes are administered and the extent to which the entire range of the adolescent population is brought within their scope.

#### Components of the Labour Force — Employed and Unemployed

So far, the discussion has been in terms of the total labour force, interpreted as covering all individuals over age 14 who reported having worked or who were seeking work for most of the year preceding enumeration. The several components of the labour force have now to be examined.<sup>4</sup> As the labour force concept was not current in 1943 and was not used then, the comparisons of the components of the labour force have to be limited to movements between 1960

<sup>4</sup>Lack of detailed data on employment status in the 1943 census limits this exercise to an analysis of data from the 1960 and 1970 census.



**Figure 4.2 – Average expectation of working life for males, Jamaica, 1943, 1960 and 1970.**

and 1970. We may assume the labour force to be divided into four broad categories, three of which admit of relatively straightforward derivation, while the fourth is less readily identifiable. The three easily identifiable categories are: (1) persons at work, (2) those looking for work, and (3) those not looking for work but with a job attachment. The fourth category is wanting work and available, or some variant of this. The last mentioned is introduced in the 1960 Census as covering “those who did not work during the year but really wanted work and were not seeking their first job”.

Despite the differences in classification adopted at the Censuses of 1960 and 1970, it is instructive to compare the size and proportional distributions of the categories at these two periods, this is done in Table 4.8. With respect to males,

the number returned as worked falls from 363,400 in 1960 to 324,500 by 1970, that is by 11 per cent. At the former period it accounts for 91 per cent of the total labour force; that is down to 84 per cent by 1970. The number seeking their first job declines from 19,500 to 18,600, but constitutes the same proportion of the total (5 per cent) at each year. Other job seekers increase from 16,400 to 18,400, showing a small rise in the proportion they form of the total – from 4 per cent to 5 per cent. Those returned as wanted work and available at 1970, amounting to 25,100 males, constitute 7 per cent of the total labour force, thus becoming the second largest category.

TABLE 4.8 SIZE AND PERCENT DISTRIBUTION OF COMPONENTS OF LABOUR FORCE 1960-1970

Year	Components of Labour Force				Total Labour Force
	Employed	Unemployed – Seekers			
	Worked	Seeking First Job	Other Job Seekers	Wanted Work and Available (1970)	
<b>NUMBERS</b>					
<b>Males</b>					
1960	363,400	19,500	16,400	–	399,300
1970	324,500	18,600	18,400	25,100	386,700
<b>Females</b>					
1960	203,100	28,200	20,700	–	252,000
1970	153,500	12,400	11,500	22,700	200,100
<b>PER CENT DISTRIBUTION</b>					
<b>Males</b>					
1960	91.0	4.9	4.1	–	100.0
1970	83.9	4.8	4.8	6.5	100.0
<b>Females</b>					
1960	80.6	11.2	8.2	–	100.0
1970	76.7	6.2	5.7	11.4	100.0

TABLE 4.9 EMPLOYED/UNEMPLOYED SECTORS OF LABOUR FORCE 1960-1970, PER CENT TOTAL

	Employed		Unemployed		Intercensal Increase 1960-70				
	Male	Female	Male	Female	Male	Female			
1960	1970	1960	1970	1960	1970	1960	1970		
Jamaica	83.9	80.6	76.7	9.0	16.1	19.4	23.3	+7.1	+3.9

With respect to females, the shifts among the different components are more pronounced. There is a marked decline in the number classified as worked from 203,100 to 153,500 that is by 24 per cent. In 1960 they form 81 per cent of the total labour force, a figure which is down to 77 per cent in 1970. Those seeking first jobs decline from 28,200 to 12,400, that is by 56 per cent. In 1960 this category accounts for 11 per cent of the female labour force as compared with 6 per cent in 1970. Likewise there is a considerable fall in the number of women seeking other jobs, from 20,700 to 11,500. Women returned as wanted work and available, numbering 22,700 in 1970, account for as much as 11 per cent of the female labour force. It is interesting to note that despite the fact that the male labour force amounts to twice the size of its female counterpart, the total females seeking work and wanted work is nearly the same as the corresponding total for the males. It is clear that an important question arising here is whether the inclusion of the category wanted work and available represents an advance in the treatment of labour force data in Jamaica or really gives rise to further problems especially in attempts to treat unemployment.

One aspect of the labour force which attracts considerable attention in Jamaica, and indeed in the West Indies at large, is the high level of rates of unemployment. These are usually shown to be many times corresponding rates for industrialised countries. Initial attempts to measure unemployment were made in labour force surveys in the 1950's and the first Census to deal explicitly with the question is that of 1960. Certain innovations in the treatment of economic activity at the 1970 Census are evidently intended also to assist in the derivation of measures of this phenomenon. If we define the unemployed as those persons in the labour force who are not classified as worked, then measures of unemployment can be derived from the data in Table 4.9 (see Figure 4.3). From these it is seen that the rate of unemployment for males moves up from 9 per cent in 1960 to 16 per cent in 1970. Even higher levels obtain for females; here the indications are of the rate increasing from 19 per cent in 1960 to 23 per cent in 1970. Manifestly these rates are heavily weighted by the numbers classified as wanted work and available.<sup>5</sup> By excluding these from the argument we obtain much more modest levels of unemployment.

The question has been raised whether the straightforward adoption of categories of economic activity developed for use in highly industrialised societies can legitimately be transplanted to conditions of undeveloped societies. Particular confusion seems to arise as a consequence of the use of the category wanted work and available in the context of a society where approximately 30 per cent of its working population are classified as self-employed.

<sup>5</sup>It should be pointed out that this category *Wanted Work and Available* constitutes a negligible proportion of the unemployed sector in the rest of the Caribbean.

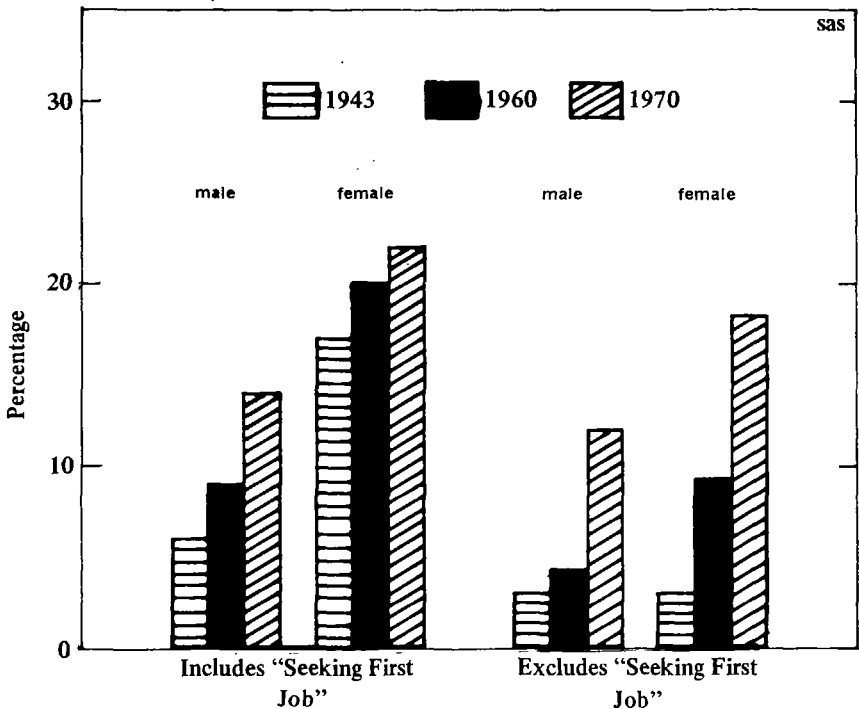


Figure 4.3 – Unemployment rates, Jamaica 1943, 1960 and 1970.

### The Increasing Burden of Dependency

One of the comparative disadvantages of developing countries, *vis-à-vis* developed countries, lies in their heavy dependency burden resulting from high fertility. A rapid growth in the number of dependents imposes greater claims on the income produced by the working population and forces the government to divert a larger proportion of investment funds to less immediately productive uses such as housing facilities. Moreover the strain of educational facilities resulting from rapid growth in child population may impede progress in reducing illiteracy and in providing adequate training for future entrants into the labour force.

The first approximation of the country's dependency burden is shown in the ratio of persons in dependent age groups (under age 15 and over age 65) to those of working ages. These ratios, as shown in Table 4.10, Column 1, can be interpreted as showing the number of dependents that must be supported, on average, by 1,000 persons of working age. It will be seen that, in 1943, there were 688 dependent persons for every 1,000 in the working ages. Rising fertility levels increased this ratio to 834 in 1960, while by 1970, the burden was even greater with 1,068 dependents per 1,000 persons in the working age group.

TABLE 4.10 DEPENDENCY RATIOS (a) PER 1,000 OF DEPENDENT AGE (b) PER 1,000 OF TOTAL LABOUR FORCE (c) PER 1,000 EMPLOYED LABOUR FORCE - 1943-1970

Dependency Ratios - Per 1,000			
Year	Dependents (under age 15 and over age 65) per 1,000 population of working age	Dependent population per 1,000 in the labour force	Dependent population per 1,000 employed labour force
	(1)	(2)	(3)
1943	688	1,449	1,525
1960	834	1,662	1,842
1970	1,068	2,328	2,867

However, not all persons of working age participate in economic activities, therefore a more accurate assessment of dependency is obtained from data classifying the number of inactive persons per 1,000 economically active persons (Column 2 Table 4.10). In 1943, 1,000 gainfully occupied persons had to meet the needs of 1,449 non-active dependents. By 1960 the number of persons being supported amounts to 1,662 per 1,000 economically active persons, the corresponding proportion for 1970 increasing to 2,328 dependents. Thus, the average number of dependents per economically active person has risen by two-thirds over the 28-year span; dependency of inactive persons increases by about 15 per cent between 1943 and 1960, while the added effect of declining participation rates over the following decade raises the number of dependents on the economically active population by 40 per cent.

If rates of unemployment accurately reflect the utilization of this country's labour resources perhaps a more useful measure of the dependency burden is the number of inactive plus unemployed persons per 1,000 employed persons. (Column 3, Table 4.10). In this picture, due to the combination of rising levels of fertility, declining participation rates and accelerating unemployment rates, the number of dependents on the working population almost doubles between 1943 and 1970. Over the earlier period, 1943-60, the number of persons dependent on the working population increases by 21 per cent from 1,525 to 1,842 persons per 1,000 of the employed population. The following decade 1960-70, however, experiences an increase of 56 per cent in the burden of dependency, the number of dependents on the employed force rising from 1,842 to 2,867.



### Distribution By Industrial Grouping

The three censuses of 1943, 1960 and 1970 adopt similar classifications for Industrial Groupings, which make it possible to obtain reliable comparisons concerning the movements occurring among these sectors over the 28 year span.

The principal features emerging from an analysis of the major industrial groupings are:

- (1) The substantial decline in the relative importance of agriculture, although the industry continues to be the major employer of labour.
- (2) The gains made by mining, manufacturing, construction and commerce between 1943 and 1960, after which slight declines in absolute numbers occur, mainly in construction.
- (3) The percentage contribution of the personal services has declined, although the numbers employed in many sub-groups such as hair-dressing and dressmaking have increased. The latter increases, however, have not been sufficient to compensate for the decreases caused by domestic services. On the other hand, community services (education and health) have shown dramatic increases, although between 1960 and 1970 this rate of increase slowed down substantially due to the heavy rate of emigration of skilled manpower (especially teachers, doctors and nurses) over this period.

At all three censuses, agriculture accounts for the largest percentage of males in the labour force. In 1960, however, because of the great increase in other industry groups, agriculture has declined in relative importance for males, from 61 per cent to 52 per cent in 1960, despite the fact that the absolute numbers in agriculture move up by 8 per cent from 182,800 in 1943 to 197,446 in 1960. On the other hand, reductions in both absolute numbers and percentage distribution occur over the decade 1960-70, with the total number of males employed in agriculture declining by over one-third, although due to the deceleration in the rate of growth in other industries, the decline in the percentage distribution to 43 per cent is not as substantial (see Table 4.11).

Females experience absolute decreases of approximately 6,000 between 1943 and 1960 and almost four times this amount (25,400) over the following decade; this, coupled with increases in other industries, means that in 1970 only 9 per cent of the female labour force are in agriculture as against 18 per cent in 1960 and 26 per cent in 1943.

In direct contrast is the manufacturing industry which experiences continual absolute and percentage gains for males over the period 1943-70. This sector accounts for 11 per cent of the male labour force in 1943 with a total of 34,000 men listed; in 1960, there are 12 per cent which amounts to 45,658 men in manufacturing. Although the latter number increases only slightly to 46,119 in 1970, the shifts among the other industries raise the percentage of manufactur-

TABLE 4.11 PROPORTIONAL DISTRIBUTION OF LABOUR FORCE BY INDUSTRIAL GROUP, 1943-1970

Industry Group	Percentage Distribution					
	Male			Female		
	1943	1960	1970	1943	1960	1970
	(1)	(2)	(3)	(4)	(5)	(6)
Total – All Industries	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture, forestry, hunting, fishing	61.0	52.2	43.6	25.5	18.0	9.1
Mining, Quarrying	0.6	1.0	2.4	0.2	0.3	0.3
Electricity, gas, water	0.4	0.8	1.2	0.0	0.1	0.3
Manufacturing	11.3	12.1	15.2	14.3	20.0	17.7
Construction	10.2	12.9	11.3	2.0	1.2	0.4
Transport and Communication	3.6	4.5	4.9	0.3	1.1	3.0
Commerce	5.4	6.9	6.2	12.9	15.8	16.8
Services	7.8	9.6	15.1	44.7	44.2	52.5

ing by 3 per cent to 15 per cent of the total labour force in 1970. For females, the change is dramatic: 25,300 females in manufacturing in 1943 which accounts for 14 per cent of the female labour force rising by 73 per cent to 43,865 females in this group in 1960 which amounts to one-fifth of the female labour force. The reverse pattern occurs over the following decade, however, when the number of females employed in manufacturing declines by the same percentage as it had increased over the previous decade, the numbers falling to the level of 26,177, similar to 1943.

The construction industry, which is the third largest single employer of male labour in 1943, rises to the second largest in 1960, before declining to fourth position in 1970. The percentage distribution over the three censuses amounts to 10 per cent, 13 per cent and 11 per cent respectively.

By far, the most significant changes have been experienced by the Service Industries and, in particular, the Personal Services, which continue to employ many more women than men. In all three censuses the service industry has been the largest single employer of female labour, accounting for approximately one-

TABLE 4.12 NUMBERS AND PERCENTAGE DISTRIBUTION OF PERSONS IN SERVICE INDUSTRIES 1943-1970

Industry Group	Numbers						
	1943	Male			Female		
		1960	1970	1943	1960	1970	
<b>Total Services</b>	23,265	36,494	45,921	79,176	96,296	77,752	
<b>Personal Services</b>							
Domestic Service	8,213	6,841	4,293	71,295	69,157	43,690	
Barbers, hairdressers	561	878	733	487	2,864	1,352	
<b>Community Services</b>							
Education	1,205	2,135	2,763	3,155	8,480	10,427	
Health	974	2,443	2,247	2,228	5,222	5,009	
<b>Rest of Services</b>	12,312	14,343	35,885	2,011	10,573	17,274	
	Proportion of Service Industry						
<b>Total Services</b>	100.0	100.0	100.0	100.0	100.0	100.0	
<b>Personal Services</b>							
Domestic Service	35.3	18.7	9.3	90.0	71.8	56.2	
Barbers, hairdressers	2.4	2.4	1.6	0.6	3.0	1.7	
<b>Community Services</b>							
Education	5.2	5.9	6.0	4.0	8.8	13.4	
Health	4.2	6.7	4.9	2.8	5.4	6.4	
<b>Rest of Services</b>	52.9	39.3	78.1	2.5	11.0	22.2	

half of the female labour force. (See Table 4.12). In terms of absolute numbers, the number of female service workers increases by one-quarter between 1943 and 1960 from 79,176 to 96,296, although over the following decade they decrease by a similar proportion to 77,752. A closer examination reveals that, despite the overall increases between 1943 and 1960, slight decreases are observed for personal services, especially domestic services, which decline from 71,295 to 69,157. After 1960, the number of domestic workers are drastically reduced by 37 per cent to 43,690. On the other hand, significant increases are observed for community services where the numbers in education and health increase by almost threefold between 1943 and 1960 from 3,155 to 8,480 for education, and 2,228 to 5,222 for health services. Over the following decade, however, this rate of growth slows down to a mere 23 per cent for education, with a slight loss recorded for health services. Males in the service sector have improved their importance continually over the three censuses, with the numbers increasing from 23,265 to 36,494 and on to 45,921 in 1970.

The advent of bauxite mining in 1960 has brought the mining and quarrying sector into greater prominence, although, because of the heavy mechanization involved in the process, it is not a very large employer of labour. This industry, which accounts for only 1 per cent of the labour force in 1960, doubles over the following decade, increasing from 3,900 to 7,200 males, or from 1 per cent to 2 per cent of the male labour force.

In general, changes among the three main industrial sectors have been considerable. The cutback in the primary sector has benefitted both of the other sectors, though, after 1960, it favours the tertiary more than the secondary (See Table 4.13).

TABLE 4.13 PERCENTAGE CHANGE IN THE INDUSTRIAL SECTORS  
1943-1970

Industrial Sectors	Percentage Change			
	1943-1960		1960-1970	
	Male	Female	Male	Female
<b>PRIMARY SECTOR:</b>	+10.0	-12.9	-30.7	-64.9
Agriculture, forestry				
Fishing, mining, quarrying				
<b>SECONDARY SECTOR:</b>	+46.0	+56.2	-14.6	-40.7
Manufacturing, construction				
<b>TERTIARY SECTOR:</b>	+60.5	+29.8	+ 0.9	+21.6
Electricity, gas, water				
Transport and Communication				
Commerce				
Services				

### Changes in the Occupational Structure

The analysis of occupational data from Census material is not very straightforward and often proves unreliable. Changing concepts of the working population and changing definitions of its major classes impose severe limitation on the available data.

For the purpose of this analysis, eleven occupational categories used in the 1970 census have been adopted. An attempt has been made to regroup the occupational classes for the 1943 and 1960 censuses into similar classifications to conform to those of 1970 for the purpose of tracing the movements of the various classes. The regrouping in the case of the 1943 census seems the least

satisfactory, especially in the case of the professional and technical workers and the agricultural class. A major limitation of the data for 1970 is the very high proportion of the labour force for whom occupation is not stated. In the case of females it is as high as 28 per cent. Despite the many limitations, it is instructive to consider the changing size of the various occupational classes between 1943 and 1970 as shown in Table 4.14 and Figure 4.4.

The data on male agricultural workers and farmers suffice to show the declining dependence on agriculture, the degree of change being greatest over the decade 1960-70. The number of males engaged in agriculture (including forestry, fishing and quarrying) seems to have increased between 1943 and 1960 from 178,300 to 203,100, although the proportional distribution shows a decline from 55 per cent in 1943 to 53 per cent in 1960. After 1960, however, a pronounced decline takes place and by 1970 the number engaged in agriculture is down to 132,000 or 40 per cent of the male labour force.

Though the overall level of participation for females is substantially lower, the pattern of decline is similar. Thus between 1943 and 1960 the number of females engaged in agriculture remains virtually unchanged, standing at a level of approximately 45,000 or 21 per cent of the labour force. After 1960, however, the latter number declines substantially to 12,663 or 8 per cent of the female labour force in 1970.

In 1943, 1960 and 1970 the class returned as production and related workers contains the second highest proportion of workers among the males, these being 16 per cent, 21 per cent and 31 per cent respectively. In terms of absolute numbers, this sector doubled over the 28 year period, rising from 49,800 in 1943 to 100,200 in 1970. With the steady declines in agriculture, the pattern of movement indicates further increases in this group.

In the case of females, however, slight declines have been recorded, the proportion increasing from 13 per cent to 17 per cent and then down to 15 per cent. The latter movement in terms of absolute numbers is even more marked, the total number of females so engaged rising from 22,900 to 36,368 between 1943 and 1960 before declining by almost the same proportion it has increased to 24,000, in 1970.

Steady increases in the numbers returned as clerical and related workers are in evidence. In the case of males this sector more than doubles over the earlier decade, rising from 5,700 to 13,000. Over the following decade, however, very little movement occurs and although slight increases are registered in terms of the proportional distribution, the actual numbers decline from 13,000 to 12,100 in 1970. Of greater significance has been the growing proportion of females in this class which increases between 1943 and 1960, from 2 per cent to 6 per cent, and doubles over the following decade to 13 per cent. The absolute numbers move from 2,300 to 13,400 and on to 20,100 by 1970.

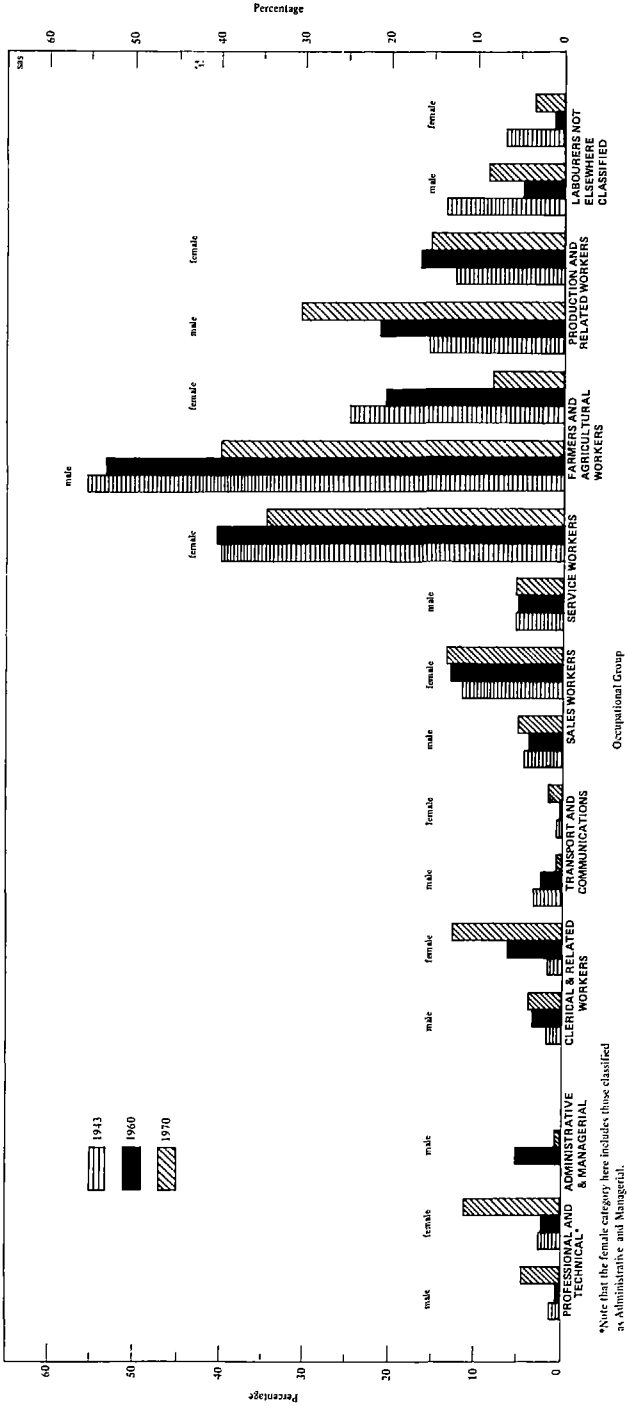


Figure 4.4 — Labour Force by sex and occupational groups, Jamaica 1943, 1960 and 1970.



No change has been recorded in the proportional distribution of male service workers which remains fairly stable around 5 per cent of the labour force, although in terms of actual numbers a slight decline from 19,200 to 17,500 is recorded between 1960 and 1970. The female service workers, who constitute the largest part of the female labour force, exhibit similar patterns of movement, the proportion remaining at a fairly steady level of 40 per cent between 1943 and 1960 before declining appreciably to 34 per cent in 1970.

The group returned as sales workers, another predominantly female occupational class, reports slight increases in the proportional distribution of females over the 28 years, rising from 12 per cent to 13 per cent in 1970. The significance of female participation in these occupations, however, can easily be exaggerated, in view of the general decline in numbers of females occupied as well as the high proportion of "not stated" returned in the 1970 census. Actually, the number of female sales workers decreases from 28,200 to 21,100 between 1943 and 1970 respectively. The pattern for males showed decreases between 1943 and 1960 and increases over the following decade, moving from 4 per cent to 5 per cent of the labour force.

Pronounced decreases characterized the workers in Transport and Communications, especially over the decade 1960-70 when the force was reduced by 80 per cent from a total of 9,475 to 2,151. On the other hand, the proportion of females so engaged, though extremely low, showed striking increases over the same decade, moving from 53 to 2,916 after almost disappearing before 1960.

Though by far one of the most important occupational classes, the professional and technical as well as managerial and administrative groups (containing most of the country's highly skilled manpower) are certainly the least satisfactorily delineated in the census. Here the movements over the decades, especially between 1960 and 1970 suggest changing definitions of basic categories. For example, the fall from 3,500 to 1,800 in 1960 and the subsequent unprecedented increase to 15,000 for males may indicate shifts in definitions, especially as changes in the education system at higher levels have not been as drastic. On the other hand, the proportion of foreign to local skills within this group has not yet been investigated.

Movements in the administrative and managerial sector suggest possible changes in the classification of these workers and the latter group of professional and technical workers. Thus pronounced increases in the professional group were paralleled by substantial decreases of a similar proportion in the administrative and managerial group. In terms of absolute numbers, the professional and technical group increased from 1,800 to 15,000 as against the decrease from 19,500 to 3,000 for those classified as administrative and managerial workers.

A similar pattern characterizes the female labour force, though the proportions returned as professional and technical workers are considerably higher than the males due to the large number of teachers and nurses which comprise this group. The number of females thus engaged declines substantially from 4,400 to



400 in 1960, and then increases dramatically to 17,300 in 1970. Parallel to this is the considerable decrease in the administrative and managerial sector declining from 4,242 in 1960 to 414 in 1970.

### **Participation Rates by Occupational Groups<sup>6</sup>**

Accompanying these changes in the overall proportions of persons employed in the different occupational groups have been equally significant changes in the rates of participation by age in the several categories of occupations distinguished. These participation rates for both males and females bring out the distinctive patterns for the occupational classes and the shifts experienced by each over the 28 years following 1943.

Considering first the rates for agriculture, the most striking feature we note is the fall in proportions at all age groups. For instance, in the age group 20-24 the proportion of males engaged in agriculture declines from 57 per cent in 1943 to 51 per cent in 1960, after which there is a definite fall to 27 per cent in 1970. Another noticeable feature of employment in agriculture for both sectors is the steady increases in participation rates with advancing age. Indeed, the participation curve rises steadily from age 15, reaching a maximum of nearly 70 per cent at age 65-69. The social implications of this pattern of movement are interesting. The comparative low rates at younger ages point to marked withdrawals from agriculture on the part of younger workers.

In strong contrast to this is the pattern for those returned as Production and Related Workers where, despite the overall increases over the three censuses, continuous declines after age 15 characterise the pattern of movement for this group. Essentially the same pattern is maintained at all censuses, the participation curve showing a marked concentration at lower ages, after which drastic reductions take place. The maximum age of participation which is centred around ages 15-19 stood at 16 per cent for 1943, increasing to 36 per cent in 1960 and rising still further to 43 per cent in 1970 for males. By age 45 these proportions are halved, approaching 10 per cent, 15 per cent and 24 per cent respectively.

The pattern for females, though similar to that for males, is not characterised by as marked increases over the three censuses. The curve of employment, however, still reflects the temporary nature of this kind of occupation. The fall in participation in agriculture and the complementary increased participation in production and related workers points to possible shifts among these occupational groups.

With regard to the service workers, no outstanding features mark the pattern of participation for the males besides the high rate of participation in the age group 15-19 in 1943 (13 per cent) as against marked declines in the following censuses approaching 4 per cent for both 1960 and 1970. The rates reach a maximum around age 20-24 and then decline gradually.

<sup>6</sup>The Figures on which this section is based are not included in this study.

By contrast, distinctive shifts in patterns of participation characterise the female service workers, an occupation that accounts for over half the female labour force, of which domestics form a large proportion. Here the continuous declines emphasise the temporary nature of this kind of occupation. The proportions between ages 15-19 have declined substantially from 57 per cent to 50 per cent between 1943 and 1960 falling even further to 40 per cent in 1970. After age 20, there is an upward turn in the curve for 1960, the proportion increasing steadily above those for 1943 throughout the rest of the age groups. In the case of 1970, however, sharp declines are recorded up until age 35-39, after which the curve of participation takes a marked upward turn, rising significantly above the proportions recorded for the previous censuses. In fact, it appears that the overall decline in participation for 1970 stems essentially from decreased levels of ages under 40, which emphasizes that withdrawals from these occupations have been mainly by younger females.

Considerable increases characterise the rates for clerical and related workers at all ages, especially in the case of females. The shape of the curve is essentially the same for both sexes at all three censuses, with a sharp increase to a maximum at age 20-24, after which it falls steeply away towards retirement, indicating sharp reductions taking place within these age groups. The principal feature of change among the clerical workers is the increases in the proportions entering at younger ages, the pattern being more marked for females. Hence in 1943, 1960 and 1970, the proportion of female clerical workers aged 15-19 rises from 2 per cent to 6 per cent to 20 per cent respectively; a pattern also reflected in the growing number of employees in the labour force over the same period.

Changes in the proportion of sales workers by age are comparatively speaking not very significant. In the case of males, the participation rate remains at a fairly stable level over all age groups. In the 1960 and 1970 censuses, the rates at age 15-19 and 65 years and over maintain the same level, with slight variations across the intermediate age groups. In keeping with the experience of the other occupational groups, the main feature of change is the increased numbers entering in the age group 15-19. With regard to the female sales workers, the sharp upward trend in the participation curves with advancing age depicts continual increments to this force from age 15 onwards.

The shape of the curves for professional and technical workers, as indicated earlier on, suggests possible alterations in the definition of the classes. As against a decrease between 1943 and 1960, massive increases have been recorded over all age groups in 1970. In addition, the fairly stable level of the curve for 1943 and 1960 is to be contrasted with the shape for 1970 which shows continual decreases after age 20-24, a pattern indicating that a large proportion of these professional and technical workers in 1970 are concentrated in the younger age group 15-24.

Complementary to this are the striking decreases reported for the administrative and managerial workers, the gap growing wider with age between the two censuses.

### Labour Force by Type Of Worker

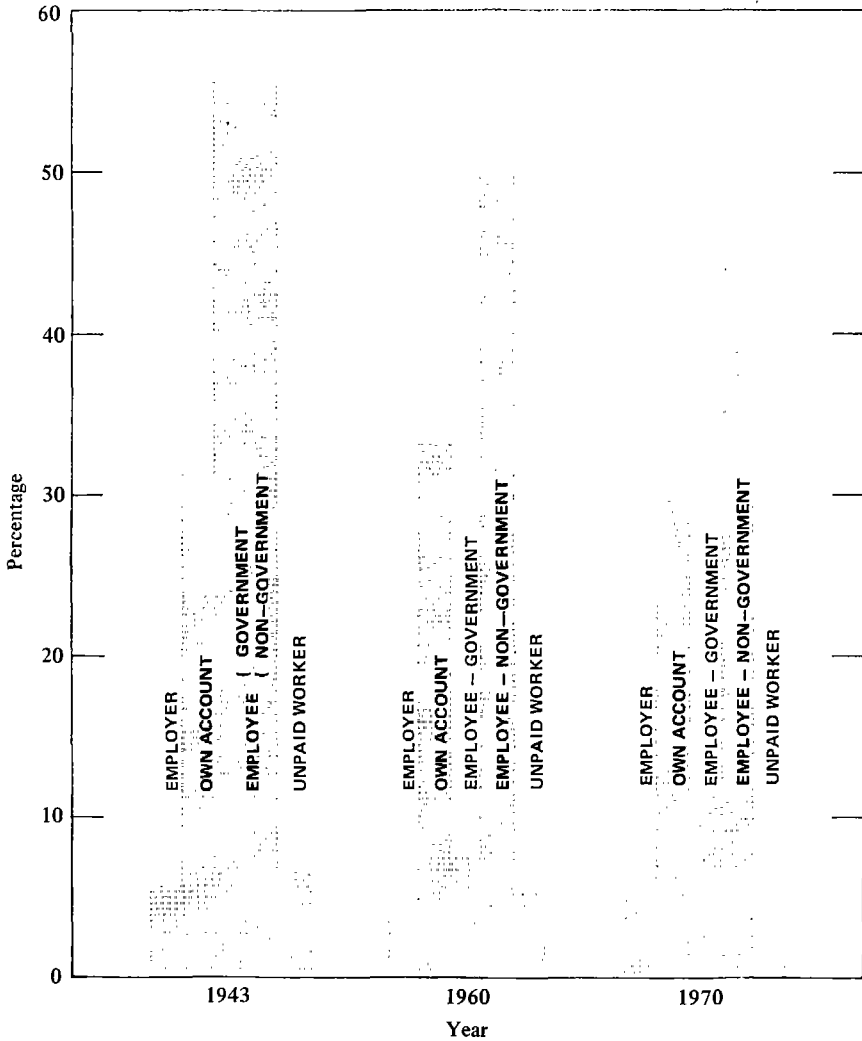
Another convenient framework for discussing characteristics of the labour force is in terms of the three-fold classification: Government employees, non-government employees and Own account workers. The identification of these groups is useful in assessing the stages of economic growth of a country as well as the growing power of the public sector over the labour market. It should be expected that with the increasing diversification of the labour force the distribution by employment status would change. At the same time some limitations to this classification must be noted. These include problems in classifying (1) quasi-government organisations such as statutory bodies and (2) persons, especially unskilled workers, who are performing work for Government under contract. Another set of problems centre around the distinction between non-government and own-account workers, in view of the fact that, especially in rural areas, many own-account workers supplement their income by employment either in government or private agencies.

An analysis of the labour force in terms of this classification reveals that by far the largest category consists of non-government employees followed by own-account workers with government employees in third position. This pattern characterises both sexes over the 28 year period (See Table 4.15) and Figure 4.5.

TABLE 4.15 PROPORTIONAL DISTRIBUTION OF LABOUR FORCE BY TYPE OF WORKER 1943-1970

Type of Worker	Male			Female		
	1943	1960	1970	1943	1960	1970
Total Labour Force	100.0	100.0	100.0	100.0	100.0	100.0
Employer	5.7	3.7	5.7	1.6	1.3	2.9
Own Account Worker	31.2	33.2	29.8	28.8	28.3	19.1
Employee – Total	56.6	57.5	62.6	55.3	61.4	75.9
Employee – Government*	–	7.6	11.1	–	7.7	16.6
Employee – Non Government*	–	49.9	51.5	–	53.7	59.3
Unpaid Worker	6.6	5.2	1.7	14.3	6.5	1.8

\*Figures not available for 1943



**Figure 4.5 – Percentage distribution of male labour force by type of worker, 1943, 1960 and 1970.**

**Note:** Group classified as employees combine both govt. and non-govt. employees in 1943; hence the high proportion as compared with the later periods.

While the distributions among the three categories show broad similarities, interesting departures are to be noted, especially among the shifts in the proportional distributions over the three censuses.

Changes in the employee sector for males between 1943 and 1960 have been negligible, the proportions increasing by only 1 percentage point from 57 per cent to 58 per cent. The intercensal increase between 1960 and 1970, however, is more appreciable, increasing by 5 percentage points to 63 per cent in 1970. It is important to note that most of this increase is attributable to the Government sector which develops at a much faster rate than the private sector, the former increasing by 4 percentage points as against 2 for the latter.

In the case of females the proportion of Government employees doubles over the same decade from 8 per cent to 17 per cent, a pattern probably connected to the striking increases in clerical and related workers observed in the previous section.

Movements in the numbers reported as employers and own-account workers have been irregular. Between 1943 and 1960, the proportion returned as employers declines from 6 per cent to 4 per cent while the proportion of own-account workers over the same period rises from 31 per cent to 33 per cent. In the following decade 1960-70, the proportion of employers rises to its former position of 6 per cent of the total labour force as against a decrease in the proportion of own-account workers to 30 per cent.

Although no change is recorded in the proportion of female own-account workers from the total between 1943 and 1960, significant declines occur over the following decade, the proportion of females in this category decreasing from 28 per cent to 19 per cent. On the whole, indications are that the category classified as own-account workers is on the decline. The decline in own account workers is consistent with the overall reduction in the agricultural industry as shown in an examination of a cross-classification of both variables illustrating the fact that own-account workers contribute the greatest numbers to agriculture, forestry and fishing. There is a slight increase in the proportion of employers to 3 per cent in 1970.

Perhaps the most interesting feature emerging from the analysis of these shifts in the occupational status of the labour force is the striking decline in the age group returned as unpaid workers. In fact, the decrease from 7 per cent to 2 per cent for males and 14 per cent to 2 per cent for females over the 28 years points to a virtual disappearance of this group within the near future. This pattern of decline is probably a result of the overall decreases in agriculture, the striking declines for females being related to the disappearance of the class of unpaid domestic workers so prevalent in the 1943 census. But it is possible that changing interpretations of this category have been in operation.

TABLE 4.16 EDUCATIONAL LEVEL OF TOTAL POPULATION BY ECONOMIC ACTIVITY 1970

Educational Attainment	Total Population	Males			Females			Not in Labour Force
		Employed-Worked	Unemployed—Seekers	Not in Labour Force	Employed—Worked	Unemployed Seekers	Not in Labour Force	
Infant or none	100.0	68.9	9.0	22.1	20.7	5.2	74.1	
Less 5 years Primary	100.0	75.1	11.9	13.0	25.3	6.8	67.9	
5 years or over								
Primary	100.0	72.8	16.0	11.2	28.3	10.6	61.1	
Secondary and G.C.E.								
Passes	100.0	78.6	7.9	13.5	57.3	7.8	34.9	
Diploma and Degree	100.0	91.7	1.0	7.3	76.1	0.8	23.1	

### Educational Levels of the Labour Force

A detailed classification of the status of the working force has been used in tabulating the educational attainment of the labour force in 1970. Educational categories used in labour force tabulations for 1943 and 1960 are not sufficiently detailed to permit comparisons with 1970, but apparently there has been some rise in the proportion of the labour force holding professional or university qualifications over the 27 year period. The position at 1970 is summarized in Tables 4.16 and 4.17 which set out the proportional distribution of economically active groups in terms of seven educational levels.

TABLE 4.17 PROPORTIONAL (PERCENT) DISTRIBUTION OF ECONOMICALLY ACTIVE CATEGORIES BY EDUCATIONAL LEVEL, 1970

Educational Level	Worked	Seeking First Job	Others Seeking	Wanted work and available	Total Labour Force
<b>MALE</b>					
Infant or none	4.5	1.7	3.5	3.8	4.5
Primary 1-4 years	10.4	5.5	10.5	9.2	10.4
Primary 5 years and over	74.6	85.8	81.5	83.2	74.6
Lower Secondary	3.6	5.0	2.8	2.3	3.6
Upper Secondary	2.7	0.5	0.4	0.2	2.7
Diploma	0.8	0.1	0.1	0.1	0.8
Degree	1.1	0.0	0.1	0.1	0.1
Other	2.3	1.4	1.1	1.1	2.3
Total	100.0	100.0	100.0	100.0	100.0
<b>FEMALE</b>					
Infant or none	2.4	1.1	2.3	2.3	2.5
Primary 1-4 years	6.4	3.3	6.6	6.4	6.5
Primary 5 years and over	72.0	80.3	82.4	84.2	72.0
Lower Secondary	5.8	9.3	4.9	3.9	5.8
Upper Secondary	5.6	0.6	0.6	0.5	5.5
Diploma	1.7	0.1	0.0	0.0	1.7
Degree	1.0	0.0	0.0	0.0	0.9
Other	5.1	5.3	3.2	2.7	5.1
Total	100.0	100.0	100.0	100.0	100.0

Less than 5 per cent of males in the labour force have no schooling or less than one year's schooling, and in the case of those seeking their first job about 2 per cent have failed to reach this level. One-tenth of male workers report 1 to 4 year's schooling, and once more first seekers show a better position than the labour force at large, with just under 6 per cent at this level. Thus 15 per cent of the island's male labour force may be classified as functionally illiterate, while 7 per cent of first seekers are in the same position. By far the largest proportion of the labour force fall within the educational level 5 years and more of primary schooling. For the total this amounts to three-quarters, and again those seeking first jobs appear in a somewhat more favourable light; 85 per cent of their number report having 5 years or more of primary school. Just over 6 per cent of all the labour force have some secondary schooling and about 3 per cent are classified as "upper secondary", that is they apparently hold qualifications which assure them entry into a university. Here however first seekers do not exhibit a better position than the labour force at large; they show less than 6 per cent with secondary schooling, while less than 1 per cent of this group have the qualifications necessary for entry into a university. Very small proportions of the labour force have diplomas or university degrees. About 2 per cent of the male labour force have higher qualifications, but this level is hardly represented among those seeking entry into the labour force.

In broad terms, the picture for females is the same, but a few contrasts should be noted. The proportion with less than 4 years of formal schooling the so-called functionally illiterate, is much lower (9 per cent) than in the case of males. In conformity with their more favourable position is the larger proportion of female workers with secondary schooling. This amounts to 11 per cent, nearly twice the level of males. More important, the proportion apparently qualified to enter a university stands at 6 per cent or twice the level of males Figure 4.6.

Of interest is the educational attainment of the four types of workers, employers, Government employees, other employees and own-account workers; that is summarized in Table 4.18. Differentials among them are not large and relate mainly to the position at the two ends of the educational scale. The smallest proportion (7 per cent) of the work force having less than 5 years schooling is found among Government employees, with other employees coming next (12 per cent) and own-account workers having the highest (23 per cent). As is to be expected, the educational level of five years or more of primary schooling is by far the largest for all types of workers. It forms about the same proportion (76 per cent) for own-account workers and non-government employees, and is lowest (67 per cent) for government workers. With regard to higher levels of education, own-account workers are grossly deficient, showing less than 2 per cent with GCE passes, or with degrees or diplomas. Other employees show just under 4 per cent of their numbers with passes in GCE subjects but less than 2 per cent with higher qualifications. Employers show the same proportion with GCE passes as non-government employees, but have a



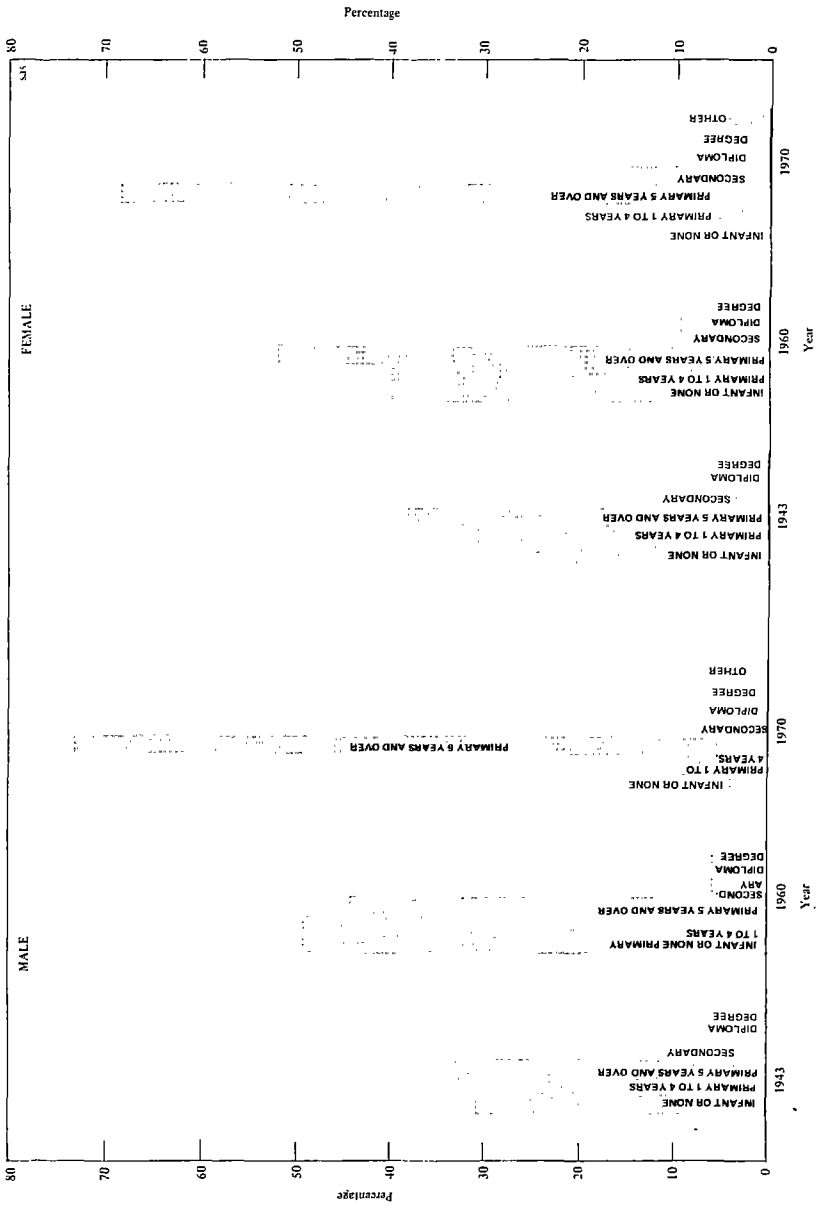


Figure 4.6 — Percentage distribution of labour force by educational attainment and sex, Jamaica 1943, 1960 and 1970.

TABLE 4.18 PROPORTION (PERCENT) DISTRIBUTION OF TYPE OF MALE WORKER BY EDUCATIONAL LEVEL 1970

Type of Worker	No Schooling and less than 5 years Primary Schooling	5 or more years Primary schooling	Secondary without G.C.E. Passes	Passes in G.C.E. subjects	Diploma or Degree	Other	Total
Employer	15.0	70.1	4.9	3.8	3.1	3.0	100.0
Government Employees	7.1	67.2	5.3	7.9	6.4	6.2	100.0
Non-Government Employees	12.4	75.6	3.9	3.7	1.9	2.5	100.0
Own Account Worker	22.5	76.0	0.6	0.2	0.2	0.6	100.0

higher proportion (3 per cent) with degrees or diplomas. The highest proportion of personnel with advanced education is shown by government employees, 8 per cent of whom have GCE passes and 6 per cent have higher qualifications.

### Conclusion

The current prevailing trend in the labour force of this island thus seems to be one of decreasing crude activity rates – in other words of labour force growth lagging behind the growth of the population – which results in part from a declining proportion of population in the working ages and from a widespread tendency towards decreasing age-specific activity rates in the youngest and eldest brackets of potential working ages, the downward trend for females being even more marked than for males.

To a large extent the trends of labour force growth in the island have been dominated by the depleting effect of external migration which accounted for over one-third of the decline over the 1960-70 decade.

The shrinking dependence on agriculture is in evidence, accompanied by a rapidly growing non-agricultural sector. Within the period 1943-60, changes in the agricultural sector were negligible. Increases in the labour force were attributed mainly to a growing industrial sector, with production and related workers showing the highest gains for males, and service workers being the most popular occupation for females. Clerical workers ranked second for both sexes. Over the following decade, 1960-70, heavy declines were recorded for agriculture, and although there was a concomitant substantial increase in the non-agricultural sector for males, an appreciable loss was observed for females in this sector.

The causes of the compression in the years of economically active life, usually attributed to a rising average age of entry into the labour force and a falling average age of retirement, are entwined with developments in the industrial sector that have played essential parts in the evolution of the structure of the labour force. Increases in the average age of entry have not been as pronounced as expected, despite significant increases in the numbers attending school.

Finally, the shifting patterns of occupations among both sexes should be viewed against the background of growing urbanization and internal migration. The considerable in-migration into the urban areas since 1921, stimulated to a large extent by the declining demands for agricultural workers and the mounting population pressures in the rural areas since the cessation of external migration, will doubtless continue on a growing scale. Under these conditions of urbanization and declining agriculture, still further changes in the occupational patterns are to be expected. So far as the males are concerned, it seems certain that increased numbers will be absorbed in skilled and semi-skilled occupations which will rise in importance as employment in agriculture declines (as has been

observed in the substantial increases in production and related workers as well as clerical workers) — a situation which may, nevertheless, present special problems in the area of training.

On the other hand, the impressive declines in female workers indicate profound changes in the employment situation, probably more so in rural areas. It is less certain that the displacement of females from agricultural employment will be compensated by growing employment in other spheres of activity to the same extent as in the case of males. Indeed, even in the case of service workers, of which a large proportion comprise domestic services — a type of work sought by female in-migrants unable to find anything more remunerative when first settled in the urban area — substantial declines have been recorded. On the other hand, these massive declines in female participation may simply represent a transitional period of re-adjustment and re-orientation to a rapidly changing industrial structure.

Barbara BOLAND

## CHAPTER 5

### MORTALITY<sup>1</sup>

Although it was not until 1878 that effective vital registration was introduced in Jamaica, there is sufficient material available to obtain rough estimates of mortality at much earlier dates. Slave records of Jamaica do not permit us to derive any reliable measures of mortality, but they do point clearly to the existence of very high rates prevailing in the 18th century and there are indications that some improvements have taken place in the late slave period, that is within the years covered by slave registration. With the first Census of the island in 1844, it becomes possible to estimate intercensal rates of mortality and to note the possible impact of such health disasters as the cholera epidemic of 1851.

By comparison with other West Indian populations, Jamaica seems to have experienced relatively favourable levels of mortality, lower possibly than any other. This at least seems to be the reason for the very steady rate of growth that characterises the island over the years 1844 to 1911.

In view of the fact that this island has achieved during the 50 years following 1921 mortality reductions on a scale which it has taken most European countries more than a century to develop, the means by which these advances have been effected are of considerable significance. Equally important are the courses of the several measures, the pattern of mortality decline in terms of cause of death, as well as certain differentials which may have played a part in determining rates and patterns of reduction.

This Chapter focuses on two broad aspects of mortality in Jamaica. The first is the general mortality position, as revealed mainly in series of life tables. Much of the material on which this rests has already been published, so that intensive treatment does not seem necessary. The second broad aspect deals with infant mortality. By the study of infant mortality along the lines of a life table application, differentials in terms of sex, legitimacy and cause of death can be more thoroughly analysed than has so far been possible.

#### **General Mortality Position**

##### *Trends in Death Rates*

The course of mortality in Jamaica can be studied from crude death rates available from 1878, which with estimates for intercensal intervals available since

<sup>1</sup>For Discussions of early aspects of mortality see G.W. Roberts *The Population of Jamaica*, Cambridge, The University Press, 1957.

1844 afford a fairly satisfactory picture of the course of mortality in Jamaica since the end of slavery. As is expected there are fairly large fluctuations to be seen in death rates before the period of effective mortality control. Thus the influenza pandemic of 1918 results in crude death rates in excess of 30, the highest recorded since the introduction of vital registration. The downward course of death rates after 1921 is manifest. Moreover there are much smaller annual fluctuations after this year than are in evidence at earlier periods.

From the series of life tables available for Jamaica since 1879-82 it is possible to present several measures of mortality which depict the changes taking place from different standpoints. Collected in Table 5.1 are four sets of measures, three of which are derived from life tables, which summarise the course of mortality reductions since 1921 and afford a comparison of the position before 1921 with the subsequent, and much more favourable, experience.

Declines in the death rate based on the actual population are considerable. From a level of 25.8 in 1920-22, it declines steadily to reach 11.9 in 1950-52 and at the most recent date shown amounts to 7.5. Thus the most recent rate is less than one-third of the rate prevailing in 1920-22. However, this gives an unduly favourable indication of improvements in mortality. The more reliable death rates based on life table populations, which are not affected by changes in age structure, present a much more realistic indication of the improvements which have actually taken place. Up to 1921 there is not much difference between crude death rates and those based on life table experience. But after declines commence the tendency for crude rates to exaggerate the extent of improvements achieved is obvious. In fact the life table death rates for the latest date 1969-70 are about twice the actual crude death rate. Based on life table mortalities, males and females have experienced a fall of 46 per cent during the 50 years following 1921, and this can be taken as summarising the overall improvements that have taken place since 1921.

Another significant measure of improvement, derived from the life table, is the change in age at which the life table cohort is reduced by one-quarter. Before the period of increasing mortality control, the life table cohort is reduced by this amount at very young ages. In 1920-22 this stands at 2.5 for males and 3.3 for females. The dramatic improvements in mortality at younger ages are well brought out by the steep rise in this age during the following 25 years of mortality decline. In 1945-47, the age at which the cohort undergoes this reduction has risen to 34.7 for males and 35.0 for females. This represents probably the most dramatic indication of improvements in mortality among children and adolescents that is available. The subsequent rises in these ages are no less striking. In fact the most recent values, 59.2 for males and 62.8 for females, represent improvements of 71 per cent and 79 per cent respectively, since 1946.

TABLE 5.1 SUMMARY MORTALITY MEASURES FOR JAMAICA, 1879-82 TO 1969-70

Period	Death rates per 1000		Actual Population, Both Sexes	Age at Which Life Table Cohort is Reduced by One-quarter		Survivors to Exact Age 50 (1 <sub>50</sub> )	
	Life Table Population			Male	Female	Male	Female
	Male	Female					
1879-82	27.0	25.1	24.4	3.4	4.4	39,398	43,255
1889-92	27.2	26.1	25.4	2.3	2.9	39,991	42,361
1910-12	25.6	24.2	22.7	2.1	3.8	43,565	46,006
1920-22	27.9	26.2	25.8	2.5	3.3	37,113	40,980
1945-47	19.5	18.3	14.1	34.7	35.0	62,360	65,040
1950-52	17.9	17.0	11.9	43.4	45.9	69,850	72,305
1959-61	16.0	15.0	9.3	55.5	59.9	80,198	83,242
1969-70	15.0	14.2	7.5	59.2	62.8	84,834	86,838

Note: Except for 1969-70, which are based on provisional life tables, these values are taken from G.W. Roberts, *Life Tables for West Indian Populations, Publication Number 14*, and *Life Tables for British Caribbean Countries, 1959-61, Publication Number 9*, Census Research Programme, 1966.

TABLE 5.2 JAMAICA LIFE TABLE DEATH RATES (1000<sub>n</sub>q<sub>x</sub>) 1920-22 TO 1969-70

Age Interval	Male					Female					% Decline 1921-70	
	1920-22	1945-47	1950-52	1959-61	1969-70	1920-22	1945-47	1950-52	1959-61	1969-70	Male	Female
	0-1	187.27	102.02	84.47	59.80	36.53	176.05	90.11	71.74	51.60	33.31	80.5
1-2	67.67	32.60	27.25	20.44	10.65	66.94	27.75	24.05	17.88	8.87	84.3	86.7
2-5	58.32	18.95	20.07	7.62	5.12	58.32	19.49	16.65	6.54	5.18	91.2	91.1
5-10	36.86	14.48	12.77	5.00	3.14	37.29	13.92	11.59	4.02	2.64	91.5	92.9
10-15	25.15	9.05	7.22	3.75	3.24	29.69	11.06	7.47	3.06	2.24	87.1	92.5
15-20	34.25	14.92	8.86	6.16	5.34	40.23	20.76	13.07	4.84	3.64	84.4	91.0
20-25	62.67	25.61	16.82	8.76	8.46	61.53	31.73	21.53	6.51	5.49	86.5	91.1
25-30	79.30	29.40	22.07	11.34	8.71	71.06	32.21	22.02	8.64	6.53	89.0	90.8
30-35	84.15	34.82	24.71	13.71	12.23	73.26	33.44	22.85	12.29	10.35	85.5	85.9
35-40	91.50	46.07	29.00	18.38	14.11	72.37	38.81	26.96	15.68	14.20	84.6	80.4
40-45	100.80	57.43	42.25	25.76	20.70	77.40	44.24	36.76	21.71	19.82	79.5	74.4
45-50	111.62	73.29	55.19	36.41	34.39	86.87	56.32	43.50	28.15	27.45	69.2	68.4
50-55	130.79	102.08	78.28	57.61	50.82	102.15	71.88	60.87	41.33	37.34	61.1	63.4
55-60	165.60	135.94	99.80	87.16	82.49	124.18	90.52	76.05	62.12	60.35	50.2	51.4
60-65	217.74	173.49	149.59	127.31	112.15	166.53	115.97	108.29	88.29	79.90	48.5	52.0
65-70	279.33	231.49	199.32	197.52	167.88	235.18	164.19	147.65	140.44	125.42	39.9	46.7
70-75	374.04	324.56	322.56	247.85	240.47	329.51	237.54	242.53	194.53	186.89	—	—



Another life table measure which is used here is the survivors to exact age 50. This points to improvements in mortality at somewhat higher ages than the foregoing index. Here as well dramatic increases are in evidence. In the case of males 37 per cent of the life table cohort survives to age 50 under the mortality of 1920-22. This moves up considerably to 62 per cent for 1945-47 and continues its steady rise to 85 per cent in 1969-70. Within the span of 50 years this proportion has more than doubled. A similar scale of improvement is observed among females. At 1920-22, the proportion of the female life table cohort surviving to age 50 stands at 41 and by 1969-70 the proportion has risen to 87 per cent, thus more than doubling in the 50 year period under review.

For a detailed pattern of mortality reductions it is best to turn to the life table death rates ( ${}_nq_x$ ) from the series of life tables. These are presented in Table 5.2 for the five series of life tables available since 1921. As the life table for 1969-70 is provisional, slight revisions of its functions are likely, but it is sufficiently reliable to give a picture of improvements over the 50 years. The reductions in  ${}_nq_x$  values are considerable. Up to age 40, the reductions between 1921 and 1970 exceed 80 per cent. Infant mortality is down by 81 per cent and the improvements continue up to a maximum at the age interval 5-10. At this point the reduction amounts to 92 per cent for males and 93 for females. For males reductions in excess of 90 per cent obtain within the age range 2 to 10. In the case of females reductions of this magnitude are observed within the age range 2 to 25. In fact the general position is that females have, at least up to age 35 enjoyed somewhat greater improvements than have males. The considerable improvements in mortalities throughout the life span can be assessed from Figure 5.1, which compares the  ${}_nq_x$  values for 1921 and 1970.

Another function of the life table from which the extent and pattern of mortality improvements can be gleaned is the complete expectation of life. Again it is convenient to compare these values for the two periods 1920-22 and 1969-70. The steady increase in this function is seen from Table 5.3, which gives  $e_x^o$  values from the series of life tables available. The improvement in the average length of life or expectation of life at birth constitutes a useful summary of the mortality position at the five dates. In the case of males it is seen that this value increases from 35.9 in 1921 to 66.7 in 1970, which means that about 31 years have been added to the average length of life. The addition to the male values at age 1 amounts to 25 years, and up to age 35 the increment is in excess of 10 years. Slightly higher additions are in evidence for females. For these the increase in the average length of life, from 38.2 years to 70.2 years amounts to 32 over the 50 year span, while the increase for age 1 is 26 years. Again the increase up to age 35 is in excess of 10 years. The general rises in the average length of life between 1921 and 1970 are depicted in Figure 5.2, which shows the relevant  $e_x^o$  values.

TABLE 5.3 JAMAICA, COMPLETE EXPECTATION OF LIFE ( $e_x^0$ ), 1920-22 TO 1969-70 AND GAINS IN EXPECTATION OF LIFE

MORTALITY

Age	Male						Female						Gains in years 1920-22 to 1969-70			
	1920-22		1945-47		1959-61		1920-22		1945-47		1959-61		1969-70		Male	Female
0	35.89	51.25	55.73	62.65	66.73	38.20	54.58	58.89	66.63	70.18	30.84	31.98				
1	43.10	56.04	59.85	65.62	68.25	45.31	58.96	62.42	69.23	71.58	25.15	26.27				
2	45.20	56.92	60.51	65.98	67.98	47.53	59.63	62.95	69.49	71.22	22.78	23.69				
5	44.92	54.99	58.73	63.48	65.32	47.39	57.79	60.99	66.94	68.59	20.40	21.20				
10	41.55	50.77	54.46	58.78	60.52	44.14	53.58	56.68	62.20	63.76	18.97	19.62				
15	37.56	46.21	49.84	54.00	55.71	40.42	49.15	52.09	57.38	58.90	18.15	18.48				
20	33.80	41.87	45.26	49.31	50.99	37.00	45.13	47.74	52.65	54.10	17.19	17.10				
25	30.88	37.90	40.99	44.73	46.41	34.26	41.53	43.74	47.97	49.39	15.53	15.13				
30	28.32	33.97	36.86	40.21	41.79	31.69	37.83	39.67	43.37	44.70	13.47	13.01				
35	25.69	30.10	32.73	35.73	37.28	29.00	34.05	35.53	38.88	40.14	11.59	11.14				
40	23.03	26.43	28.63	31.36	32.77	26.07	30.32	31.45	34.46	35.68	9.74	9.61				
45	20.33	22.89	24.77	27.11	28.41	23.04	26.60	27.55	30.16	31.34	8.08	8.30				
50	17.57	19.49	21.07	23.04	24.32	19.99	23.04	23.68	25.96	27.15	6.75	7.16				
55	14.84	16.41	17.64	19.28	20.48	16.98	19.62	20.05	21.96	23.10	5.64	6.12				
60	12.28	13.59	14.30	15.88	17.09	14.03	16.32	16.49	18.25	19.42	4.81	5.39				
65	9.99	10.91	11.37	12.81	13.92	11.32	13.12	13.17	14.76	15.88	3.93	4.56				
70	7.90	8.44	8.55	10.33	11.20	9.01	10.20	10.00	11.74	12.78	3.30	3.77				

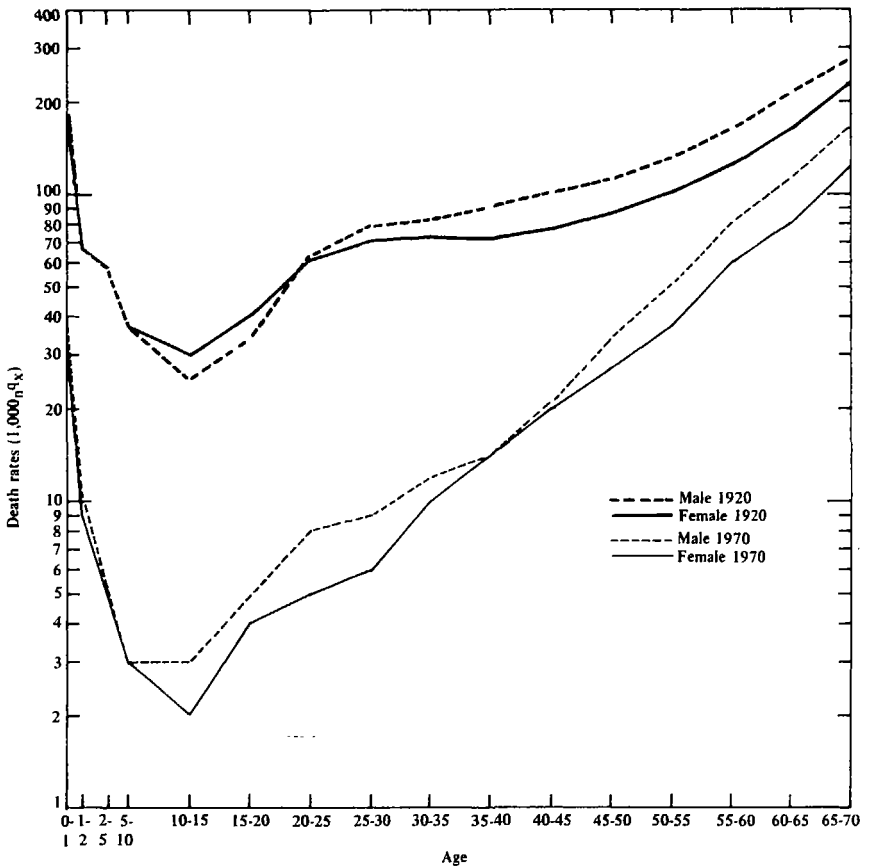


Figure 5.1 – Probability of dying ( $1000_nq_x$ ) by sex, 1920-22 and 1969-70.

With an average length life for females of 70 years it is clear that not much separates the mortality of Jamaica from some of the European populations, although its position still remains clearly lower than the mortality position of the best European experience, especially in the case of infants and children under 5.

#### *Changes in the Cause of Death*

An important aspect of movements in levels of mortality is that these are associated with changes in the relative intensity of death from various causes. Usually the initial gains are registered in reduction of mortality from certain infectious diseases which mainly affect infants. These gains follow from growing control over environmental factors, especially improved public health. It is not

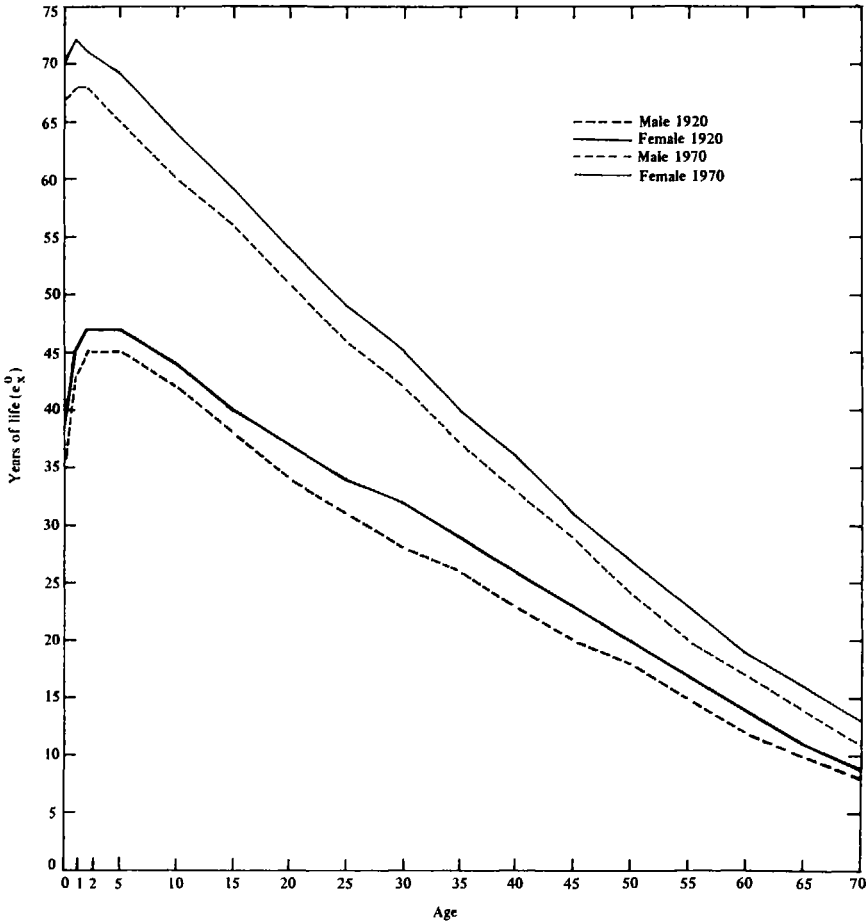


Figure 5.2 — Complete expectation of life ( $e_x^U$ ) by sex, Jamaica 1920-22 and 1969-70

possible to trace changes in cause of death over an extended period. In any event cause of death statistics are subject to certain deficiencies although those for Jamaica probably are the most reliable available in the West Indies. In Eastern Caribbean countries in general permission for burial is contingent on a certificate of cause of death being produced. Where for one reason or another medical certification is not possible in this area the certificates purporting to give the cause of death can be signed by one of several other officials, so long as there is no evidence of foul play. In Jamaica permission for burial does not call for medical certification; the necessary document is the registration of the death. Since moreover a clear distinction is made in the vital statistics between deaths medically certified as to cause and those not medically certified, it is possible to

obtain a fairly safe measure of cause of death, although, it is generally acknowledged that this remains one of the weak links in the chain of demographic statistics for the region.

It is not possible to trace patterns of changing cause of death for periods prior to 1946-47 or after 1961. Consequently the present analysis is based on the three periods, 1946-47, 1950-51 and 1959-61. Three aspects of mortality are considered, all being life table applications. Nine groups of causes have been selected, eight being those appearing in a previous study and one, deaths due to vehicular accidents, being added for the period 1959-61. The first element of the analysis represents the proportion of deaths in the life table that can be ascribed to the several causes, while the second converts these into death rates for the total stationary population. These are prepared for males and for females and are shown in Table 5.4. The third aspect of the analysis shows the years of life lost at age 0, as a result of selected groups of cause of death. This in short compares the extent to which these diseases cut down the average length of life of males for the two periods 1950-51 and 1959-61, and is the subject of Table 5.5.

From Table 5.4 it can be seen that while reductions in some classes of mortality have occurred, death attributable to other groups of causes have gained in prominence. The outstanding development has been the growing importance of deaths from degenerative diseases. The proportion of deaths due to diseases of the circulatory system moves up from 17 per cent to 21 per cent and to 24 per cent, a considerable change in a period of only 14 years. Likewise proportions of deaths put down to cancers of all forms increase markedly, in the case of males these move from 6 per cent to 7 per cent then to 11 per cent, being slightly higher for females. A similar pattern obtains for diseases of the nervous system; here proportions for males increase from 9 per cent to 14 per cent and from 12 per cent to 19 per cent for females over the 14 years. By contrast there are certain groups of diseases for which drastic reductions in intensity have been recorded. Thus deaths from digestive diseases (mainly dysentery and enteritis) have come down appreciably for both sexes as the proportion ascribable to them shows. Other diseases which represent appreciable falls are deaths from respiratory ailments, from tuberculosis, malaria and syphilis. In fact in the case of tuberculosis and malaria these have virtually disappeared as important causes of death by 1960. Although the proportion of deaths due to vehicular accidents, entered only for the period 1959-61, is small, it will undoubtedly increase in the future.

The second category of cause of death measures considered, the death rates per 100,000 of the stationary or life table population, brings out the changes in these groups of causes even more clearly. Reductions in death rates are strongest for diseases of the digestive and respiratory systems. The former shows a 43 per cent reduction for females and 29 per cent for males; the latter falls by about 36 per cent for both sexes. Although the rates from syphilis, tuberculosis and malaria were never as high as for major groups such as those of

TABLE 5.4 ANALYSIS OF MORTALITY FROM VARIOUS CAUSES BASED ON LIFE TABLES  
FOR 1946-47, 1950-51 AND 1959-61

Cause of Death	Per cent Total Deaths			Death Rate Per 100,000 Population			Per cent Decrease or Increase in Death Rates 1946-47 to 1959-61
	1946-47	1950-51	1959-61	1946-47	1950-51	1959-61	
	Male						
Diseases of Circulatory System	17.2	21.1	23.8	330.2	378.5	380.6	+ 15.3
Diseases of Nervous System	8.9	9.2	13.7	171.5	165.5	218.8	+ 27.6
Diseases of Digestive System	10.4	8.7	9.0	200.5	156.4	143.0	- 28.7
Diseases of Respiratory System	9.4	7.3	7.2	181.4	131.6	115.5	- 36.3
Cancer	5.8	7.1	11.4	111.1	126.9	182.4	+ 64.2
Syphilis	7.0	5.9	1.6	133.9	106.8	25.2	- 81.2
Tuberculosis, all forms	6.3	5.0	1.5	120.8	89.7	24.1	- 80.0
Malaria	4.5	3.3	0.3	87.4	59.1	4.4	- 95.0
Motor Accidents	-	-	1.3	-	-	20.2	-
	Female						
Diseases of Circulatory System	17.5	21.4	24.3	319.2	363.5	364.0	+ 14.0
Diseases of Nervous System	11.6	13.9	18.9	211.7	236.1	283.4	+ 33.9
Diseases of Digestive System	8.8	6.9	6.1	161.1	117.9	91.5	- 43.2
Diseases of Respiratory System	8.3	6.5	6.6	151.5	110.3	98.4	- 35.0
Cancer	6.4	11.2	12.5	116.7	189.4	187.9	+ 61.0
Syphilis	3.5	3.0	0.7	63.8	50.4	10.4	- 83.7
Tuberculosis, all forms	5.5	4.3	0.7	100.4	73.3	10.0	- 90.0
Malaria	3.9	2.3	0.3	71.4	39.6	4.8	- 93.3
Motor Accidents	-	-	0.3	-	-	5.1	-

the digestive system, it is noteworthy that the steep declines they have experienced, in excess of 80 per cent, have virtually removed them from the list of causes. On the other hand the considerable increase in rates of death from circulatory causes, cancers and diseases of the nervous system make these by far the dominant components of the mortality curve. An increase of between 61 per cent and 64 per cent is shown for cancer, while the lowest increase of about 15 per cent occurs in the case of circulatory diseases.

A third method of illustrating the effects of disease is to estimate the loss in the mean after life time or expectation of life at birth experienced as a consequence of the operation of a group of diseases. This can be calculated for both sexes and for all ages. In the illustration presented in Table 5.5 however it is limited to the average length of life, or expectation of life at birth, and only the position with regard to males for 1950-51 and 1959-61 is dealt with. The

TABLE 5.5 YEARS OF LIFE LOST AT AGE 0 THROUGH CERTAIN CAUSES OF DEATH, MALES, 1950-51 AND 1959-61

Cause of Death	Years of Life Lost at Age 0	
	1950-51	1959-61
Diseases of Digestive System	2.6	2.8
Diseases of Circulatory System	2.6	2.7
Diseases of Nervous System	1.2	1.7
Diseases of Respiratory System	2.1	1.6
Cancer	0.9	1.5
Tuberculosis, all forms	1.5	0.3
Syphilis	1.3	0.3
Motor Accidents	—	0.2
Malaria	1.1	0.1

most impressive improvements here are in the case of tuberculosis, syphilis and malaria. Whereas these cause a reduction of between 1.1 and 1.5 years in the average length of life in 1950-51, the reduction is only 0.1 in the case of malaria and 0.3 for the other two in 1959-61. Years of life lost also show a considerable improvement in the case of diseases of the respiratory system, from 2.1 to 1.6 years. This measure however emphasises that, despite improvements made in environmental control, diseases of the digestive system remain a major source of loss of life. That they cause a loss of as much as 2.8 years in the average length of life is of course due to the fact that their major toll is exacted at infancy.

In conclusion it can be stated that the steep falls in overall mortality have brought into prominence the cardiovascular-renal deaths and deaths from cancers whereas diseases having their origin in environmental conditions have become relatively less important. In short the prevailing pattern of mortality conforms to that characterising the advanced societies.

### Infant Mortality

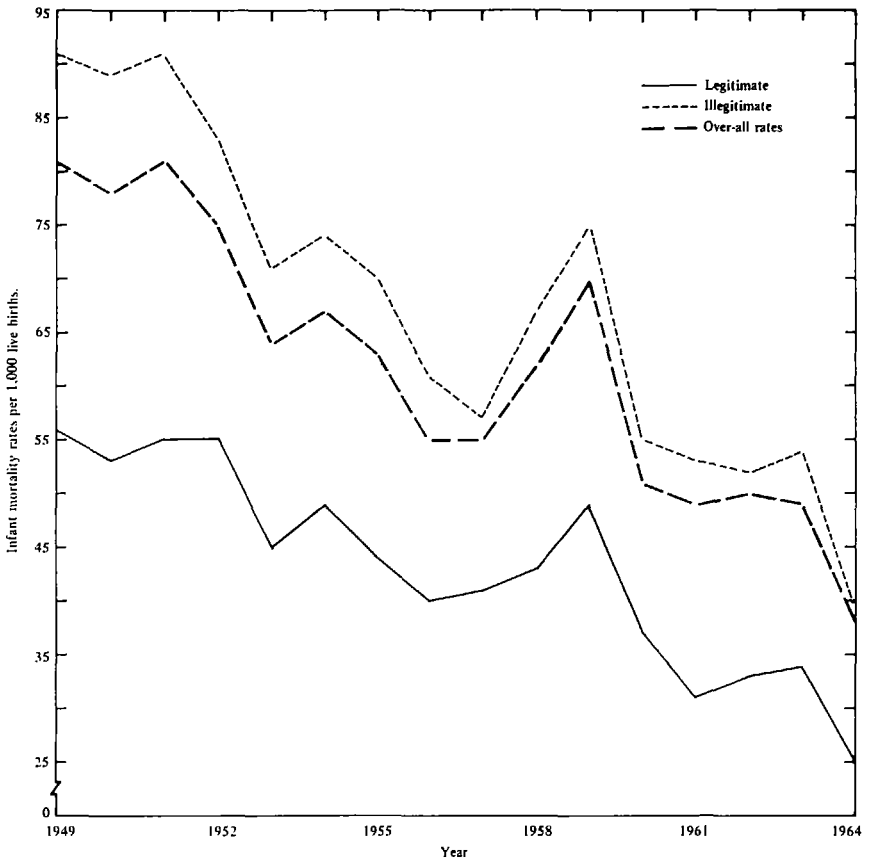
As has been stated earlier, the first reductions in mortality that appear in the early 1920s are among infants. Some irregularities have characterised the course of infant mortality rates since then, but these are much less marked than the wide annual fluctuations that obtained in the period before mortality came under effective control. From rates which in general exceed 150 and at times approach 200, the level has fallen steadily and the latest, that for 1973, is in the low 30s, indicating the magnitude of the reduction effected in the 50 years following 1921.

Infant mortality can be examined in terms of several interesting differentials. There is in the first place the differential by sex, which appears when narrow age intervals in the first year of life are employed. Also, as infant mortality is at once a measure of mortality and a fairly sensitive index of socio-economic conditions of the parents of the infants whose experience is under study, other forms of differentials are of interest. In the present context attention is being paid to two such forms. One of these is the differential by legitimacy of the infant; here the comparison is drawn between mortality among infants born to married parents and among those born to unmarried parents. These two series are available for Jamaica since the commencement of vital registration. Largely because of his interest in the extent to which the illegitimate rate exceeded the legitimate, the first Registrar General, S.P. Smeeton, developed series of these two rates. As will be seen from Table 5.6 and Figure

**TABLE 5.6** INFANT MORTALITY RATES, JAMAICA, 1949-64  
BY LEGITIMACY

Year	Overall	Infant Mortality Rates	
		Legitimate	Illegitimate
1949	80.7	56.3	91.1
1950	78.3	53.2	88.6
1951	81.2	55.4	91.3
1952	75.1	55.5	83.0
1953	64.1	45.4	71.4
1954	67.1	48.6	73.9
1955	63.2	43.6	70.2
1956	55.4	39.6	60.8
1957	54.7	40.7	56.7
1958	62.1	43.3	67.5
1959	69.8	49.3	74.9
1960	51.5	36.8	55.3
1961	48.8	30.8	52.9
1962	49.6	33.0	52.3
1963	49.2	33.5	54.2
1964	38.0	24.8	38.9





**Figure 5.3 – Infant mortality rates by legitimacy, Jamaica, 1949-64.**

5.3, these follow essentially parallel courses; in particular the marked departures from the underlying trend that characterise some years occur among both series. But there are considerable variations in the differential. In two years, 1952 and 1960, the excess of the illegitimate over the legitimate is as low as 50 per cent, whereas the highest level of the differential (72 per cent) appears in 1961.

Another important differential available over the course of the years to which attention must be directed, is that among the 14 parishes of the island. Before 1921 for instance Kingston constitutes one of the centres of very high infant mortality, as also do the parishes of Trelawny and St. James. By contrast the parish of St. Ann has always enjoyed relatively low levels. The important point to note is that after 1921 the reductions have been relatively greater in the urban centre, and Kingston and St. Andrew now shows one of the lowest rates, as it is this area which has benefitted most from improved measures of public health.

In order to bring out the widely differing age gradients in the differentials being discussed, it is necessary to make use of narrow age intervals under one year of life, and this can best be done by a life table application. This seems especially relevant in treating cause of death, where patterns involve such marked contrasts in terms of neonatal and postneonatal mortalities. The present detailed analysis of infant mortality is carried out for the three year period 1959-61 and the intervals of age used are in some cases the detailed breakdown presented by the Registrar General or the wider intervals in terms of which cause of death is presented. The former proceeds by days for the first week, by weeks for the first month, then for 1-3 month, 3-6 months, 6-9 months and 9-12 months. In the analysis of cause of death however, the first 7 days are combined into an interval of a single week.

#### *Differentials by Sex and by Legitimacy*

In Table 5.7 are presented life table functions for the first year of life over the years 1959-61. For the year as a whole the infant mortality rate for males is 60.6 per 1,000, which is 16 per cent higher than the corresponding female rate (52.3). At all age intervals under one year the advantage lies with females, but there is wide variation from one interval to another. During the first two days of life the differential is less than 30 per cent and seems to move up to a maximum within the period of 3 to 5 days, while at higher age intervals the differential is much less. The mortality differential by sex can be summarised in terms of early neonatal, late neonatal and post neonatal rates per 10,000 which are as follows:

	<u>Both Sexes</u>	<u>Male</u>	<u>Female</u>
Early neonatal (under 1 week)	123	142	103
Late neonatal (1 to 4 weeks)	65	71	59
Post neonatal (over 4 weeks)	377	393	361

At all three intervals the male rates are higher, but the excess over the female rates is highest for early neonatal group (38 per cent) and lowest (9 per cent) for the post neonatal, while the differential for the late neonatal amounts to 20 per cent.

Differentials by legitimacy and sex can be studied from Table 5.8 and Figure 5.4. For both sexes the advantage lies definitely with the legitimate. In the case of males infant mortality for legitimate births over the whole year amounts to 45.6, as compared with 66.3 for the illegitimate, a differential of 45 per cent. The corresponding rates for females are 34.3 and 59.1, a differential of even greater magnitude (72 per cent). In the first day of life the differential in

TABLE 5.7 LIFE TABLE FOR BOTH SEXES, MALES AND FEMALES FOR FIRST YEAR OF LIFE, JAMAICA, 1959-61.

Age	Both Sexes		Male		Female	
	Probability of Dying x 10,000	Survivors out of 10,000 Births	Probability of Dying x 10,000	Survivors out of 10,000 Births	Probability of Dying x 10,000	Survivors out of 10,000 Births
Under 1 day	29	10,000	31	10,000	26	10,000
1 day	34	9,971	38	9,968	30	9,974
2 days	17	9,937	20	9,930	13	9,944
3 days	15	9,920	19	9,910	11	9,931
4 days	11	9,906	13	9,892	9	9,920
5 days	10	9,895	12	9,879	7	9,911
6 days	8	9,885	8	9,866	7	9,904
7-13 days	39	9,877	45	9,858	34	9,897
14-20 days	15	9,838	16	9,814	15	9,863
21-27 days	12	9,823	12	9,799	11	9,849
1-3 months	62	9,812	67	9,787	57	9,838
3-6 months	94	9,751	97	9,721	90	9,782
6-9 months	120	9,660	124	9,627	117	9,693
9-12 months	114	9,544	120	9,508	108	9,580
One year	—	9,435	—	9,394	—	9,477

TABLE 5.8 LIFE TABLES FOR MALES AND FEMALES, BY LEGITIMACY, FOR FIRST YEAR OF LIFE, JAMAICA, 1959-61

Age	Male				Female			
	Legitimate		Illegitimate		Legitimate		Illegitimate	
	Probability of Dying x 10,000	Survivors out of 10,000 Births	Probability of Dying x 10,000	Survivors out of 10,000 Births	Probability of Dying x 10,000	Survivors out of 10,000 Births	Probability of Dying x 10,000	Survivors out of 10,000 Births
Under 1 day	31	10,000	32	10,000	26	10,000	26	10,000
1 day	37	9,969	39	9,968	22	9,974	33	9,974
2 days	24	9,932	19	9,930	10	9,952	14	9,941
3 days	16	9,908	20	9,911	10	9,942	11	9,927
4 days	13	9,892	14	9,892	8	9,931	9	9,916
5 days	10	9,880	13	9,879	5	9,923	8	9,907
6 days	6	9,870	9	9,865	6	9,918	8	9,899
7-13 days	35	9,864	49	9,856	21	9,912	39	9,891
14-20 days	13	9,830	17	9,808	8	9,891	17	9,853
21-27 days	11	9,817	13	9,792	7	9,883	13	9,836
1-3 months	53	9,806	72	9,779	39	9,876	64	9,823
3-6 months	63	9,754	110	9,709	63	9,837	101	9,761
6-9 months	83	9,693	139	9,601	65	9,776	137	9,662
9-12 months	72	9,613	138	9,468	58	9,713	127	9,530
1 year	—	9,544	—	9,337	—	9,656	—	9,409

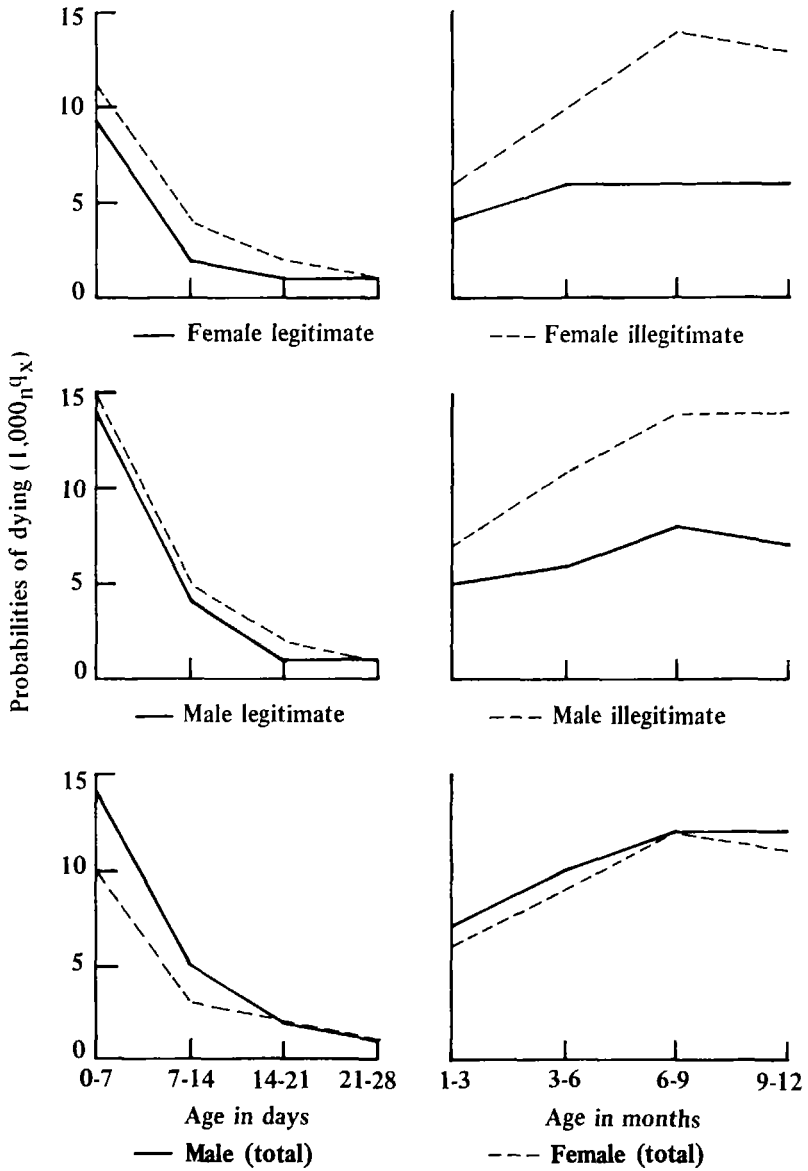


Figure 5.4 – Probabilities of dying in successive intervals of infancy ( $1000nq_x$ ), by sex and legitimacy, Jamaica, 1959-61.

favour of legitimate infants is not apparent, and despite the generally more favourable rates they exhibit in the first week, the differentials are irregular. At higher ages, especially in the post neonatal region where the effects of differentials in environmental conditions begin to take their toll, the much higher mortalities among children born to unmarried mothers is evident. Thus within the age interval 6-9 months the mortality rate among male infants born to married mothers is 83 per 10,000 as compared with 139 for other infants, the latter in fact showing a 67 per cent excess over the former. For the period 9 to 12 months even higher differentials prevail. Among the males the rate for illegitimate infants (138) is nearly twice that for the legitimate; in the case of females, the rate of 127 is slightly more than twice that for the legitimate. Again it is convenient to summarise the position in terms of early neonatal, late neonatal and postneonatal rates per 10,000; these are as follows:

	<u>Male</u>		<u>Female</u>	
	<u>Legitimate</u>	<u>Illegitimate</u>	<u>Legitimate</u>	<u>Illegitimate</u>
Early neonatal (under 1 week)	136	144	88	109
Late neonatal (1 to 4 weeks)	59	78	36	69
Post neonatal (over 4 weeks)	267	452	223	421

This emphasises that differentials are lowest in the first week of life, that is before differentials in environmental conditions begin to be felt. For males the mortality among those with unmarried parents shows only 6 per cent excess over that of the other category while the differential for females is somewhat higher (24 per cent), but both of these are small by comparison with the differentials that obtain in the late neonatal and post neonatal periods. Thus for males the late neonatal rate among illegitimate infants (78 per 10,000) is 53 per cent above that for legitimate infants. The female differential in this age interval is even higher; the rate among illegitimate infants (69) is nearly twice as high as that among legitimate infants. At the period when environmental factors rather than congenital factors are more important, that is between one month and a complete year, the differences between the two sets of rates are at a maximum.<sup>2</sup> For males the illegitimate rate of 452 per 10,000 is 69 per cent above the corresponding rate for the legitimate (267). Again a differential of greater magnitude is noted among the females; here the rate for illegitimate infants (421) is 89 per cent above that for the legitimate (223).

<sup>2</sup>For a discussion of Environmental Conditions and Infant Mortality, see Ruth Rice Puffer & Carlos V. Serrano, *Patterns of Mortality in Childhood*, P.A.H.O., Scientific Publication No. 262, 1973.

The foregoing differentials derive essentially from the higher socio-economic status of parents of legitimate children. It is established that in terms of socio-economic status the married are at a higher level than the unmarried, although when the threefold division into married, common law and visiting is introduced the unexpected finding has to be faced that the lowest in the hierarchy is common law and not visiting. So that the higher mortalities among infants whose parents are unmarried represent their socially disadvantaged position which leaves them relatively less protected against diseases having their origin in environmental factors. This in fact distinguishes two broad classes of infant mortality, the endogenous and the exogenous.<sup>3</sup> The former is presumed to arise from the genetic makeup of the infant, that is inherent in him, while the latter is attributable to purely environmental or external factors. Higher mortality rates among illegitimate infants in the post neonatal period can be related to exogenous factors. This differential is of special significance in Jamaica since 70 per cent of its births occur to unmarried parents.

#### *Infant Deaths from Specific Causes*

It is next essential to examine the structure of mortality according to cause of death, especially with regard to the differentials by sex and legitimacy, already identified as of significance in the study of infant mortality. Often mortality analysis by cause of death points to disparities which have their origin in socio-economic conditions of the population.

Again the approach which seems most useful in this context is that utilising life table functions for the first year of life. This offers a reliable means of comparing mortalities among the several groups. Causes of death are analysed here under six broad categories. The first five represent the principal causes affecting infants, while the sixth is a residual comprising all other causes. Since in the Reports of the Registrar General the age intervals used are different from the very fine intervals already used, cause of death analysis is carried out here in terms of the following intervals: under 1 month, 1-3 months, 3-6 months, 6-9 months and 9-12 months.

The procedure followed here is to calculate, for the actual population, the proportions which deaths from a given cause form of total deaths within various age intervals and to apply these to the  ${}_n d_x$  column in order to derive life table mortalities from the several causes. An issue to be faced in obtaining these proportions is the appreciable number of infant deaths not medically certified as to cause. This amounts to 21 per cent of all deaths for the three year period under study and varies within the intervals of age in terms of which the tabulation are presented. The method used to estimate total deaths from the different causes is to apply raising factors for each age interval separately. One limitation of this approach is that it implies the same degree of medical certification for all causes of death, an assumption which may not be justified.

<sup>3</sup>J. Bourgeois-Pichat, *An analysis of Infant Mortality*, Population Bulletin, No. 2, October, 1952.

In Table 5.9 are given the total deaths in the life table for the first year of life broken down into the six major categories indicated above. The largest group consists of diseases peculiar to infancy. The aetiology of this group is primarily biological, and from the data available appears to be mainly responsible for deaths of infants under 1 month of age. Diseases such as birth injury, congenital malformations and other ill-defined causes peculiar to infancy are important here. Of the 565 infant deaths in a cohort of 10,000 of both sexes, 202 or 36 per cent are put down to this group of causes. These causes exact their heaviest toll among infants under one month of age, accounting for 61 per cent of all deaths at this age. While their relative importance declines with advancing age, they are still of significance in the age interval 9 to 12 months, when they account for just over one-quarter of total deaths.

Sex differentials with respect to cause emphasise the generally more favourable position of the females, but slight differences are in evidence. As can be seen, the comparisons between the two are best made in terms of the components of deaths, and these are presented in Figure 5.5. The curve of deaths for diseases peculiar to infancy is essentially L-shaped, reflecting a decline from under one month to 1-3 months. Males exhibit a much higher mortality from these diseases in the neonatal period than do females. While the curve of deaths shows a tendency to rise in late infancy, this is somewhat more pronounced in the case of males. The pattern of cause of death due to gastro-enteritis is directly opposite to that last discussed. The post-neonatal influence here is well demonstrated in the curve of deaths.

This shows a peak in the interval 6-9 months after which a decline is evident. Both sexes show almost the same form of cause of death from these diseases. In the case of other causes, the pattern is somewhat similar to that observed in the case of diseases peculiar to infancy, but of course affects a much smaller proportion of the infants. Again the effect is principally in the neonatal periods, so a relatively steep decline is seen at 1-3 months. After that the curve rises slightly and then falls, with females reaching a peak much earlier than males.

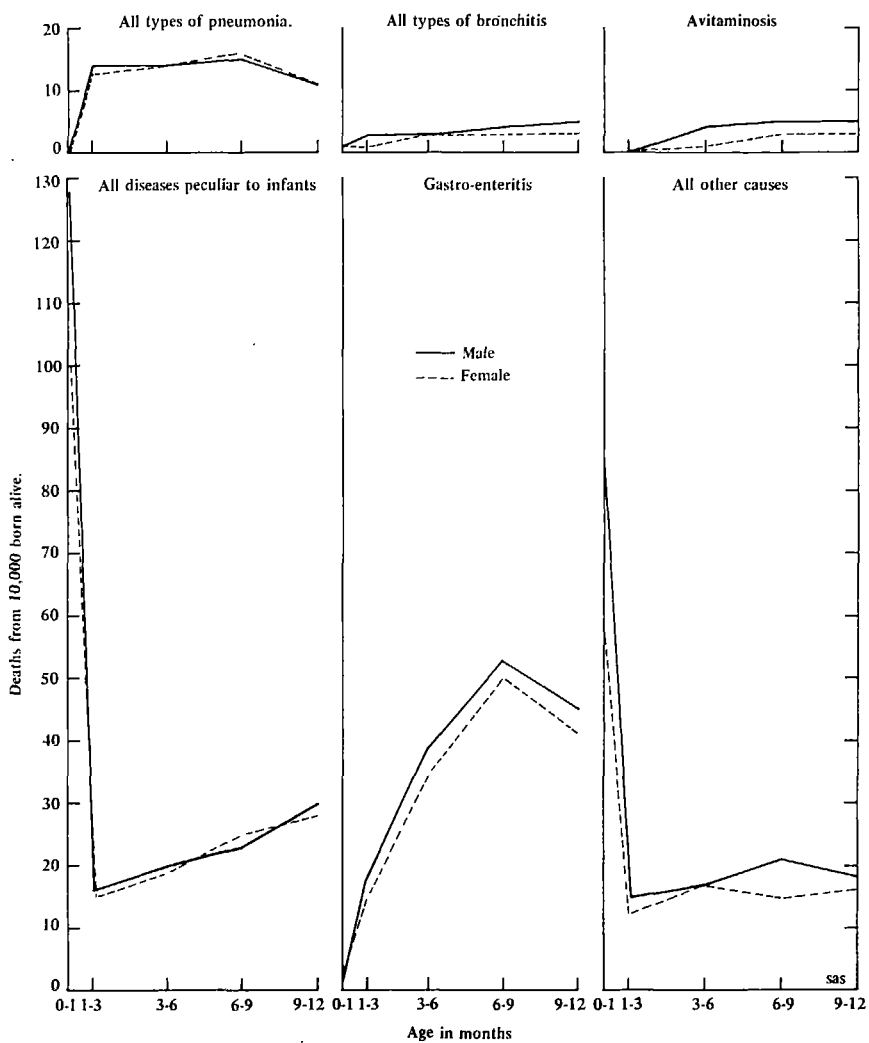
Sex differentials seem unimportant in the case of the curves of the other three causes of infant deaths. One can note however, the effect of avitaminosis relatively late in infancy and moreso in the case of males and the correspondence in mortality experience of both sexes from these diseases. The curve from bronchitis remains almost flat throughout infancy, with a slight tendency to move up in the post-neonatal period, and here this appears more clearly among males. Again in the case of pneumonia, there is not much difference between the sexes, both of which exhibit the relatively unbroken level from age 1 to 9 months.

The second most important group of causes is gastro-enteritis, to which is ascribed 26 per cent of all infant deaths. The pattern here is in marked contrast



TABLE 5.9 LIFE TABLE DEATHS FROM FIVE GROUPS OF CAUSES, BY SEX, FOR FIRST YEAR OF LIFE, 1959-61

Age Interval, Months	Total Life Table Deaths	All Types		Avitaminosis	All Types Bronchitis	All Diseases Peculiar to Infants	All Other Causes
		Gastroenteritis	Pneumonia				
<u>Both Sexes</u>							
0-1	188	1.06	0.50	0.00	1.26	114.04	70.99
1-3	61	16.21	13.22	0.46	1.87	15.35	13.88
3-6	91	36.81	14.11	1.31	2.71	19.08	16.97
6-9	116	51.12	15.56	2.77	3.68	24.68	18.18
9-12	109	43.47	11.54	3.39	4.00	29.35	17.26
0-12	565	148.67	54.93	7.96	13.52	202.50	137.28
<u>Male</u>							
0-1	213	1.09	0.50	0.19	1.39	126.69	83.13
1-3	66	17.73	13.60	0.40	2.82	15.92	15.52
3-6	94	38.71	14.09	1.59	2.78	19.55	17.27
6-9	119	52.68	14.94	2.89	4.08	23.50	20.91
9-12	114	45.82	11.38	3.39	5.19	30.25	17.97
0-12	606	156.03	54.51	8.46	16.26	215.91	154.80
<u>Female</u>							
0-1	162	1.00	0.50	0.00	1.11	100.74	58.51
1-3	56	14.69	12.85	0.51	1.00	14.79	12.24
3-6	89	35.29	14.40	1.03	2.68	18.73	16.87
6-9	113	49.56	16.32	2.65	3.16	25.90	15.40
9-12	103	40.81	11.50	3.36	2.75	28.29	16.28
0-12	523	141.35	55.57	7.55	10.70	188.45	119.30



**Figure 5.5 – Infant Life Table Deaths from 10,000 born alive by major cause, age in months and sex Jamaica, 1959-61.**

to that shown by diseases peculiar to infancy. Whereas the latter is most important at ages under one month, the former shows little importance at this early age. It gains momentum after the first month of age; in the interval 3-6 months these causes account for 40 per cent of all deaths and in the following interval to 44 per cent and this proportion continues to the end of the first year of life.

All forms of pneumonia account for 10 per cent of infant deaths. In so far as these do not attain any significance until after the first month of age, their impact tends to resemble that of gastro-enteritis. But pneumonia tends to attain a maximum intensity in the age interval 6-9 months, when it accounts for 13 per cent of all deaths; in the last quarter of infancy this group is responsible for 11 per cent of total deaths. Deaths from bronchitis are credited with causing 2 per cent of all infant deaths and again the pattern of mortality is a slight rise from the earliest period of infancy, although at each age interval this group accounts for very low death rates. The small group of diseases that may be associated with nutritional deficiencies — avitaminosis — account for only 1 per cent of all infant deaths. The reliability of diagnosis on which these are based is unknown, but it is of interest to note that nearly all of these deaths occur among infants more than 3 months of age and that there is a slight tendency for the intensity of the group to rise towards the end of the first year of life. The residual category, comprising all other causes amounts to 24 per cent of all deaths of infants. In the first month of life 38 per cent of deaths are put down to causes comprising this group, but the proportion of deaths they account for is appreciably less at higher ages being responsible for 16 per cent for the interval 9-12 months.

In summary it can be said that diseases peculiar to infancy produce an infant death rate of 20 per 1,000 births, that gastro-enteritis is responsible for an infant death rate of 15, and pneumonia for a rate of 5. The two other groups of causes identified — bronchitis and avitaminosis — show infant mortality rates of just over one and just under one per 1,000, respectively.

It is also of interest to ascertain from Table 5.9 whether any marked differentials by sex characterise the groups of causes under study. The general similarity in pattern for both sexes is clear. The proportion of total infant deaths associated with each of the six groups is almost identical for both sexes and the general age gradients are similar throughout.

The fact that parents of so-called illegitimate children are evidently lower in the socio-economic scale than are their counterparts involved in formal married unions means that differentials that emerge from comparisons between the two types of infant mortality basically attest to differentials in the status of the two family forms. The much higher rates that characterise the illegitimate arise from conditions that obtain among families of this type which annually are responsible for 70 per cent of births within the island. It is therefore to the wider elements of family structure that these differentials must ultimately be

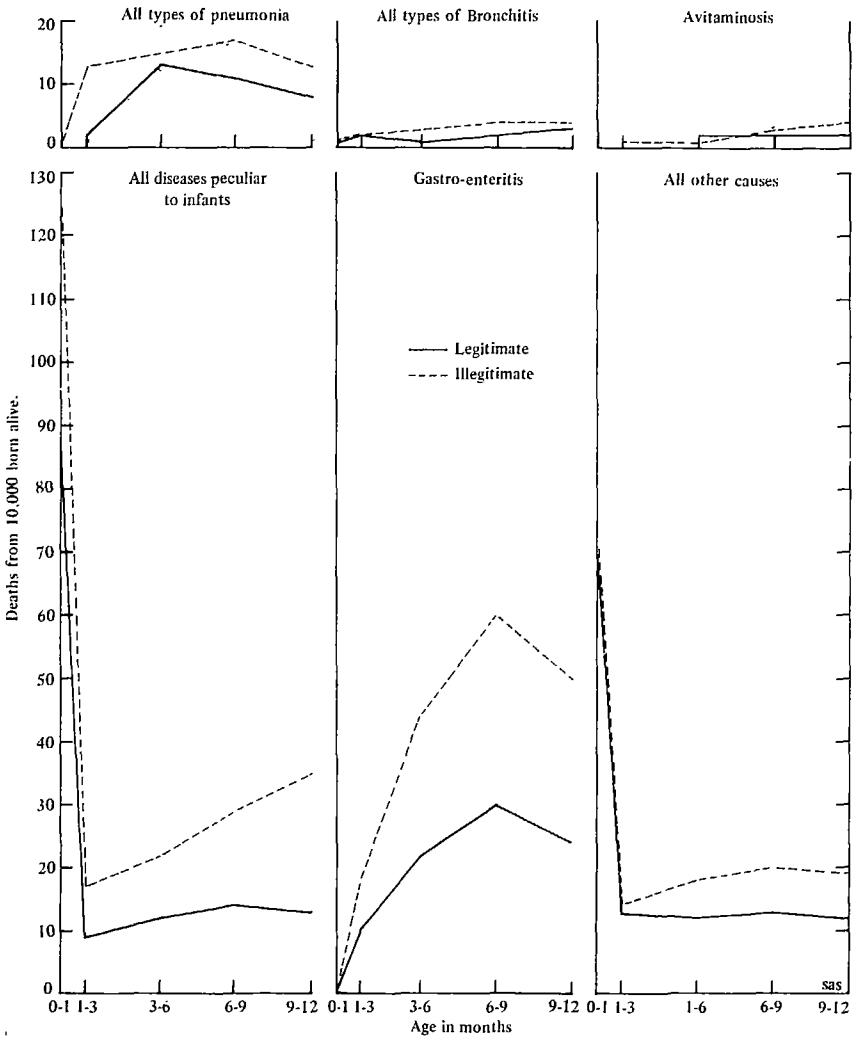
related. Some of the sociological implications of births occurring in the context of such families have been discussed by writers on the West Indian family.<sup>4</sup> Less attention has been paid to the significance of deaths of infants under these conditions. But of their sociological importance there can be no doubt. Apart from the fact that relatively high infant mortality characterises reproduction among these families, it is possible that losses of this nature have profound effects on the functioning family and warrant detailed study.

From the data on cause of death among the two categories of infants, one striking differential emerges (See Table 5.10). This is in respect of gastro-enteritis, a class of disease notoriously associated with inadequate social conditions and poor nutritional status. In the case of legitimate infants the number of deaths due to this group in the entire period of one year amounts to 88, or 22 per cent of the total, which puts this as the third major source of infant mortality, after diseases peculiar to infancy and all other causes. By contrast among the illegitimate it is relatively of much higher significance coming second after diseases peculiar to infancy and accounting for 28 per cent of all infant deaths. This suggests greater resistance to these diseases or less exposure to them by infants born to married parents, both of which may be the result of the relatively favourable social position they enjoy. A further factor may be the greater delay on the part of unmarried parents in seeking medical attention for their sick children. Diseases peculiar to infancy also contribute slightly more to overall infant deaths among the illegitimate (37 per cent) than they do among the legitimate (34 per cent). On the other hand all forms of pneumonia are responsible for a slightly greater proportion of total deaths among legitimate than among illegitimate — 11 per cent as against 9 per cent. But it is significant that with regard to all the groups of causes, the illegitimate rates are higher than the legitimate, indicating that the effects of socio-economic conditions are evident not only in the special case of gastro-enteritis.

A graphic presentation of causes of death for the two categories of infants appears in Figure 5.6. There are appreciable differences between the two in terms of diseases peculiar to infancy. The legitimate infant is in a more favourable position; the most impressive difference between the two appears at the early neonatal period and at the last three months of infancy. It is noticeable too that while the curve of legitimate deaths shows a tendency towards decline in late infancy, the course for the illegitimate tends to move upwards. The curve of deaths for all other causes shows a slightly different pattern. Mortality experience from this component is almost identical for legitimate and illegitimate in the neonatal and early post-neonatal period. After age 1-3 months, the

<sup>4</sup>See for instance M.G. Smith, *Kinship and Community in Carriacou*, Yale, 1962 and *West Indian Family Structure*, Washington, 1962. Another important work covering the subject is: Edith Clarke, *My Mother who Fathered Me* (second edition, with introduction by M.G. Smith, London 1967.





**Figure 5.6 – Infant Life Table Deaths from 10,000 born alive by major cause, age in months and legitimacy, Jamaica, 1959-61.**

curve for the legitimate remains flattened for most of the remaining period of infancy while the illegitimate deaths move up somewhat. The picture for gastro-enteritis shows most deaths occurring at 6-9 months for both legitimate and illegitimate. The rate for illegitimate infants is substantially higher with 60 per 10,000, compared with 30 for legitimate. Both groups experience a decline after 6-9 months, with the steeper gradient appearing for illegitimate infants.

*Regional Differentials in Infant Mortality*

Attention has already been directed to the fact that, whereas in the periods prior to the effective control of mortality, infant mortality tended to be very high in the main urban centre, the picture since the growing control over mortality shows this part of the island to be among the most favourable. It is now necessary to examine variation in infant mortality according to the different parishes into which the island is divided. Despite the small size of the island it is possible to discern characteristics peculiar to each of its parishes. Often there are changes in environmental conditions at different times, and these vary in intensity from one period to another. Undoubtedly such fluctuations make for variations in mortality experience by parish. Also of relevance here is the fact that the administration of health is localised, so it is to be expected that the quality of service and facilities will vary from parish to parish over time. It must be recognised too that some parishes have come under greater urban influence than others, and although it is not intended to examine strictly urban-rural differentials in infant mortality, these do in fact constitute a significant aspect of mortality in the island.

Kingston and St. Andrew now constitute a single urban unit, with the former representing a highly commercialised centre and the latter the expanding suburban fringes. Consequently for the purpose of the present analysis it is advisable to treat these two as one. A further advantage in so doing is that this tends to offset the effects of non-correction of births and deaths for usual place of residence. Their combination is again justified because together they form a single administrative unit for the purpose of health administration.

Entered in Table 5.11 are infant mortality rates for the parishes from 1949 to 1964. The impressive declines have been accompanied by notable fluctuations, although these have been less prominent than those which obtained prior to the period of mortality control. There can be identified at least four years of high mortality experienced by all parishes; these are 1951, 1955, 1959 and 1963.

It seems possible to effect a classification of the parishes, roughly, into three broad categories, depending on their comparative levels and the scale of reductions they experience; these are high, medium and low mortality parishes. St. James, Hanover, Westmoreland and St. Elizabeth comprise the high infant mortality parishes. They are located in the west of the island. St. James, on the north-west coast and supporting the second largest urban centre of the island, registers the highest rates at the commencement of the period and up to 1954 experiences very high rates; but within the following years considerable falls have characterised this parish. The other high level parishes show somewhat similar patterns of movement, but reductions are not so great.

What may be regarded as parishes with medium rates, with rates in the 80s and 70s are St. Mary, St. Catherine, Portland and Clarendon. These are located

TABLE 5.11 INFANT MORTALITY RATES BY PARISH, 1949-64

Year	Parish											Total		
	Kingston and St. Andrew	St. Thomas	St. Mary Portland	St. Ann	Trelawny	St. James	Hanover	West- moreland	St. Elizabeth	Man- chester	Clarendon		St. Catherine	
1949	70.1	65.9	75.0	87.6	61.1	67.6	106.8	102.3	103.7	102.3	65.7	75.6	86.2	80.7
1950	66.8	70.6	77.7	94.5	65.9	82.7	103.6	83.1	89.5	89.5	68.6	70.7	86.8	78.3
1951	63.2	77.8	66.9	92.1	74.4	108.9	112.8	93.6	93.8	101.0	65.4	74.8	54.0	81.2
1952	83.1	79.1	80.7	86.5	60.3	87.8	97.7	89.5	91.6	93.2	55.4	64.4	77.8	75.1
1953	41.2	65.1	60.0	65.3	55.7	83.0	96.1	90.0	91.4	88.0	48.3	60.0	67.0	64.1
1954	45.2	61.5	70.6	80.9	64.2	77.7	109.5	85.6	78.8	72.9	53.5	71.1	75.7	67.1
1955	47.7	56.8	69.1	69.9	53.5	84.6	98.1	94.0	77.0	76.3	55.9	53.7	65.5	63.2
1956	43.2	51.1	47.0	58.0	61.0	59.2	87.2	83.0	78.4	69.0	52.9	38.7	52.5	55.4
1957	46.6	42.6	50.2	54.3	43.4	59.4	69.4	79.9	67.5	66.8	45.3	55.8	54.9	54.7
1958	54.8	55.3	65.1	70.2	58.6	51.2	79.3	85.7	78.9	70.1	47.9	52.6	66.5	62.1
1959	62.1	66.2	67.2	76.2	60.0	64.2	95.4	112.2	100.0	71.7	54.8	55.6	69.3	69.8
1960	49.8	46.7	43.7	57.6	46.0	63.5	60.8	79.4	67.1	49.4	40.8	43.9	47.8	51.5
1961	43.7	39.9	41.4	56.8	41.9	46.5	60.9	72.5	61.3	50.9	48.2	48.9	47.6	48.8
1962	44.9	41.9	42.6	52.3	42.7	60.0	54.3	54.4	62.4	49.6	44.0	47.6	55.0	48.8
1963	40.4	55.2	56.0	63.3	52.3	62.6	54.0	76.2	62.4	71.4	41.9	47.5	53.1	51.0
1964	32.1	29.6	36.2	44.1	42.3	57.7	41.0	55.5	45.1	48.5	32.1	39.5	33.4	38.0



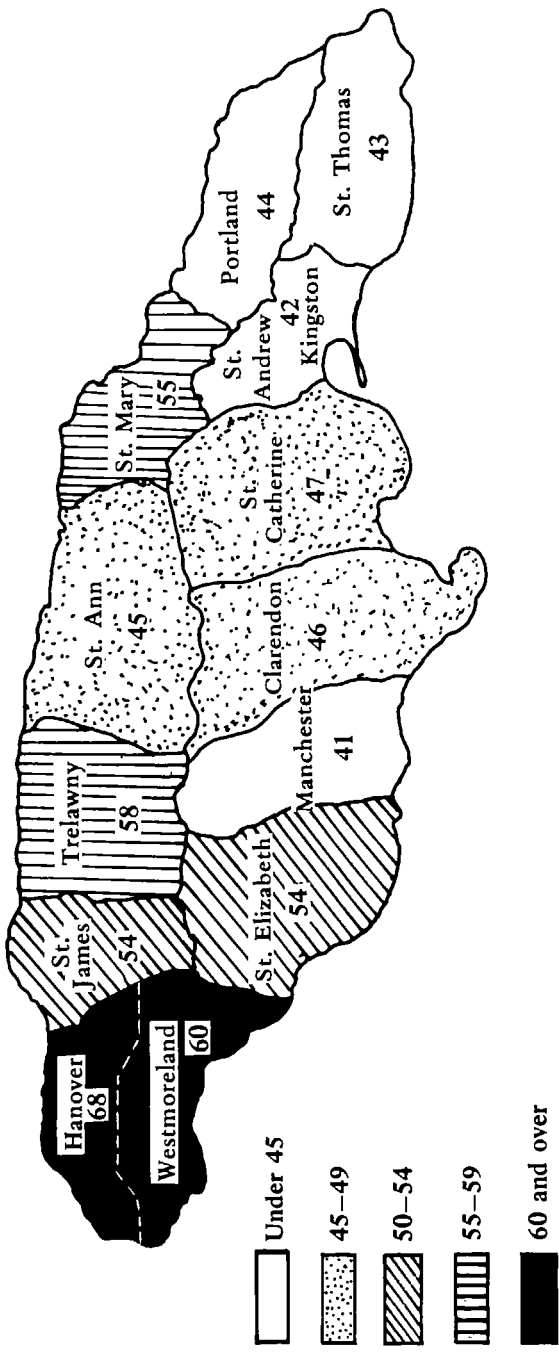


Figure 5.7 -- Average infant mortality rates for parishes of Jamaica, 1959-64

in the more central areas of the island. Their declines are in general moderate, although Clarendon tends to show somewhat more marked reductions. Having begun with an infant mortality rate of 89 in 1949, it has succeeded in bringing it down to 33 in 1964, which represents a considerable improvement.

Kingston, St. Andrew, St. Thomas, Manchester and St. Ann may be designated low mortality parishes. There have been a few high points the course of infant mortality for Kingston-St. Andrew, but of the wide scale of improvement there can be no doubt. One parish which cannot be easily fitted into any of three groups identified is Trelawny, largely because of irregular movements in mortality it exhibits.

The division noted above suggests that the western part of the island experiences relatively high rates, while the low mortality areas are located within the urban centre and within parishes adjoining it. It is tempting to consider whether any other factor can be identified as being closely associated with levels of infant mortality. For instance, it may be asked whether an index of socio-economic development may be associated with these mortalities. It is possible to construct such indices for the parishes. One such measure, based on educational attainment of females within the childbearing span, is available for 1960. This, however, does not show any high correlation with parish levels of infant mortality.

It is useful to depict the average infant mortality levels for the 14 parishes for the last 5 years for which the type of information is available, 1959-64 (See Figure 5.7). These show clearly the parishes of high infant mortality and those of comparatively low levels. Apart from Manchester all parishes with infant mortality levels under 45 are in or around the centre of the island. It is of interest to note that the lowest infant mortality occurs in Manchester (41). The map also brings out clearly that the parishes in the west exhibit the highest infant mortality in the island.

George W. ROBERTS  
Dorian L. POWELL

## CHAPTER 6

### FERTILITY

While Jamaica may still be said to support a population of high fertility, the programmes in force aimed at ensuring its reduction and the several forms of differentials now in evidence suggest that in the not too distant future appreciable declines may be expected. For this reason particular attention is paid to the analysis of fertility trends, in terms of several types of measures, both of period rates and family size values. Differentials by parish, educational attainment of the mother, main activity, as well as by union status, are relevant, and again form an important focus of interest here.

Although the Island has for a period of close on a century enjoyed a reliable system of vital registration from which have been produced a valuable series of Annual Reports on Vital Statistics, the machinery for processing these data has within recent years been seriously dislocated, to the extent in fact that the last year for which tabulations are available is 1964. This means that for the past decade no tabulations of births by age of mother or by order are available. The absence of such data is all the more unfortunate as it coincides with the period covered by the operation of the National Family Planning Board, so that throughout the life of the institution, it is impossible to trace movements in age specific fertility rates or changes in parities. To some extent the information available from the 1970 Census tends to make up for this deficiency; indeed it is necessary to lean heavily on this form of data. But the fact remains that in the absence of detailed tabulations of Vital Statistics, such as were available up to 1964, many aspects of the Island's fertility cannot be effectively explored.

This Chapter makes use for the most part of material derived from the Censuses of 1970 and earlier years. In treating rates of children ever born per woman two components are recognized: the proportion of women who are mothers (mothers/women) and children ever born per mother (children/mothers).<sup>1</sup> The first constitutes a measure of childlessness and the second a measure of family size; the separation into these two components is valuable in assessing the part played by sterility in determining the fertility of the population. Other aspects of fertility to be taken up are differentials by parish, differentials by educational attainment, by main activity of the mother and by type of union. A type of information obtained in the Caribbean for the first time, age at which the woman has her last child, is also considered to a limited extent.

<sup>1</sup>For further discussion of this approach see G.W. Roberts, *Fertility and Mating in Four West Indian Populations* (University of the West Indies, forthcoming 1975).

### **Annual Numbers of Births and Birth Rates**

Considerable attention has been directed to the growth in the annual number of births occurring in the Island since World War II, largely because of the strain on the provision of social services which results from this. Unquestionably the number of births rises steeply between 1943 and 1960, as can be seen from Figure 6.1. Whereas up to 1949, annual number of births is less than 45,000, the subsequent rise has meant that after 1960 annual births are in excess of 65,000. The levelling off after 1966 when the highest number of births ever registered in the Island is noted (71,000) constitutes an important aspect of recent fertility trends. In fact it seems that the annual numbers are on the decline. The number registered in 1973 (61,000) represents the lowest since 1957. Undoubtedly the heavy emigration of females of childbearing age during the 20 years preceding 1970 has contributed considerably to a stabilisation of numbers of births, but it is also tempting to assert that this movement attests to genuine reductions in levels of fertility.

Recent movements in the Island's birth rates are to some degree reflected in the annual numbers of births noted above. There is evidence that fairly high birth rates, about 40 per thousand, prevail in the Island up to the end of the 19th century. But these rates decline somewhat in the early 20th century and relatively low rates continue up to the period following the Second World War. The lowest birth rate experienced in Jamaica (30) is that recorded for 1945. The subsequent rise in these rates to high levels in the 1960s is to some degree determined by the marked fall in the proportion of childless women in the Island. The comparatively low rates obtaining after 1965 derive in part from the slight reduction in the number of females of childbearing age that has resulted from heavy external migration. But again there is the possibility that social changes taking place in the Island, together with the campaign aimed at reducing fertility, is having an effect on current fertility levels.

### **Age Specific Fertility Rates and Reproduction Rates**

The use of age specific fertility rates in the analysis of fertility is essential; they are of value not only as indicators of changes in levels at the different age groups, but also because they yield a useful summary measure, the gross reproduction rate.

Age specific fertility rates for 1960 are used as a basis for comparison with those of 1970 (see Table 6.1 and Figure 6.2). It is evident that no real change has taken place in the past decade. In 1970 rates are slightly higher than in 1960 for women under 30 years. At both periods the highest rate is at age 20-24, 0.30 in 1970 and 0.29 in 1960. The second highest is at 25-29. Only at age 30-34 does the rate of 0.19 for 1970 lie below that of 1960, while at higher ages rates are the same for both periods.

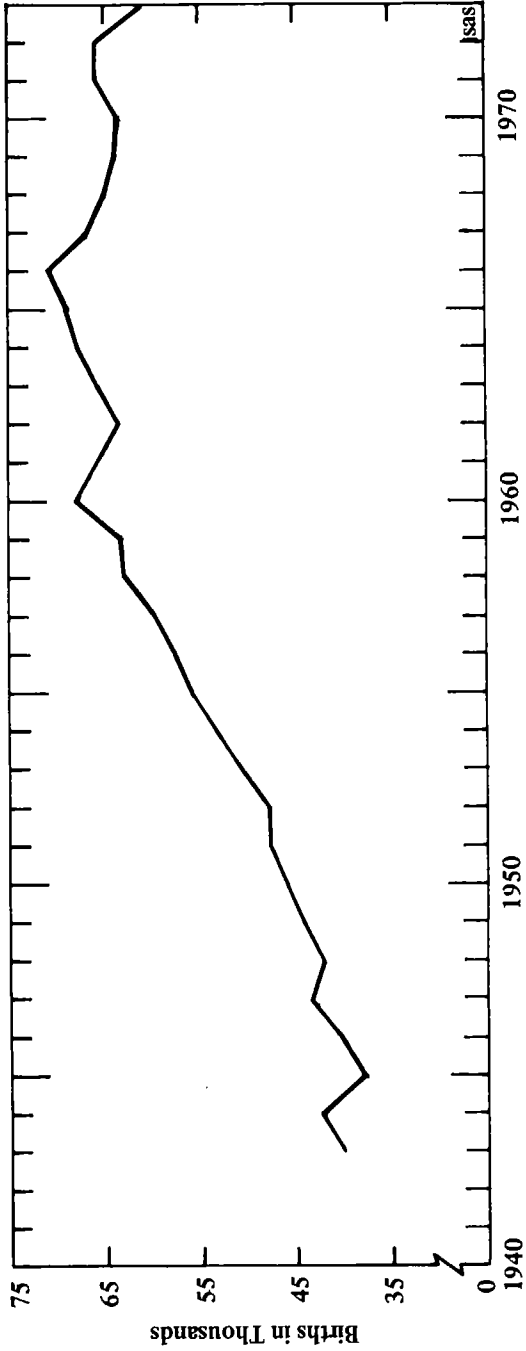


Figure 6.1 – Annual Number of Births, Jamaica, 1943 to 1973.

TABLE 6.1 AGE SPECIFIC FERTILITY RATES AND PERCENTAGE INCREASE OR DECREASE: JAMAICA 1960 AND 1970

Age Group	Age Specific Fertility Rates		% Increase (+) or Decrease (-)
	1960	1970	
15 - 19	0.1528	0.1674	+ 9.6
20 - 24	0.2881	0.3018	+ 4.8
25 - 29	0.2563	0.2681	+ 4.6
30 - 34	0.2058	0.1902	- 7.6
35 - 39	0.1288	0.1273	- 1.2
40 - 44	0.0472	0.0468	- 0.8
45 - 49	0.0082	0.0078	- 4.9

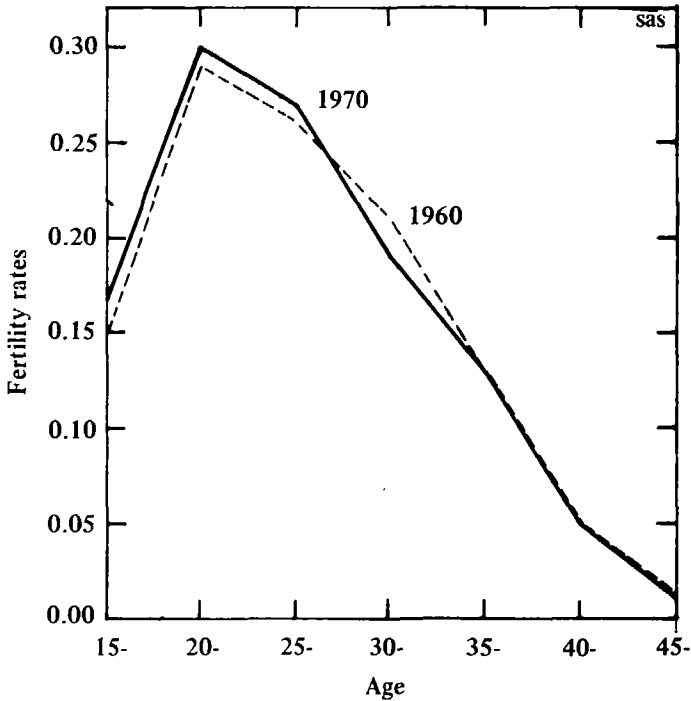


Figure 6.2 — Age specific fertility rates, Jamaica, 1960 and 1970.

Yet again, this lack of change in so sensitive a measure as the age specific fertility rate serves to re-emphasize the point that the fall in the birth rate up to 1970 is a result of changing age structure due to migration and not necessarily an indication of true declines in fertility. It also substantiates the evidence that gains in fertility at younger ages are mainly due to reductions in childlessness.

It is essential to trace these changes from year to year since 1960, but this analysis cannot be undertaken until the Vital Statistics for the years after 1964 are processed.

A fairly long series of reproduction rates is available for Jamaica, extending from the middle of the 19th century. Because of disturbances in the age and sex structure of the population, there are some advantages in basing reproduction analysis on the experience of both parents, that is in terms of joint gross reproduction rates. A series of these is included in Table 6.2, which also gives the conventional rates based on females only. It appears that in the 19th century joint gross reproduction rates of about 2.7 obtain up to about 1881, after which slight declines are in evidence.

TABLE 6.2 JOINT GROSS REPRODUCTION RATES AND REPRODUCTION RATES BASED ON FEMALES

Period	Joint Gross Reproduction Rates	Reproduction Rates based on Females
1844-61	2.57	-
1861-71	2.67	-
1871-81	2.55	-
1879-83	2.45	-
1889-91	2.61	2.12
1909-13	2.64	2.14
1919-23	2.64	2.05
1949-50	2.19	1.91
1959-61	3.18	2.69
1969-71	3.18	2.69

Source: Seminar Paper, Department of Sociology, University of the West Indies, 1971.

The possibility that the slight declines in the 19th century may be the result of under registration cannot be ruled out, although the disturbances in the age and sex structure of the population, occasioned by marked sex-and age-selective emigration could possibly have contributed to declines in fertility. From 1881 to about 1921 the joint gross reproduction rates remain virtually unchanged at 2.6. The subsequent declines following 1921 are marked and the level of 2.2 for the years 1949-50 is the lowest in the series. Then comes a rise to 3.2 in 1959-61 and the level remains the same in 1969-71.

The conventional reproduction rates, based on female experience solely, show an almost unbroken level of 2.2 from 1891 to 1921, but the subsequent decline to 1949-50 is, comparatively, much less than that experienced in the case of the joint rates. There has been a remarkable rise to 2.7 in 1960 and up to 1970 this high level remains unchanged. The rise in period rates in recent years is important but without complementary data on cohort values, definite pronouncements on fertility movements cannot be advanced.

#### **Completed Fertility: Average Family Size**

The experience of women of completed fertility conveys no information on current performance; it represents a cumulative experience going back to the 1930s, so far as the picture is derived from the 1970 Census. In the case of the 1943 Census, this approach takes us back to the fertility of women in the early years of the present century. But the significance of measures of completed fertility cannot be overstated. In the first place, measures of completed family size derived from the Censuses of 1943, 1960 and 1970 provide reliable indices of movements throughout the present century for the Island as a whole. And in view of the pronounced areal differentials that have characterised the country, it is useful to supplement the analysis for the entire Island with an analysis of movements in the several parishes. For both types of analysis, women aged 45-54 are used, and because of the relevance of sterility in the earlier years of the century, the two aspects of fertility identified earlier — the sterility component and the family size component — are employed throughout.

Proportions of women who are mothers, children per mother and per woman age 45-54 by parish for 1943, 1960 and 1970 are given in Table 6.3. The percentages of women who are mothers are shown in Figure 6.3 It is evident that in 1943 levels are lowest in the most highly urbanized of all parishes — Kingston.

Proportions rise markedly as we move away from the urban centre, so that St. Mary St. Ann and Trelawny have the highest values, with 88 per cent of women being mothers. The other rural parishes have slightly lower levels.

Percentages at 1960 are, with some exceptions, lower than at the preceding Census date. Kingston and Westmoreland increase by 3 and 1 percentage points respectively, while St. James, Hanover, St. Elizabeth and Manchester, all show no change. The greatest decrease is in St. Thomas and St. Mary, of 7 points each.





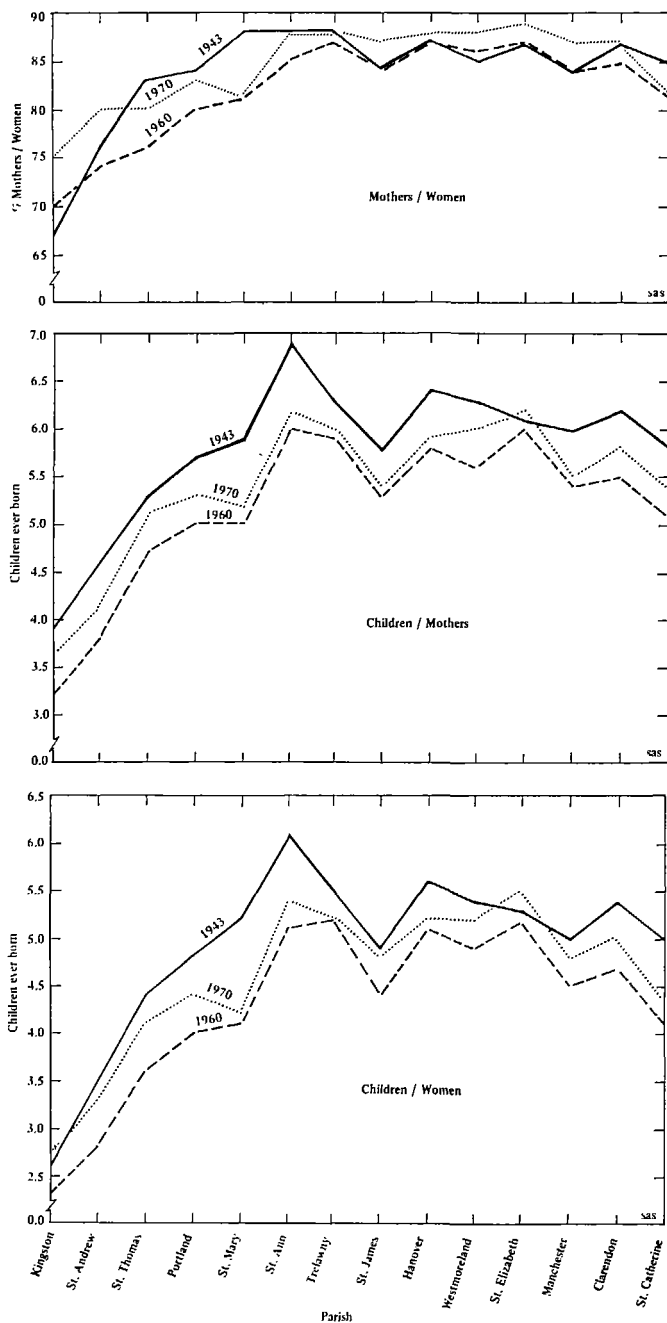


Figure 6.3 – Proportion (%) of women who are mothers, children per mother and per woman, for women age 45-54, by parish, 1943, 1960 and 1970.

TABLE 6.4 CHANGES IN PROPORTIONAL DISTRIBUTION OF FAMILY SIZE,  
WOMEN AND MOTHERS AGE 45-54, BY PARISH, 1943, 1960 AND 1970

Year	King- ston	St. Andrew	St. Thomas	Port- land	St. Mary	St. Ann	Tre- lawny	St. James	Han- over	West- more- land	St. Eliza- beth	Man- chester	Claren- don	St. Cather- ine
1943	.326	.245	.166	.159	.151	.117	.121	.157	.126	.150	.130	.158	.127	.147
1960	.299	.256	.236	.197	.190	.147	.130	.158	.128	.135	.130	.163	.154	.191
1970	.248	.199	.200	.166	.186	.125	.123	.126	.115	.123	.111	.128	.132	.175
							1-3 Children							
1943	.559	.470	.409	.351	.332	.262	.300	.325	.267	.290	.316	.322	.297	.342
1960	.655	.583	.475	.439	.436	.348	.337	.396	.325	.363	.326	.409	.382	.433
1970	.599	.513	.413	.390	.404	.296	.314	.366	.294	.304	.289	.362	.335	.381
							4-5 Children							
1943	.204	.197	.172	.173	.172	.149	.174	.194	.179	.176	.173	.181	.178	.207
1960	.190	.194	.183	.183	.196	.178	.199	.195	.201	.195	.181	.181	.190	.184
1970	.195	.223	.184	.178	.173	.181	.189	.210	.201	.195	.181	.190	.176	.189
							6+ Children							
1943	.238	.321	.418	.476	.496	.588	.525	.481	.554	.534	.511	.497	.525	.475
1960	.155	.223	.341	.378	.367	.474	.465	.409	.406	.442	.493	.410	.428	.383
1970	.206	.264	.403	.432	.422	.523	.497	.424	.505	.501	.529	.448	.489	.430

Note: Proportions for women with no children are calculated on the basis of all women.

Other proportions are based on mothers only.

The curve for 1960 is less pronounced than in 1943. In 1970, 75 per cent of women in Kingston are mothers and 80 per cent in St. Andrew. St. Elizabeth has the highest rate of motherhood with 89 per cent of women being so defined. The 27 year period being analysed shows relatively slight change in proportions of women who are mothers among those of completed fertility, and in general the form of the areal differential is maintained throughout.

Children ever born per mother, aged 45-54, as plotted in Figure 6.3, show generally high levels of completed family size. The high rate of 6.9 children in St. Ann is the outstanding feature in 1943. Kingston and St. Andrew show moderate families of 3.9 and 4.6, but all other parishes have large families ranging from 5.3 in St. Thomas to 6.4 in Hanover. By 1960 family size has declined, but with the exception of Kingston, St. Andrew and St. Thomas all have levels of 5.0 children per mother. St. Ann and St. Elizabeth have the largest families of 6.0 children per mother each. Values for 1970 fall between those of 1943 and 1960, the only variation being St. Elizabeth, where the rate of 6.2 children is slightly above that of 1943 (6.1). This parish, along with St. Ann, has the highest rates of children per mother in 1970. The curve along which the parishes lie in 1970 is basically the same as that for 1960. Generally then, completed family size in 1970 is less than it is in 1943. The greatest decreases, of 0.7 per mother, are in St. Mary and St. Ann, while St. Elizabeth, as was noted previously, has a slight increase over this period.

Children ever born per woman (Figure 6.3) shows a fairly stable pattern for all three Censuses. In 1943 women in Kingston have 2.6 children and these rates rise steeply to a level of 6.1 for St. Ann. In 1960 families are noticeably smaller in size ranging from 2.3 in Kingston to 5.2 in Trelawny and St. Elizabeth. By 1970 however, the number of children ever born per woman has increased so that the range lies between 2.7 and 5.5 children per woman of completed fertility. Between 1943 and 1970 all parishes except Kingston and St. Elizabeth have declines, and in the case of St. Mary this is by one child per woman. Kingston shows an increase of 0.1 and St. Elizabeth by 0.2 per woman. The analysis of these historical events has shown that while fertility remains high there is firm evidence of declines in most areas.

### Completed Fertility: Family Size Distribution

The foregoing analysis of completed fertility in terms of average family size may usefully be supplemented by an examination of changes in family size distribution. This involves the proportion of all women who are childless, that is the direct complement of the proportion of women who are mothers, which has been considered earlier. In addition, the proportions of mothers considered to have small families (1-3 children), those with medium size families (4-5 children) and those with large families (6 children and more) are also identified. These distributions are shown in Table 6.4 as well as in Figure 6.4a and b.

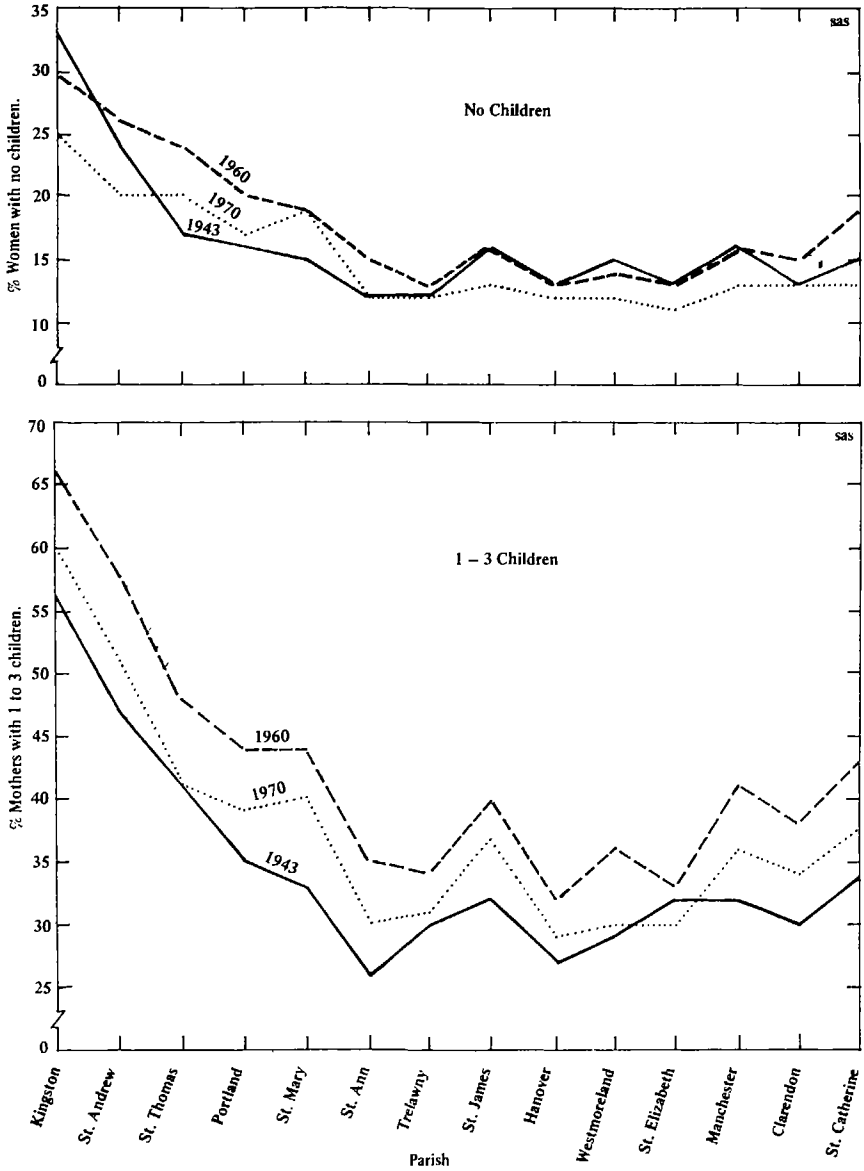


Figure 6.4a – Changes in Proportional Distribution of Family Size, woman and mothers age 45-54, by parish, 1943, 1960 and 1970.

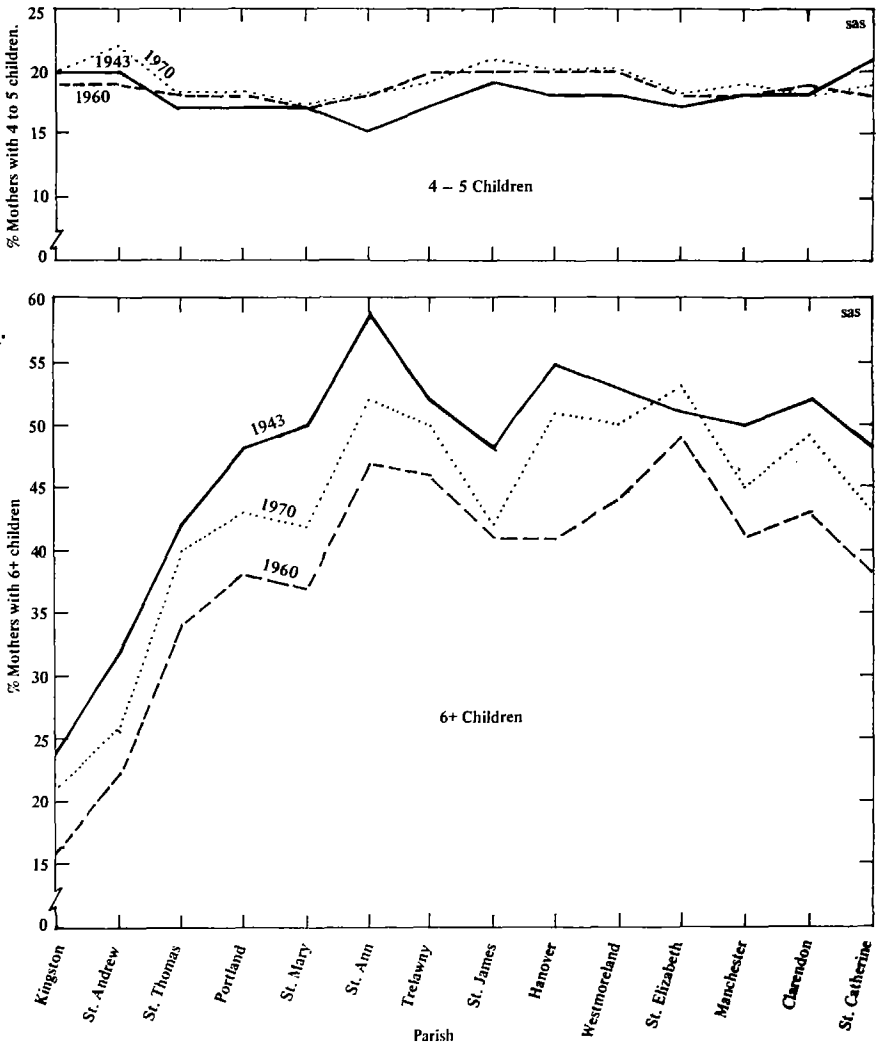


Figure 6.4b – Children in Proportional Distribution of Family Size, woman and mothers age 45-54, by parish, 1943, 1960 and 1970.

There is a marked contrast between urban and rural areas with respect to proportions of women without children; this holds for all three Censuses. Kingston shows the highest proportion childless, while the parishes towards the West have the lowest levels. The one exception to this is St. James, where the level is somewhat above those of parishes adjoining it. In 1943, one-third of the females in Kingston are childless, which is about three times the corresponding level for parishes such as St. Ann and Trelawny. Between 1943 and 1960 proportions of childless women move up somewhat in eight parishes, while four parishes show no change. Only Kingston and Westmoreland exhibit slight decreases. In all parishes except St. Mary, falls in proportions of childless women are noted between 1960 and 1970. Rates for 1970 range from 25 per cent for Kingston to 11 per cent for St. Elizabeth.

As can be seen from Figure 6.4a the proportions of mothers with families of 1-3 children increase between 1943 and 1960, but in the succeeding decade these proportions decline. The pattern of differential among the parishes is distinctive, with very high proportions obtaining in the urban centre and lower levels prevailing as we move away from this area. Of note is the generally higher proportion characterising St. James and Manchester in 1960 and 1970, unmistakable signs of some fertility reductions in these parishes.

There is little variation in the proportions of mothers with medium sized families, that is 4-5 children, as will be seen from Figure 6.4b. Proportions lie between 15 per cent and 22 per cent at the three Censuses. Looking next at mothers with large families, that is 6 children and more, we note a shift in direct contrast to that noted for proportions of small families (see Figure 6.4b). The decline in the proportions of large families noted between 1943 and 1960 is followed by a rise in the succeeding decade, although at 1970 the proportions are, with the single exception of St. Elizabeth, still lower than those of 1943.

As is to be expected, families with 6 or more children increase as we move out from the urban centre. Thus for 1943 Kingston and St. Andrew show proportions of 24 per cent and 32 per cent respectively, while the corresponding proportion for St. Ann stands much higher (59 per cent).

In summarizing the position of family size distribution at the three Census periods, we may note three outstanding aspects. In the first place there has been some change in the proportion childless; this has in general declined for the island as a whole, but for the several parishes it has moved irregularly. Secondly, the proportion of medium sized families (with 4-5 children) has changed very little, possibly the only notable feature here being the rise in the case of St. Ann. Thirdly, the movements at each end of the distribution depict a fall in fertility between 1943 and 1960, with an upturn in the following decade, but which still leaves levels of completed fertility lower in 1970 than at the commencement of the period under review.

### Fertility in the age Group 20-24

In the absence of detailed tabulations of Vital Statistics, we have to rely mainly on fertility data derived for women of childbearing age from the 1970 Census. Rates of children ever born per woman furnish useful measures for tracing movements for the island as a whole as well as for assessing changes in areal differentials. The first age group for which this analysis will be carried out is 20-24, which covers the experience of women approaching the peak of fertility performance. Moreover it is among women in this age range that marked changes in levels and differentials can best be observed.

The two components of fertility for this age range and the actual rates of children ever born per woman for the years 1943, 1960 and 1970 are given in Table 6.5. Proportions of women who are mothers show an overall increase in all parishes from 1943 to 1970 (Figure 6.5). Lowest proportions for 1943 are for Kingston and St. Andrew, 33 per cent and 35 per cent respectively, while the highest ones are noted for Trelawny (58 per cent) and Hanover (55 per cent). The percentage for St. Thomas is 49, and for all other parishes values lie between 54 per cent and 50 per cent.

Proportions for 1960 show notable increases over 1943. Here again the lowest levels are for Kingston and St. Andrew – 56 per cent and 57 per cent respectively. Other parishes show values ranging from 66 per cent to 72 per cent. The relative positions of the different parishes have remained basically the same between 1943 and 1960.

Proportions for 1970 are appreciably higher than those observed 27 years earlier. Here there is evidence of a change in the previous pattern, with St. Andrew having the lowest proportion of mothers (60 per cent). Kingston, St. Ann and Manchester have proportions of 69 per cent, 68 per cent, and 68 per cent respectively. St. Thomas has the highest proportion, 81 per cent, and all other parishes have values between 70 per cent and 79 per cent. In summary we can say that all parishes show increases between 1943 and 1970 in the percentage of women who are mothers. The parish with the most marked increase is Kingston – 36 percentage points – and that with the lowest is St. Ann with an increase of 16 percentage points.

The second component – children per mother – does not present the same pattern as the first. Here there are declines in some parishes between 1943 and 1960 but these in general rise after 1960 (Figure 6.5). All of these, with the exceptions of Clarendon, show increases between 1960 and 1970 which are approximately the same in magnitude as the decrease witnessed between 1943 and 1960. In the case of Clarendon the increase in the second intercensal period is more marked than the decrease of the first.

In 1943, Hanover shows the highest value with 2.3 children per mother and again Kingston and St. Andrew are lowest with 1.7 and 1.8 children respectively. The picture at 1960 is essentially the same with the exception of St. Ann,



TABLE 6.5 PROPORTION OF WOMEN WHO ARE MOTHERS, CHILDREN PER MOTHER AND PER WOMAN, FOR WOMEN AGE 20-24 BY PARISH 1943, 1960 AND 1970

Year	Kingston	St. Andrew	St. Thomas	Portland	St. Mary	St. Ann	Trelawny	St. James	Hanover	Westmoreland	St. Elizabeth	Manchester	Clarendon	St. Catherine
1943	.331	.351	.493	.509	.512	.518	.577	.541	.550	.542	.540	.507	.539	.507
1960	.561	.570	.720	.714	.698	.673	.720	.677	.724	.711	.721	.662	.699	.676
1970	.693	.595	.807	.764	.768	.679	.771	.709	.732	.718	.741	.678	.731	.734
1943	1.668	1.766	2.033	2.009	2.045	2.188	2.215	2.122	2.291	2.147	2.086	2.034	2.114	2.014
1960	1.826	1.909	2.236	2.205	2.160	2.046	2.183	2.099	2.223	2.244	2.145	2.018	1.709	2.150
1970	2.097	2.066	2.498	2.430	2.477	2.187	2.420	2.269	2.541	2.393	2.361	2.189	2.410	2.344
1943	.552	.620	1.022	1.023	1.048	1.134	1.278	1.149	1.260	1.165	1.125	1.032	1.140	1.022
1960	1.025	1.089	1.609	1.574	1.507	1.377	1.572	1.422	1.611	1.594	1.547	1.336	1.195	1.454
1970	1.454	1.229	2.015	1.855	1.904	1.485	1.867	1.610	1.859	1.718	1.748	1.485	1.761	1.720

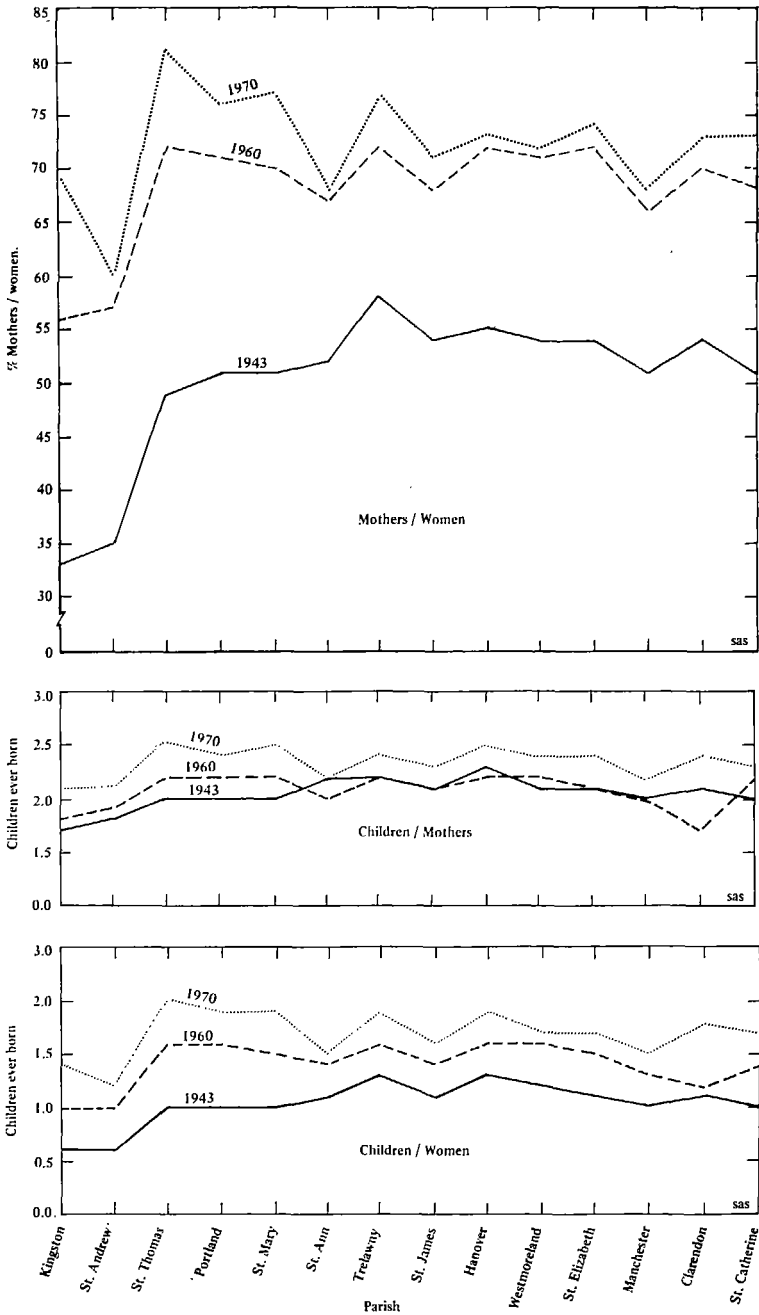


Figure 6.5 – Proportion (%) of women who are mothers, children per mother and per woman, for women age 20-24, by parish, 1943, 1960 and 1970.

Hanover and Clarendon. The reasons for the shifts evidenced between 1943 and 1960 are probably many and complex, but improvements in the bio-medical and social conditions of the population cannot be ruled out.

All parishes show increases between 1960 and 1970. Clarendon has an increase of nearly one child per mother over 1960. At 1970 the number of children per mother are, for all parishes, over 2.1. In fact, with the exception of Kingston and St. Andrew (2:1 each), St. Ann and Manchester (2.2 each), St. James and St. Catherine (2.3 each) all parishes have values over 2.4.

It will be seen that in 1943 only two parishes – Trelawny and Hanover, have higher values than St. Ann – a parish long known for its high fertility. However, the picture for this parish at 1970 is dramatically different when compared both with itself at the earlier period and with other parishes in that year. From being an area with one of the highest rates of children per mother, it falls to one of the lowest. The decrease in the fertility of St. Ann may be attributed to two major factors. First the growth and development of the Jamaica Family Planning Association since the 1940s has undoubtedly played a major role in the changing fertility pattern.<sup>2</sup> Concurrent with the work of the Jamaica Family Planning Association was the economic development of the parish in the form of the expansion of tourism and, to a lesser extent, of the bauxite industry. Attendant on this improved economic status are improvements in education, changing social values, including undoubtedly the acceptance of small family ideals and growing motivation to resort to family planning. St. James which has also had considerable economic development through the tourist industry, is second only to St. Ann in its low level of increase in the number of children ever born per mother over the 27 years under study.

Children per woman represents the product of the two previous components and is also shown in Figure 6.5. Once again there is a stable pattern like that of mothers/women with steady increases in values from 1943 through 1970. From 1943 the proportions range from 0.552 in Kingston to 1.278 in Trelawny. For all parishes, excluding Kingston and St. Andrew, the proportion of children per woman exceeds 1. There is an increase in all parishes between 1943 and 1960, while further rises occur in the next decade. The rate nearly doubles between 1943 and 1960 in the case of St. Thomas, while the parish with the lowest increase is St. Ann, where the percentage rise is 31.

#### **Distribution of Family size in the age Group 20-24**

Family size distribution offers a useful complement to the analysis of children ever born per woman just discussed. Analysis of these distributions for

<sup>2</sup>For further discussion on this see. Sonja A. Sinclair, *A Fertility Analysis of Jamaica with reference to the parish of St. Ann, Social and Economic Studies*, Vol. 23, No. 4, December, 1974.

TABLE 6.6 CHANGES IN PROPORTIONAL DISTRIBUTION OF FAMILY SIZE, WOMEN AND MOTHERS AGE 20-24, BY PARISH, 1943, 1960 AND 1970

Year	Kingston	St. Andrew	St. Thomas	Portland	St. Mary	St. Ann	Trelawny	St. James	Haverover	Westmoreland	St. Elizabeth	Manchester	Clarendon	St. Catherine
1943	.669	.649	.507	.491	.487	.482	.423	.459	.450	.458	.460	.493	.461	.493
1960	.440	.432	.281	.287	.303	.328	.281	.324	.276	.291	.280	.339	.302	.326
1970	.307	.405	.193	.236	.231	.321	.229	.291	.268	.282	.259	.322	.269	.266
							<u>No Children</u>							
							<u>1-3 Children</u>							
1943	.945	.926	.885	.876	.883	.857	.851	.861	.835	.861	.879	.885	.872	.885
1960	.930	.910	.852	.857	.874	.893	.862	.884	.858	.842	.872	.896	.870	.867
1970	.886	.881	.796	.813	.795	.870	.809	.835	.778	.810	.826	.861	.807	.823
							<u>4-5 Children</u>							
1943	.052	.065	.094	.109	.102	.118	.127	.118	.131	.115	.103	.095	.108	.099
1960	.066	.084	.131	.127	.114	.097	.123	.101	.124	.136	.116	.096	.116	.120
1970	.105	.109	.183	.169	.187	.117	.176	.145	.197	.172	.154	.129	.173	.165
							<u>6+ Children</u>							
1943	.003	.009	.021	.015	.015	.025	.022	.021	.034	.024	.018	.021	.020	.016
1960	.004	.006	.017	.015	.012	.011	.015	.015	.018	.022	.012	.008	.014	.013
1970	.009	.009	.021	.017	.019	.013	.014	.020	.025	.018	.020	.010	.019	.016

Note: Proportions for women with no children are calculated on the basis of all women. Other proportions are based on mothers only.

women aged 20-24 is particularly relevant, as these are one stage removed from the commencement of the childbearing span. The distributions in terms of proportion of women who are childless, as well as the proportions of mothers with small families, the proportion of medium size families and large families are the subject of Table 6.6.

The proportion of women of this age group who are childless is depicted in Figure 6.6. It is immediately clear that dramatic falls have taken place between 1943 and 1960, the most marked being for Kingston, from 67 per cent to 44 per cent and St. Thomas from 51 per cent to 28 per cent. The decline in other parishes ranges from 14 to 20 percentage points. In 1960, Kingston and St. Andrew have the highest levels of childless women, 44 per cent and 43 per cent respectively. St. Thomas, Trelawny, Hanover and St. Elizabeth show the lowest levels with only 28 per cent having no children. Reductions in proportions of childless women have been steep over the 27 year period so that by 1970 all parishes except Kingston (31 per cent) and St. Andrew (40 per cent) show proportions childless of less than 30. The falls in terms of percentage points range from 30 to 16, with the latter characterising the parish of St. Ann.

The foregoing illustrates clearly and concisely the dynamic, controlling role that childlessness has in the past played in curbing rates of population growth in the Island. These reductions in proportions of women with no children re-emphasize the point made earlier, that the present increased rate of population growth is due largely to reductions in childlessness rather than to increases in the number of children born per woman, that is, in genuine family size.

Proportions of women with 1-3 children show declines, particularly between 1960 and 1970 (see Figure 6.6). At 1943, Kingston with the highest proportion, shows 94 per cent of the mothers having 1-3 children by age 20-24. For other parishes the proportion with families of this size range from 84 per cent to 90 per cent. At 1960, the picture remains virtually the same as in 1943.

Rates for 1970 show more marked changes. Kingston and St. Andrew remain at the top of the scale with rates of 88 per cent each. They are closely followed by St. Ann and Manchester with 87 per cent and 86 per cent. Levels for other parishes lie between 80 per cent and 85 per cent and once again Hanover has the lowest — 78 per cent.

Turning to women with 4-5 children (see Figure 6.6) we see that movements in these proportions are the reverse of those obtaining for women with 1-3 children. In other words there have been increases and these are most marked between 1960 and 1970. In 1943 levels are highest for Trelawny and Hanover, with 13 per cent of women having 4-5 children at ages 20-24. Kingston (5 per cent), St. Andrew (6 per cent) and St. Thomas (9 per cent) were lowest.

Changes over the 17 years from 1943-60 are minimal. Kingston and St. Andrew have rates of 7 per cent and 8 per cent; St. Ann, St. James and Manchester of 10 per cent and St. Mary of 11 per cent. Trelawny, Hanover, St.

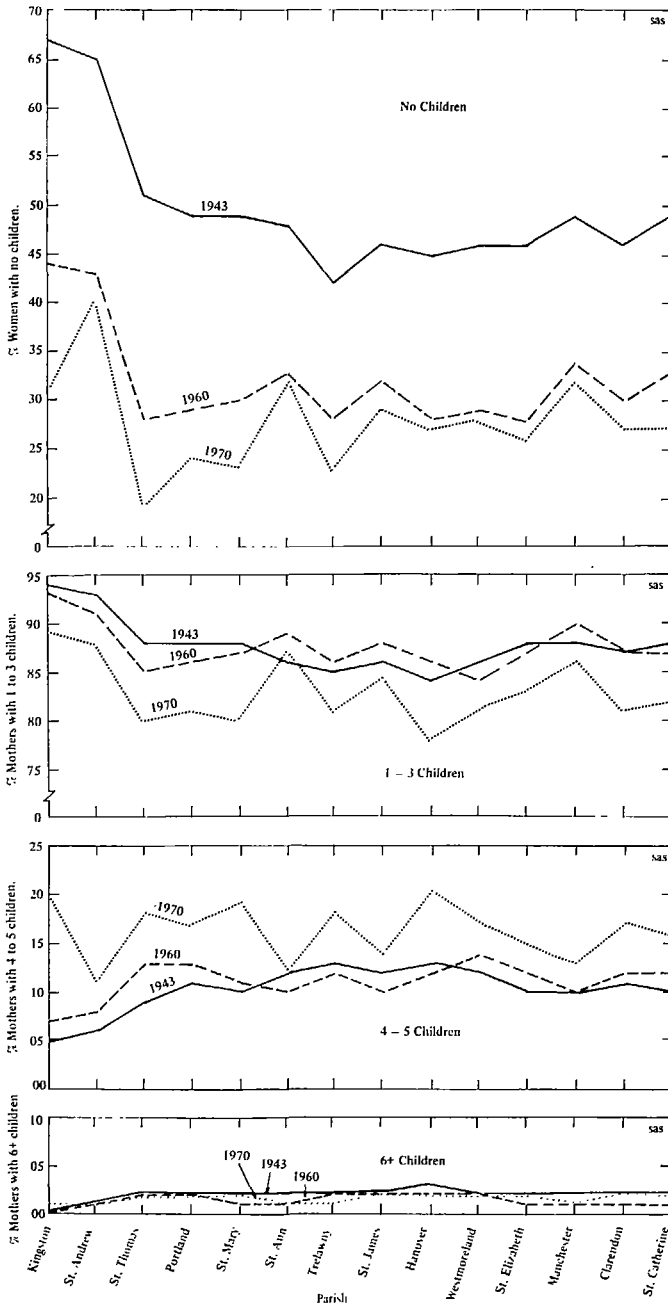


Figure 6.6 – Changes in Proportional Distribution of Family Size, women and mothers age 20-24, by parish, 1943, 1960 and 1970.

Elizabeth, Clarendon and St. Catherine stand at 12 per cent; St. Thomas and Portland at 13 per cent and Westmoreland is highest at 14 per cent.

By 1970 proportions of women with 4-5 children for several parishes have increased fairly substantially and the variation by parish is more marked than in either 1943 or 1960. While both Kingston and Hanover have the same proportion (20 per cent) of women having 4-5 children at ages 20-24 in 1970, the increase for Kingston over 1960 of 13 percentage points is considerably higher than that of any other parish. Hanover's level increased by 7 percentage points. St. Andrew has the lowest level (11 per cent) while St. Ann (12 per cent) is the only parish showing no change between 1943 and 1970. St. Mary's level of 19 per cent represents an increase of 8 percentage points.

Proportions of women in the age group 20-24 with 6 and more children are, as is to be expected, insignificant at all three Censuses. All values lie below 3 per cent (Figure 6.6).

#### **Fertility in the age Group 30-34**

The age group 30-34 is the second group under study. This in fact complements the first as it represents the experience of woman moving towards the end of the childbearing span. All three measures are presented in Table 6.7. The proportions of women who are mothers are depicted graphically in Figure 6.7. Again, as at the earlier ages, the most striking feature is the considerable increase between 1943 and 1970, particularly in Kingston and St. Andrew where these are 32 and 24 percentage points respectively. At 1943, only two parishes — Kingston (55 per cent) and St. Andrew (62 per cent) — show percentages of less than 70. Trelawny has the highest proportion of mothers — 82 per cent. Values rise steadily as we move away from the main urban centre.

A similar pattern emerges in 1960. Kingston and St. Andrew, while maintaining their relatively low positions, show the greatest increase in the 17 years following 1943. From 55 per cent mothers in 1943, Kingston moves to 73 per cent. St. Ann, Trelawny and Clarendon show the smallest gains — 5 percentage points each. At 1970 we note among the rural parishes, a levelling off of the percentage of women who are mothers at ages 30-34. The increases between 1960 and 1970 are not so marked as in the preceding intercensal interval. In fact, with the exception of the urban parishes, the increase in percentage points is less than 10. St. Elizabeth which moves from 88 per cent in 1960 to 91 per cent shows a significant levelling off. For all parishes except Kingston, St. Andrew, St. Thomas and St. Mary, the proportion of women who are mothers at these ages is 90 per cent or above. It is evident that gains in the future will be minimal.

The family size component — children ever born per mother — is an important one as it may account for some of the overall changes in fertility rates (Figure 6.7). At the first Census date, 1943, in Kingston, St. Andrew, St. Thomas, Portland and St. Catherine, children per mother number less than 4. In

TABLE 6.7 PROPORTION OF WOMEN WHO ARE MOTHERS, CHILDREN PER MOTHER AND PER WOMAN, FOR WOMEN AGE 30-34 BY PARISH, 1943, 1960 AND 1970

Year	Kingston	St. Andrew	St. Thomas	Portland	St. Mary	St. Ann	St. Tre-lawny	St. James	Hanover	Westmoreland	St. Elizabeth	Manchester	Clarendon	St. Catherine
1943	.554	.620	.697	.720	.744	.802	.824	.777	.807	.791	.785	.765	.788	.733
1960	.733	.762	.804	.823	.812	.849	.868	.840	.869	.856	.879	.846	.839	.810
1970	.870	.861	.893	.909	.891	.903	.908	.906	.917	.907	.912	.899	.900	.898
1943	2.567	3.046	3.741	3.806	3.961	4.464	4.492	4.098	4.530	4.345	4.401	4.165	4.301	3.883
1960	2.810	3.218	3.908	4.180	4.099	4.357	4.388	4.055	4.444	4.476	4.431	4.092	4.114	4.005
1970	3.926	3.868	5.014	5.115	4.974	4.769	5.155	4.649	5.208	5.127	5.036	4.720	4.974	4.883
1943	1.423	1.888	2.613	2.739	2.947	3.580	3.702	3.182	3.658	3.436	3.453	3.185	3.391	2.846
1960	2.058	2.451	3.142	3.442	3.329	3.698	3.811	3.406	3.862	3.832	3.896	3.462	3.453	3.246
1970	3.414	3.331	4.478	4.651	4.432	4.307	4.681	4.210	4.776	4.643	4.592	4.245	4.474	4.384



FERTILITY

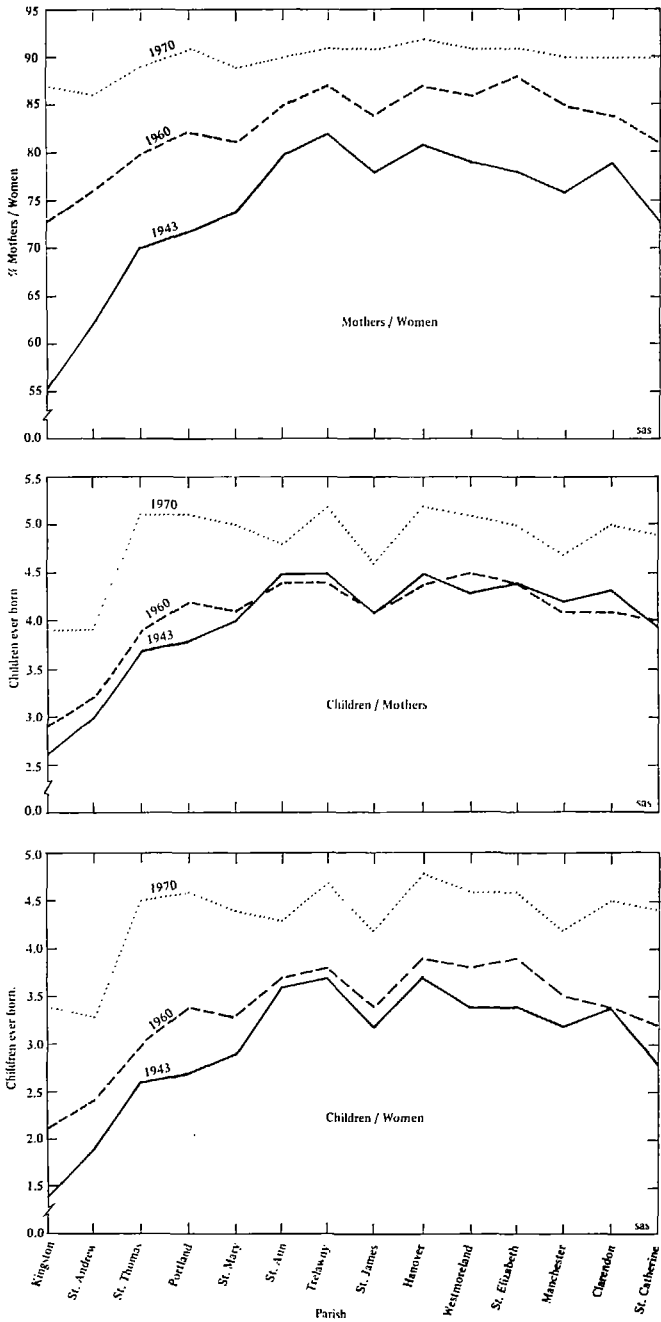


Figure 6.7 – Proportion (%) of women who are mothers, children per mother and per woman, for women age 30-34, by parish, 1943, 1960 and 1970.

St. Ann, Trelawny and Hanover they number 4.5 and mothers in all other parishes have between 4 and 4.5 children each. At the 1960 Census, some parishes have gains and others declines. Kingston moves from 2.6 to 2.8, St. Andrew, St. Thomas and Westmoreland all show rises of 0.2 children per mother; St. Mary shows a rise of 0.1 and Portland of 0.4. Other parishes show declines in 1960.

Rates at 1970 are noticeably higher than either those 1943 or 1960. All parishes except Kingston and St. Andrew have values greater than 4.5. The most interesting increases are in the parishes of St. Thomas and Kingston. In St. Thomas the rate of children per mother increases by 1.2, while in Kingston the increase is 1.0. All other areas experience increases of less than one child per mother. St. Ann, which in 1960 declines from the 1943 level, shows the lowest increase at 0.4 children per mother. St. James also has a relatively small increase, 0.5. Once again the effect of family planning knowledge and practice is evident in the case of St. Ann, and increased economic development in both St. Ann and St. James. Trelawny and Hanover have the highest level of children per mother at 5.2 each.

The 27 year period from 1943 presents an interesting picture. St. Thomas emerges as the parish with the greatest increase, 1.4 children per mother. Kingston and Portland follow closely with 1.4 and St. Mary and St. Catherine each have increases of the order of one child per mother. Yet again, St. Ann shows the smallest increase of 0.3. It is difficult at this stage to account for the considerable increase in the parish of St. Thomas, especially as it adjoins the Kingston-St. Andrew urban centre.

The examination of the overall fertility level, children per woman, proves even more interesting than the previous component, children per mother (Figure 6.7). Again it is a case of rising levels. In 1943, the parishes immediately surrounding the urban centre – St. Thomas, Portland, St. Mary and St. Catherine – all have rates of under 3.0 children per woman. Trelawny and Hanover, the parishes lying on either side of St. James, which contains the main tourist centre of the Island and shows marked evidence of fertility declines, have the highest levels, 3.7 children per woman. For 1960 the rates show the same pattern of differential, although all are a slightly higher level than 1943. Kingston and Portland experience the greatest increases, 0.7 per woman. St. Ann and Trelawny have increases of 0.1 only, while St. James and Hanover increase by 0.2.

Increases in children per woman between 1960 and 1970 are more marked than during the preceding intercensal period. The number of children per woman in St. Thomas, moves up from 3.0 in 1960 to 4.5 in 1970, a rise of 1.5 children. Kingston and St. Catherine have gains of 1.3 and 1.2 children respectively.

The smallest increase is in St. Ann (0.6). All parishes except Kingston and St. Andrew have levels of over 4, whereas at 1960 no parish has a level as high as

this. Children per woman in Hanover amount to 4.8 as compared with 3.3 for St. Andrew – a difference of 1.5 children.

In view of the upward movements during 1943-60 and 1960-70, the overall gains recorded between 1943 and 1970 are considerable. Kingston has by far the greatest increase – 2 children per woman. St. Thomas and Portland too have large gains of 1.9 children. Once again the smallest gain (0.7) is that for St. Ann.

In summarising these measures of fertility we note that all age groups within the childbearing span show significant increases in the 27 years between 1943 and 1970. Indeed we may, from a purely demographic viewpoint, note with some concern the dramatic increases that have taken place in this period. However, it is possible that much of the increase noted is due to improvements in health care. Here the consequent reductions in childlessness, particularly among younger women, must, from the socio-medical perspective, give rise to a sense of achievement. This particular aspect of a contributing factor to population growth highlights a problem which many developing societies have to face – namely, that success in dealing with one problem tends to create another, and at times, equally acute one.

#### **Distribution of family size in the age group 30-34**

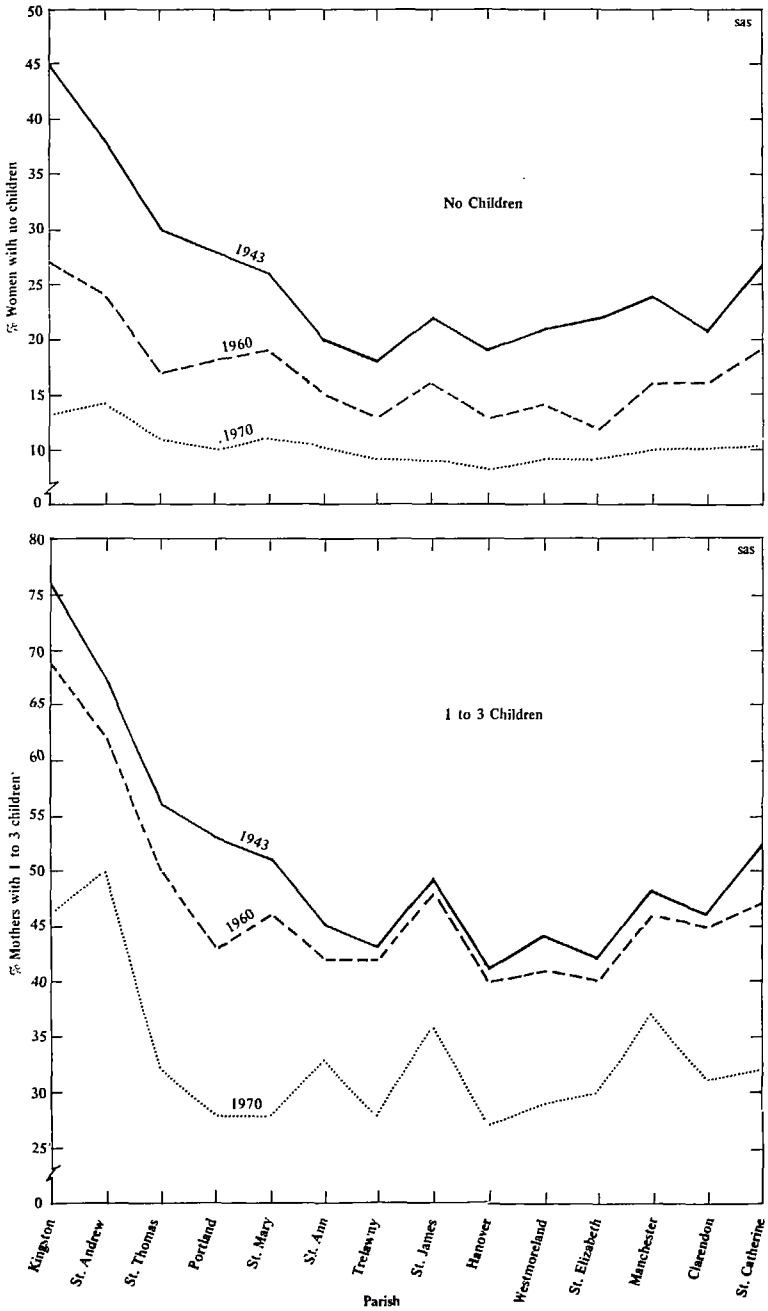
Changes in proportional distribution of family size for the age group 30-34 at the last three Censuses of Jamaica are set out in Table 6.8. Looking first at non-mothers, we see that while overall rates are lower than at ages 20-24, the general pattern of decreasing levels of childlessness up to 1970, as shown in Figure 6.8a, is similar to that obtaining at the earlier age group.

In 1943, rates of childlessness are high in the urban centre and in parishes nearest to it. Of all women, 45 per cent are still childless at ages 30-34 in the parish of Kingston. In St. Andrew and St. Thomas the rates are 38 per cent and 30 per cent respectively. Trelawny has the lowest level of childlessness, only 18 per cent.

The greatest declines for the intercensal period between 1943 and 1960 are experienced in Kingston and St. Andrew, and those parishes adjoining them. St. Elizabeth shows a decline of 10 points while the decline in other parishes ranges from 5 to 8 percentage points. While Kingston and St. Andrew still show relatively higher rates of childlessness at 1960, the difference among the parishes is not as marked as in 1943.

In 1970 all parishes show considerably reduced levels of childlessness; these lie between 8 per cent and 14 per cent. The declines in childlessness between 1943 and 1970 are outstanding. The decline in Kingston is by 32 percentage points and in St. Andrew by 24. St. Thomas, Portland and St. Catherine decline by 19, 18, and 17 percentage points respectively. Trelawny has the smallest fall (9 percentage points) and declines for all other parishes range from 10 to 15 points.





**Figure 6.8a – Changes in Proportional Distribution of Family Size, women and mothers age 30-34, by parish, 1943, 1960 and 1970.**

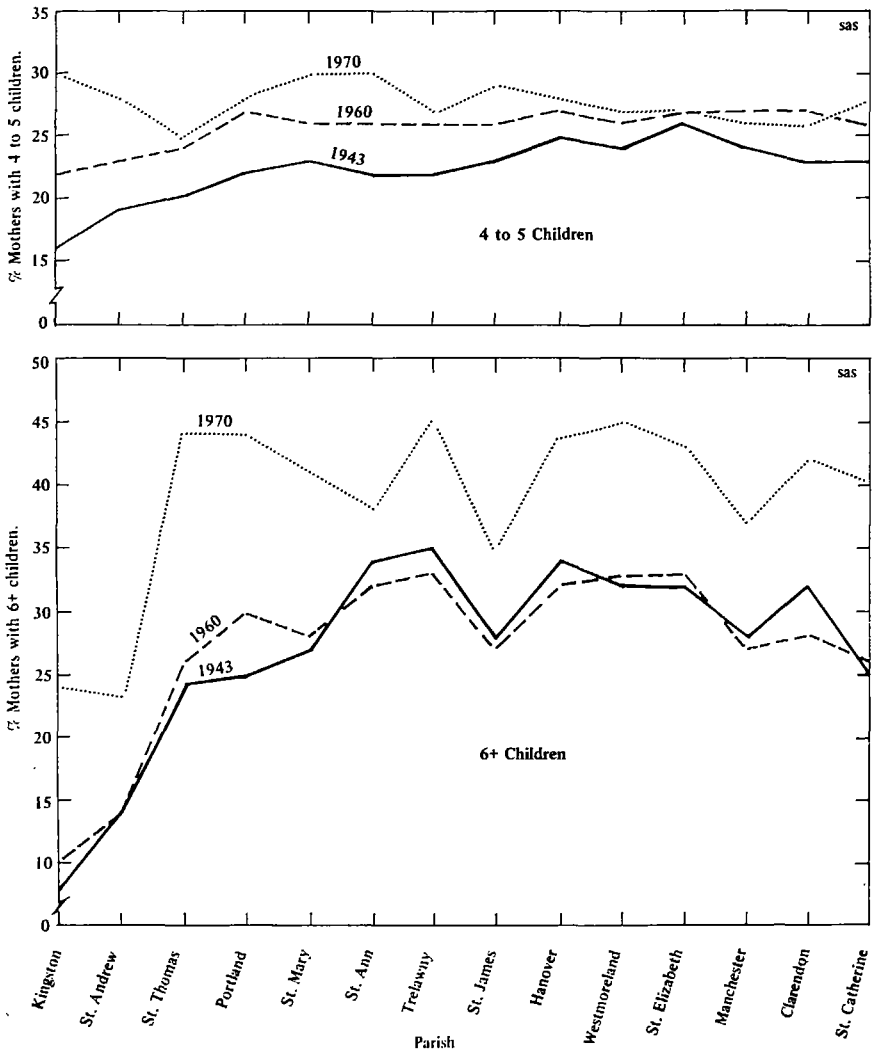
The proportions of women with 1-3 children at ages 30-34, show the same parish differential as that observed for non-mothers, that is a pronounced decline as we move away from the urban centre, as can be seen in Figure 6.8a. In 1943 in Kingston, St. Andrew and St. Thomas proportions of 76 per cent, 67 per cent and 56 per cent respectively prevail while Hanover has a rate of 41 per cent. The differential among the parishes is essentially the same in 1960, with all rates being lower than in 1943. The general fall in proportions of women with 1-3 children between 1960 and 1970 is accompanied by some changes in parish differential. There are changes in the relative position of St. Andrew and St. Ann, both of which show proportions which are high by comparison with those of other parishes. The declines between 1960 and 1970 are marked. St. Ann has the smallest decline of 9 points, while the lowest proportion of mothers with 1-3 children is that of Hanover (27 per cent). It is interesting to note that parishes with fairly dynamic urban centres all show rates relatively higher than the parishes adjoining them. This is evident in Kingston and St. Andrew, St. Ann (St. Ann's Bay and Ocho Rios), St. James (Montego Bay) and Manchester (Mandeville).

We summarize by noting the declines between 1943 and 1970 in the number of women aged 30-34 having 1-3 children. Kingston has the greatest decline of 30 percentage points over the 27 year period. Other parishes exhibiting substantial reductions are Portland, St. Mary and St. Catherine. Lowest changes are shown by St. Ann, St. Elizabeth and Manchester.

Proportions of women aged 30-34 with 4-5 children (Figure 6.8b) show a general rise in the 27 years following 1943. The outstanding movement occurs in Kingston, where the proportion in 1943 (16 per cent) rises to 22 per cent in 1960 and to 30 per cent in 1970, thus about doubling within a generation. Kingston, which has the lowest proportion of mothers with this family size in 1943, shows the highest level 27 years later. Also appreciable has been the rise shown by the suburban parish of St. Andrew, from 19 per cent in 1943 to 28 per cent in 1970. In fact these proportions tend to increase most in areas within or near to urban centres of the island, that is in parishes such as Kingston, St. Andrew, St. James, St. Ann and Manchester. In 1943 the parish with the largest proportion of mothers having 4-5 children is St. Elizabeth, where the figure stands at 26 per cent, while the lowest level (16 per cent) is that of Kingston. In 1970 the proportion is as high as 30 per cent in three parishes and falls below 28 per cent in only five; at this latter date the proportion is lowest (25 per cent) in St. Thomas.

The rates of the final family size grouping for this age range — that of 6 plus children are in marked contrast to those of mothers with 1-3 children. There have been significant increases in the numbers of mothers having 6 or more children particularly between 1960 and 1970 (Figure 6.8b).

In 1943 rates for women with 6 and more children increase as we move out from the urban parishes. Thus Kingston has only 8 per cent of mothers with families of this size. St. Andrew has 14 per cent and St. Thomas 24 per cent.



**Figure 6.8b – Changes in Proportional Distribution of Family Size, women and mothers age 30-34, by parish, 1943, 1960 and 1970.**

Portland has 25 per cent and so does St. Catherine. Of the mothers in St. Mary, 27 per cent have 6 plus children while St. Ann has 34 per cent and Trelawny 35 per cent. St. James shows a relatively lower rate of 28 per cent, but Hanover is up to 34 per cent. Westmoreland, St. Elizabeth and Clarendon have rates of 32 per cent and Manchester of 28 per cent. Six parishes show slight declines in 1960. These are St. Ann, Trelawny, St. James, Hanover, Manchester and Clarendon. These declines range from 1 to 4 percentage points. Rates at 1970 which are well above those of 1960, range from 45 per cent in Trelawny and Westmoreland to 23 in St. Andrew. Actually, with the exception of Kingston (24 per cent) and St. Andrew (23 per cent), the percentage of mothers in other parishes having 6 plus children ranges between 35 per cent and 45 per cent. The lowest increases between 1960 and 1970 are in St. Ann, St. James and St. Andrew with 6, 8 and 9 percentage points respectively. St. Thomas has the highest increase of 18 percentage points. Between 1943 and 1970 St. Thomas again shows the greatest increase – 20 percentage points. Two parishes have increase of less than 10 – St. Ann (4) and St. James (7), all others range from 10-19.

### **First and last births**

The commencement and termination of childbearing are undoubtedly the most significant milestones in the fertility history of the woman. The age at first birth at once determines the commencement of childbearing and, potentially, the size of completed family. This age is also of importance from the medico-demographic perspective, as the younger the age the greater the risk of still births and foetal wastage in general. The socio-demographic viewpoint is also relevant in relation to first birth, as again the lower the age of the mother the greater the need of supporting social services.

Age at birth of last child has been collected for Jamaica for the first time at the Census of 1970. The term has two connotations, depending on the age of the woman at the time of the event. When applied to a woman of childbearing age it refers to the age at the birth of the most recent child, and is of consequence in the analysis of open birth intervals. When applied to a woman of completed fertility, that is who is over age 45, the term signifies the effective end of childbearing and will in general be less than 45. It is in the latter sense that the term is used in this Chapter.

The interval between these two measures – age at first birth and age at last birth – therefore assumes, in the context of women of completed fertility, special significance. While the potential length of the childbearing span is in fact determined biologically by age at menarche on the one hand and age at menopause on the other, it is actually the first birth and the last birth that mark the exact number of years spent in childbearing.

The average ages at birth of first and last child and the difference in years for women age 45-54, for all parishes at 1970 are given in Table 6.9. Two



TABLE 6.9 AVERAGE AGE AT BIRTH OF FIRST AND LAST CHILD,  
AND DIFFERENCE IN YEARS: WOMEN AGED 45-54,  
FOR PARISHES OF JAMAICA, 1970

PARISH	Average Age at Birth of First Child	Average Age at Birth of Last Child	Difference in Years
Kingston	23.30	28.14	4.84
St. Andrew	23.51	33.17	9.66
St. Thomas	21.05	33.66	12.61
Portland	21.71	33.69	11.98
St. Mary	21.65	33.46	11.81
St. Ann	21.73	35.52	13.79
Trelawny	21.04	34.57	13.53
St. James	21.68	34.11	12.43
Hanover	21.55	35.25	13.70
Westmoreland	21.83	35.16	13.33
St. Elizabeth	22.17	35.59	13.42
Manchester	22.02	34.46	12.44
Clarendon	21.48	34.76	13.28
St. Catherine	21.85	34.12	12.24

parishes, St. Thomas and Trelawny show an average age of 21 years at first birth, while 23 years is the average in Kingston and St. Andrew. For all other parishes the age is 22 years. Clearly an average age of 21 to 23 years indicates that childbearing in fact does not commence at an early age, when comparisons are drawn with most high fertility societies. The average age at last birth for the fourteen parishes on the other hand shows a greater range. The outstanding parish is Kingston where the average age of 28 years is by far the lowest. St. Elizabeth has the highest average age at 36 years while the others have levels of between 33 and 35 years.

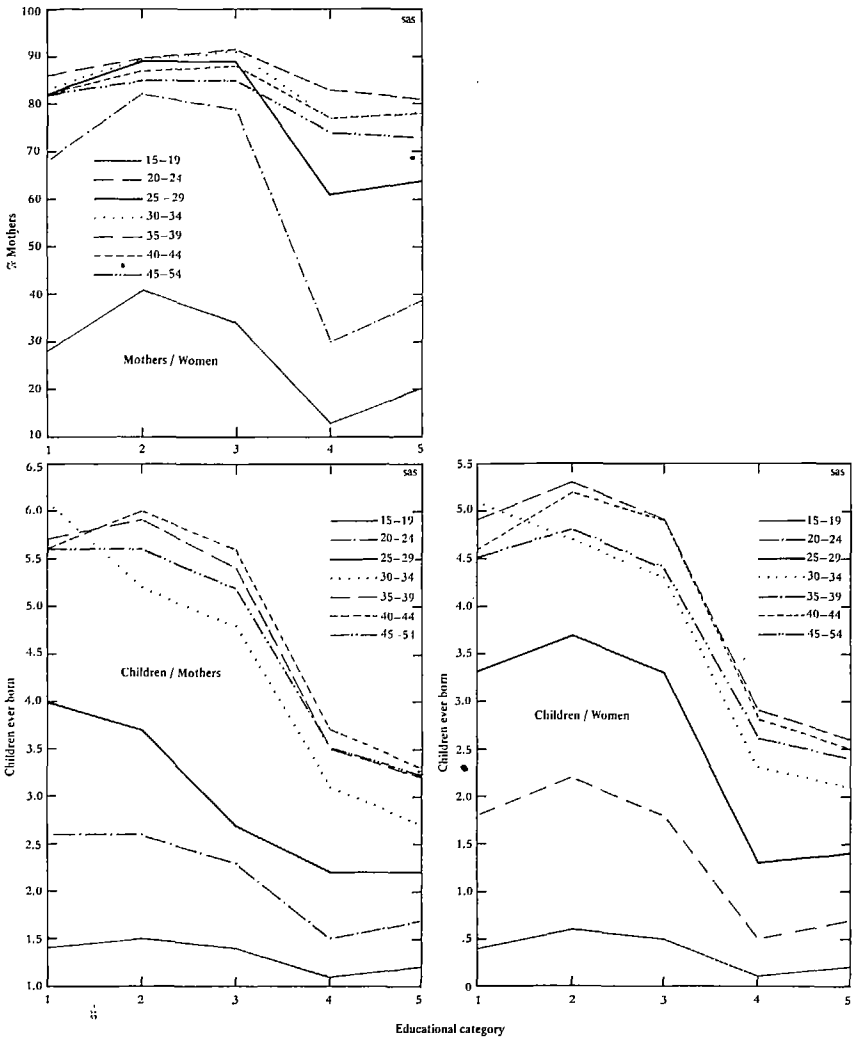
The period spent in childbearing, as illustrated by the difference in years between average age at first and last birth, is revealing. The time span for the parish of Kingston is significantly lower than that of other parishes. With a period of five years of childbearing these women spend one half the time that women in St. Andrew spend in childbearing. Women in the remaining parishes spend between twelve and fourteen years in childbearing.

It should be noted that the potential biological period of childbearing is approximately thirty years, so that women in Kingston are in fact utilizing one sixth of this time, while those in St. Andrew spend one third. In none of the remaining parishes is the actual period spent in childbearing even equal to one half of the biological time span. St. Ann, Trelawny and Hanover all have periods of fourteen years. St. Ann is of special interest as it was a parish of very high fertility and this long interval for women of the 1916-25 birth cohort, is in keeping with those high levels.

TABLE 6.10 PROPORTION OF WOMEN WHO ARE MOTHERS, CHILDREN PER MOTHER AND PER WOMAN, BY EDUCATIONAL ATTAINMENT OF WOMEN AGE 15-54, JAMAICA, 1970

Group	Mothers/Women					Children/Mothers					Children/Women				
	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V
15-19	.283	.412	.342	.129	.204	1.356	1.484	1.369	1.110	1.240	.384	.611	.468	.143	.253
20-24	.684	.825	.785	.298	.392	2.574	2.648	2.328	1.529	1.702	1.760	2.185	1.828	.455	.667
25-29	.824	.894	.893	.609	.637	4.047	4.192	3.668	2.203	2.237	3.335	3.746	3.274	1.342	1.424
30-34	.833	.894	.908	.768	.785	6.109	5.257	4.760	3.055	2.726	5.087	4.697	4.324	2.346	2.141
35-39	.862	.892	.907	.827	.808	5.702	5.905	5.448	3.488	3.164	4.914	5.266	4.939	2.883	2.556
40-44	.820	.866	.882	.771	.778	5.580	5.958	5.603	3.698	3.280	4.574	5.160	4.939	2.850	2.552
45-54	.818	.847	.847	.741	.734	5.570	5.622	5.216	3.473	3.262	4.554	4.759	4.420	2.572	2.394

Note: Category I - No schooling or Infant school only  
 Category II - Four years and under of Primary school  
 Category III - Four years and over of Primary school  
 Category IV - School Leaving Certificate (completion of Primary school)  
 Category V - Secondary school and higher education



**Figure 6.9 – Proportion (%) of women who are mothers, children per mother and per woman, for women age 15-54, by educational category, Jamaica 1970.**

Kingston is an example of a relatively late commencement and very early termination-events which must influence completed family size. It also demonstrates the compression of the several events (births) into a short period of time (for an elaboration on this point see Figure 6.3, children ever born per mother for women age 45-54).

### Differentials by education, 1970

Education has consistently been proved to produce one of the most important types of differential fertility. With an increase in education, particularly above the primary level, fertility declines begin to appear in most societies.

Elementary or primary education has been free since 1893, but compulsory school attendance has never been rigidly enforced. Secondary education on the other hand has only been free on a limited basis since 1972.

The differentials treated here are those that emerge from the 1970 Census which made use of detailed classifications of educational attainment. See Table 6.10. The educational categories as used in our discussion represent groupings of the detailed classes recognized in 1970 and are as follows:

- Category I No schooling or Infant school only
- Category II Four years and under of Primary school
- Category III Four years and over of Primary school
- Category IV School Leaving Certificate (completion of Primary school)
- Category V Secondary school and higher education

The proportions of women within the several age groups who are mothers appear in Figure 6.9. There is a basic pattern underlying the fertility differentials in all age groups. Proportions in category II are in excess of those for category I, then there is a decline to category IV, after which there is again a slight rise. So that although there is a general reduction in fertility as educational attainment rises, this pattern is broken at both ends of the distribution. The differential is most pronounced within the age group 20-24. From a level of 68 per cent for category I there is an increase to 82 per cent for category II, followed by a steep reduction to 30 per cent for category IV, while for women at the top of the educational scale the proportion who are mothers moves up to 39 per cent. In general the differences between categories I and II tend to be more in evidence among the younger women, for whom also the rise between categories IV and V is more conspicuous. It is possible that differentials in the age at the formation of unions contribute to these patterns of proportions who are mothers.

Rates of children per mother are also presented in Figure 6.9. These show much more clearly than the first component a tendency for fertility to fall as we move up the educational scale, although the rise between categories I and II, a prominent feature of the first fertility component, is less evident at some of the higher age groups. For all age groups the difference in family size between the lowest and the highest educational categories is marked.

TABLE 6.11 PROPORTION OF WOMEN WHO ARE MOTHERS, CHILDREN PER MOTHER AND PER WOMAN BY MAIN ACTIVITY OF WOMEN AGE 15-54, JAMAICA, 1970

Age Group	Mothers/Women			Children/Mothers			Children/Women					
	Worked	Seeking first job	Others seeking work Home duties	Worked	Seeking first job	Others seeking work Home duties	Worked	Seeking first job	Others seeking work Home duties			
15-19	.261	.254	.393	.463	1.309	1.269	1.381	1.407	.342	.322	.543	.652
20-24	.561	.612	.755	.861	1.971	1.895	2.177	2.522	1.106	1.159	1.643	2.172
25-29	.766	.836	.873	.929	2.930	3.210	3.408	3.965	2.243	2.685	2.976	3.684
30-34	.841	.904	.885	.932	3.822	3.992	4.194	5.107	3.216	3.610	3.711	4.760
35-39	.854	.849	.884	.927	4.427	3.932	4.735	5.829	3.782	3.337	4.184	5.404
40-44	.836	.846	.852	.895	4.639	5.046	5.026	6.006	3.878	4.270	4.285	5.374
45-54	.798	.865	.811	.868	4.607	4.781	4.606	5.675	3.678	4.135	3.737	4.924

Thus for mothers aged 25-29 the average number of children ever born for those in category I (4.0) is nearly twice that value for mothers of category V (2.2). Again for mothers aged 30-34, the average family for those at the lowest level of the educational scale (6.1) is more than twice that for those in category V (2.7). The general pattern is that between categories II and IV very pronounced differentials are in evidence. In other words it is only after four years of formal schooling that notable reductions in family size tend to appear.

Overall fertility rates, that is children ever born per woman, combining the patterns of the two components discussed above, show quite clearly the rise in rates between categories I and II: only in the case of the age group 30-34 is this not distinct (Figure 6.9). For all age groups the marked differentials between categories II and IV emerge, while the upturn between categories IV and V appears for the three youngest age groups. In conclusion it may be said that although there is a firm negative association between family size and level of educational attainment, the relationship is not regular, being less in evidence at the two ends of the educational scale.

#### **Differentials by economic activity, 1970**

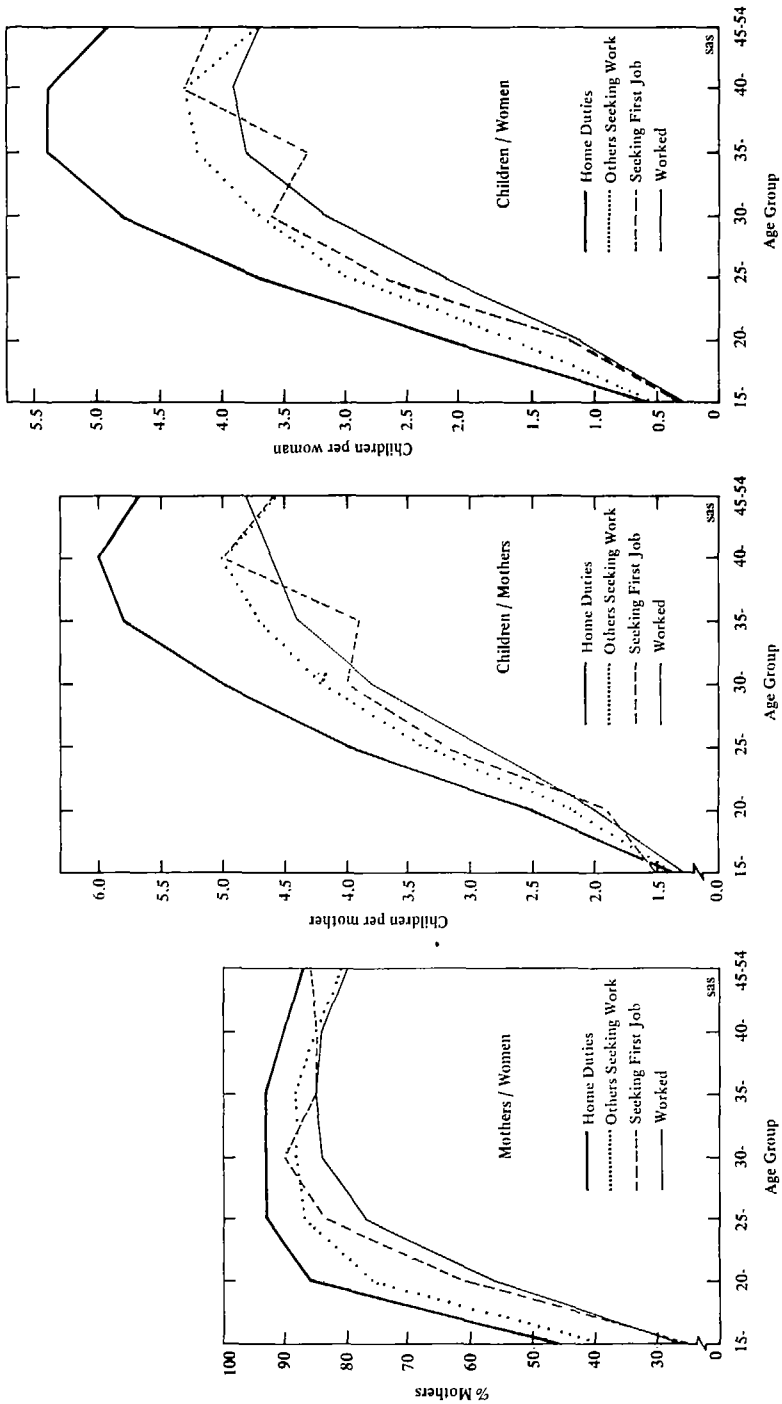
The level of female participation in the working force is accepted as being of marked relevance to fertility performance and the female population classified by main activity is used here to illustrate these levels. See Table 6.11. Figure 6.10 shows the proportions of women who are mothers at various ages by main activity of mother at 1970. Of women 15-19 classified as worked, 26 per cent are mothers, the corresponding proportion of women aged 20-24 is 56 per cent. The curve increases steadily to ages 30-34 after which it begins to level off. The peak is attained by the age group 35-39 when 85 per cent of the women classified as working are mothers.

For women classified as seeking their first job, the curve for the proportions of mothers is more regular, peaks earlier (30-34 years) and declines more steeply. The highest proportion — at what can be viewed as the mid point of the child-bearing span — 30-34 is 90 per cent. In contrast to working women and those seeking their first job, women classified as others seeking work, show markedly higher proportions as mothers at early ages.

At the commencement of childbearing these are 39 per cent and then rise steeply to 76 per cent by ages 20-24. Thereafter, the rise is more gradual with a levelling off from age 25.

In contrast to women who are economically active, those engaged in home duties show, as is to be expected, much higher rates of mothers per woman. As with others seeking work, rates are high at early ages. The peak is attained early, under 30, and then the curve levels off and declines gradually after 39 years. Rates of mothers for ages 25-30 are 93 per cent.

For all classifications then we see a relatively constant pattern of fairly low



**Figure 6.10 — Proportion (%) of women who are mothers, children per mother and per woman, by main activity of women age 15-54, Jamaica, 1970.**

rates at early ages. These rise rapidly so that high rates of motherhood are in evidence by ages 30-40 after which there is a slight decline up to age 44 years.

Rates for women over 45 show high levels of sterility. These stand at 80 per cent for working women, 86 per cent for those seeking their first job and 81 per cent for others seeking work. Women engaged in home duties have a rate of 87 per cent.

Numbers of children per mother by main activity are presented graphically in Figure 6.10. The curve for working mothers shows a fairly steady rise in numbers of children from 1.3 per mother at ages 15-19 to 4.6 by ages 40-44. For mothers classified as seeking their first job, the reverse "J" shape of the curve is distinct from age 30-35, after which there is a rise to a maximum of 5 children per mother by age 40. Rates for others seeking work are higher but similar in shape to those classified as worked.

Significantly higher rates obtain for women classified as engaged in home duties. At ages 20-24 there are 2.5 children and at 30-34, 4.0 or 38 per cent more than those of working mothers. Their 5.0 children at ages 30-34 and 5.8 at 35-39 are 32 per cent higher than corresponding rates for working mothers of both age groups. By ages 40-44 mothers engaged in home duties have 6 children each, a rise of 1.4 children or 30 per cent over those for working mothers.

Rates of completed family size by main activity of mother, as shown by women aged 45-54, are all above 4.5 children. Working mothers and others seeking work have the smallest families, 4.6 each, while those seeking their first job have families of 4.8 children. Mothers for those classified as engaged in home duties, have large families of 5.7 children. This is 1.1 children or 24 per cent more than working mothers and others seeking work.

Children ever born per woman at various ages is discussed next and appears in Figure 6.10. For women classified as working, rates are moderate with a maximum of 3.9 children per woman by the end of the childbearing span. The rates are low at ages under 25, 0.3 children at 15-19 and 1.1 at 20-24. They then rise steeply so that at 40-44 there are 3.8 children per woman. Women seeking their first job show the same rates as working women at ages under 20, that is 0.3 children. However, by ages 20-24 and 25-29 the rates are slightly over, 1.2 and 2.7 respectively, those for working women. By ages 30-34 there are 3.6 children per woman, an increase of 1.4 children over the earlier classification. For the next age group women seeking their first job have 0.5 children less than working women while at the terminal age group the rate is 4.3 children per woman. Those women classified as others seeking work are, except at ages 35-39, similar to women seeking their first job.

As in the case of children per mother, women classified as engaged in home duties show rates markedly higher than those obtaining for the other three classifications. The difference is most marked at ages over 25. The rate of 3.7



children at 25-29 is 0.7 more than for those classified as others seeking work and at ages 35-39 and 40-44 women engaged in home duties have 5.4 children. This represents increases of 1.2 and 1.1 respectively over the rates of the same ages for others seeking work.

Completed family size of children ever born per woman clearly shows rates well above those of low fertility societies. For women classified as worked and others seeking work the rates are 3.7 children. Those seeking their first job have 4.1 children and for women engaged in home duties there are 4.9 children per woman. It is evident that economic activity plays a significant role in lowering fertility rates as these parameters show considerably lower rates for women who are classified as worked.

### Fertility differentials by union type

Another form of fertility differential worth examination is the size of family by the type of union in which the woman is involved. In most societies refinements, designed to limit the analysis of fertility to women at risk of childbearing and at the same time to consider associated aspects such as the formation and duration of family unions can satisfactorily proceed by concentrating on women in formal married unions. But such an approach is not adequate in the context of West Indian populations where a substantial proportion of childbearing takes place outside of formal married unions. In these societies the study of fertility must take into account the fact that family types other than formal married unions exist and that distinctive patterns of fertility may be associated with the types recognized.

In analysing fertility in Jamaica therefore, the fact that so much childbearing takes place outside of formal marriage must be given due weight. Consequently such analysis has to include the experience of all women at risk of childbearing, irrespective of the type of family union that gives rise to it. The three-fold division into married, common-law and visiting affords an adequate means of relating fertility to all women at risk of childbearing.<sup>3</sup>

The first type, the married, is the only type of union enjoying legal sanction; it also of course signifies that the partners share a common household. The second type, the common-law is marked by the absence of legal sanction, although the partners do share a common household. The third type, the visiting, is a non-residential one, characterized by the absence of legal sanction and by the fact that the partners do not share a common household. The common element in these three types is that all women participating in them are

<sup>3</sup>For discussion of these issues see G.W. Roberts, *op cit.*, and *The Population of Jamaica*, Cambridge University Press, 1957: G.W. Roberts and L. Braithwaite, "A Gross Mating Table for a West Indian Population", *Population Studies*, Vol. XIV, No. 3, January, 1961.

TABLE 6.12 PROPORTION OF WOMEN WHO ARE MOTHERS, CHILDREN PER MOTHER AND PER WOMAN, FOR WOMEN AGE 15-54 BY UNION STATUS, 1943, 1960 AND 1970

Age	Mothers/Women			Children/Mothers			Children/Women		
	1943	1960	1970	1943	1960	1970	1943	1960	1970
15-	.598	.673	.691	1.389	1.485	1.492	.831	.999	1.028
20-	.742	.811	.820	2.363	2.357	2.304	1.753	1.913	1.890
25-	.793	.863	.898	3.376	3.376	3.492	2.678	2.914	3.134
30-	.826	.877	.931	4.357	4.294	4.650	3.601	3.764	4.327
35-}	.868	.873	.927	}	5.171	5.480	}	4.513	5.081
40-}	.855	.855	.904		5.599	5.862		4.785	5.301
45-54	.879	.847	.882	6.451	5.805	5.475	5.670	4.917	4.828
				<u>Common-Law</u>					
15-	.498	.606	.737	1.443	1.476	1.554	.719	.894	1.145
20-	.674	.794	.900	2.286	2.333	2.587	1.540	1.852	2.328
25-	.758	.842	.938	3.177	3.289	3.928	2.410	2.768	3.683
30-	.803	.843	.932	4.035	4.028	5.032	3.242	3.396	4.687
35-}	.844	.828	.921	}	4.486	5.592	}	4.214	5.149
40-}	.824	.824	.882		4.990	4.807		5.598	3.963
45-54	.854	.810	.842	5.569	4.845	5.154	4.758	3.923	4.340
				<u>Partner</u>					
15-	.104	.180	.236	1.193	1.213	1.277	.124	.218	.302
20-	.365	.554	.510	1.749	1.826	3.003	.638	1.011	1.533
25-	.482	.697	.669	2.486	2.562	3.018	1.199	1.787	2.018
30-	.560	.748	.704	3.108	3.155	3.794	1.740	2.361	2.672
35-}	.648	.786	.696	}	3.576	4.207	}	2.533	2.810
40-}	.803	.803	.642		3.906	3.921		4.069	3.151
45-54	.732	.836	.570	4.638	4.170	3.442	3.397	3.485	1.963

at risk of childbearing, that is, the partners to the union are in sexual relationships, irrespective of whether or not they share a common household or are involved in a union bearing full legal sanction.

Because of the distinctive features of each type and different ages at which they are established, it is to be expected that interesting fertility differentials by type of union will emerge. But analysis of these differentials is by no means straightforward, largely because of the movement of women from one type of union to another in the course of their passage through the childbearing span. Indeed this element of the mating pattern of the region leads to interesting interpretative problems in the study of fertility.

While there is clearly an advantage in applying to the analysis of differentials by union type the approach used so far, this topic poses special problems with regard to one of the two fertility components used; that is the proportion of women who are mothers. The reliability of this measure depends on the accuracy with which we can identify all women within that category as well as women within the category who are mothers. Census material affords accurate estimates of numbers of women married, as well as numbers in common-law unions, and in all three types of union, the identification of those who are mothers presents no serious difficulty. However, the determination of numbers of women who are actually in visiting unions, is not easy at a Census enumeration. It is impractical to introduce into a Census schedule questions about the formation and duration of visiting type unions.

In fact, several groups of women have to be combined in order to arrive at estimates of numbers in visiting unions. The fact that the proportion of women who are mothers in this type of union is so small by comparison with similar data based on the other types of union, strongly suggests inadequacies in estimates of total numbers in that union type. For this reason, no comparative analysis of the first component, the proportion of women with children, is considered here. As will be seen from Table 6.12, the proportion of women in visiting unions who are mothers is, especially at younger ages, much too small by comparison with the corresponding values for the other two unions, to represent the true position of this type. Nevertheless the pattern of an increase between 1943 and 1960, followed by a slight fall in the succeeding decade, which appears in so many fertility situations, is a prominent feature of proportions of women who are mothers among those classified as visiting. In the case of the common-law and married types, where the first component remains valid, two features are in evidence. There is a steady rise from 1943 to 1970 for both of these types. Again, while the proportions who are mothers show higher values for married than for common-law types in 1943 and 1960, the advantage lies with the common-law in 1970.

It is necessary here to concentrate on the measure of children ever born per mother, (Figure 6.11). In the first place there is a clear contrast between married

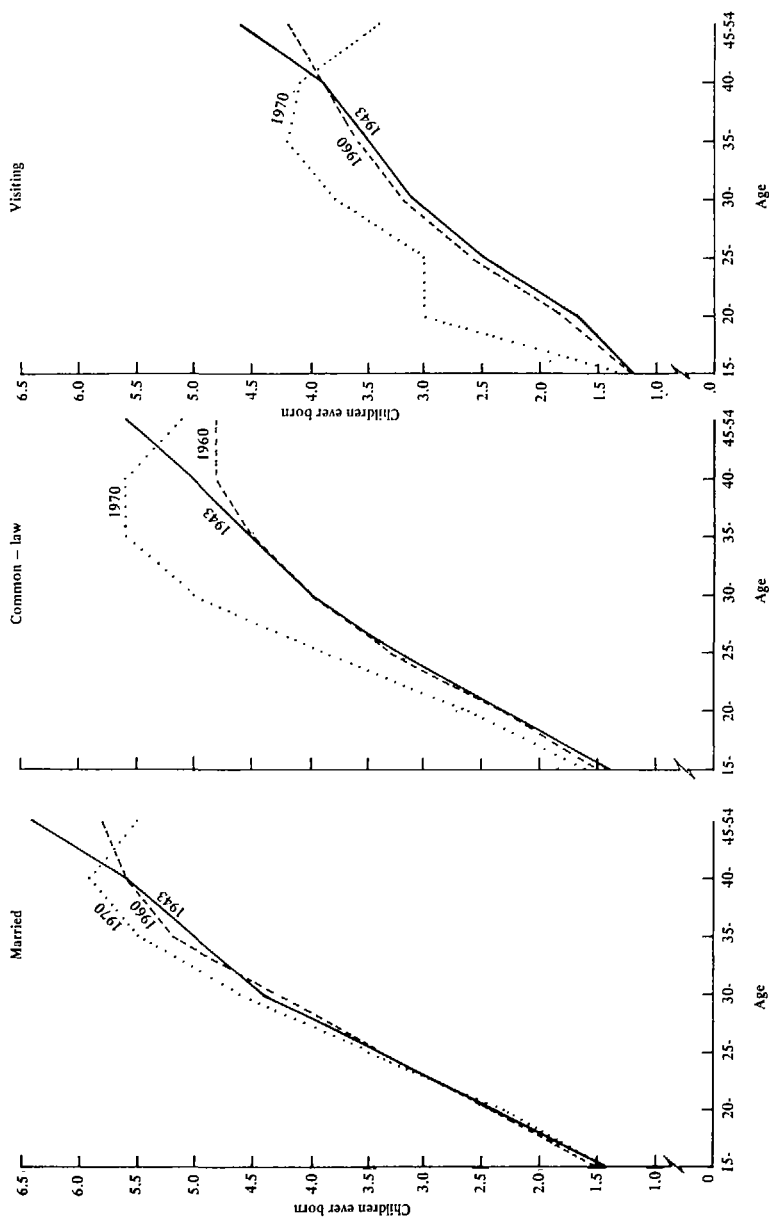


Figure 6.11 — Children ever born per mother, by union status of women age 15-54, Jamaica, 1943, 1960 and 1970.

and common-law on the one hand and visiting on the other. Values for the first two considerably exceed those for the visiting. But more interesting is a comparison between the married and common-law rates. In an earlier study, attention was drawn to the fact that at younger ages, under age 35, children ever born per mother is higher for the common-law, whereas at higher ages the advantage lies definitely with the married woman.<sup>4</sup> This pattern is well defined in many populations of the Eastern Caribbean, but not clearly evident in Jamaica. It is true that the rates for 1943 and 1960 show that under age 20, common-law mothers have higher values than married, but the differential does not hold at higher ages. However, in 1970, the differential noted for Eastern Caribbean populations at earlier Censuses, is clearly defined for Jamaica. Indeed, the differential observed here puts the common-law rates above the married for almost the entire range of childbearing span. Up to the age group 40-44 in fact, the common-law has a clear advantage over the married, and only in the age group 45-49 does there appear to be a higher value for the married. When we compare the position for these two types with that for the visiting union, the much lower position of the latter is clear; this holds for all three Census dates. The rate for the age group 20-24 for 1970, it should be noted, puts the visiting type as higher than the other two. This seems to be part of the rise in rates for visiting women that can be seen over the period covered by the three Censuses. It is also important to note that appreciable rises characterize rates for common-law mothers, and, to a lesser extent, for married mothers.

The summary position for women of completed fertility shows highest rates for married types at all three Censuses; this holds for both proportions who are mothers and rates of children ever born per mother. But the differentials with respect to type, change somewhat over time. Thus, the differential between married and common-law stands at 16 per cent and 20 per cent respectively for the Censuses of 1943 and 1960 respectively, but falls to 6 per cent by 1970. By contrast, the differential between married and visiting stands at 39 per cent for both 1943 and 1960, but moves up considerably to 59 per cent for 1970. In terms of movements over time, the rates for married unions decline from 6.5 in 1943 to 5.8 in 1960 and to 5.5 in 1970. In the case of common-law unions, the average family size stands at 5.6 in 1943, then declines appreciably to 4.8 in 1960 and then rise to 5.2 by 1970. The steady decline that characterizes the visiting type is much more marked than in the case of the married. For the former, the reduction between 1943 and 1970 is about 26 per cent as compared with a fall of 16 per cent for the married.

The pattern of the differential by type of union seems to conform to that noted in other studies.<sup>5</sup> That is, there is in general a rise as we move from the visiting to the common-law and the married. But there are patterns in the

<sup>4</sup>See G.W. Roberts, *Fertility and Mating in Four West Indian Populations*, *op. cit.*

<sup>5</sup>See G.W. Roberts, *op. cit.*

differentials which are absent from earlier experience. Moreover, the unexpected differential between married and common-law family sizes among women of childbearing age does not seem to be in accord with one hypothesis put forward by Roberts concerning the situation in 1960, as exemplified in the fertility performance of population of the Eastern Caribbean. This states that a measure of selectivity may be involved in the shift from common-law to married unions; that in fact it is the women with larger families who tend to marry, that the average age at which this shift tends to take place coincides with the age at which there is a reversal in the differential between married and common-law family sizes. But much closer analysis of the differential as of 1970 has to be done and in addition comparisons must be drawn with other West Indian countries before it can be definitely concluded that the most recent position, as revealed by the 1970 Census, marks a fundamental departure from earlier conditions.

### Conclusion

While the outstanding feature of this analysis of fertility has been the marked rise experienced throughout the island, especially over the decade 1960-70, equally significant has been the tendency for the urban-rural differential to become less prominent. In other words, the rise in the main urban centre has been much greater than the rise in rural parishes. Indeed there would seem to be also slight rises in other parishes in which fairly large urban centres are located, notably St. James and Manchester. The question has now to be considered, Is this recent fertility pattern evidence of an impending reversal of the well-known urban-rural differential, or is there some more plausible interpretation of the situation?

It is not intended to embark on an interpretation of the position, for the material on which such an analysis should be based is as yet not available. But a few remarks on two relevant aspects which have to be considered in seeking answers to these questions should at this stage be offered. One of these is the possibility that improvements in health and the general control of disease during the past few decades has been most successful in urban centres. The available evidence supporting better control of mortality in urban than in rural populations points as well to closer control of infectious diseases, and this probably holds for venereal infections as well, although the post-1970 situation here seems to be one of an increase to probable early levels. It is possible that reductions in infections of this nature have been most pronounced in urban areas, where health facilities are best. Such a development would mean a material contribution to overcoming high levels of sterility and sub-fecundity.

Another fact which seems relevant to these fertility movements has been the extensive migration into urban centres in recent years. It is true that by far the most prominent of these has been the influx into St. Andrew, but clearly there has been some movement into other parishes with fairly large urban centres,

even though these may have been counterbalanced by out-migration, largely to Kingston-St. Andrew. It can be argued that this rural to urban migration involves large proportions of females of high fertility, thus resulting in appreciable settlements of such females in urban centres. At this stage conclusive evidence to this effect is lacking, but the appreciable in-migration from western parishes into Kingston-St. Andrew, reviewed in Chapter 3, may be an indication that developments along these lines have taken place. A close study of the relationship between internal migration and fertility may help to clarify the recent tendency for the urban-rural differentials to decline.

Sonja A. SINCLAIR

## CHAPTER 7

### GROWTH PROSPECTS

One issue that remains to be faced now is what the foregoing survey of demographic changes implies for the country in terms of population growth. It is manifest that an indication of what growth may take place will prove of interest to many agencies of the society, both Governmental and private. For instance, an estimate of the school age population, say for the 20 years following 1970, should prove of vital use to educational planners as well as to industries catering for members of this age group. Similarly economic planners require estimates of population over this period, so that future changes in the size and structure of the working force can be integrated into their plans. Such estimates also furnish material on which to construct estimates of the demand for housing, for transport, for communication, and for many social services that a modern community requires. Further, assessment of future population, together with assumptions of internal migration (much of which, incidentally, proceeds in response to public and private plans for internal development) can be made to yield estimates of growth of the metropolitan centre, which also are of importance to social and economic planners. It is the purpose of this Chapter to consider this question of the growth of the island's population, in terms of Projections based on certain assumptions. In doing this, it is instructive to consider briefly some broad factors that may be influencing the strictly demographic variables, the future course of which has to be mapped in order to construct these Projections.

#### Some General Considerations

While the periods of growth that we have identified have been discussed in demographic terms, mainly indeed with regard to the magnitude and direction of external migration, they have to be linked to wider processes of change. The strictly demographic forces characterising each period, whether external migration, mortality or fertility, are, to a large degree, functions of economic, social and political factors. Economic and social developments outside of the island have, as has been argued, played a dominant role in population movements. Above all, the entire Caribbean has been controlled by the shifting fortunes of the sugar industry and the conditions imposed in virtue of its status as a plantation society under European domination. When the demand for this commodity was high, attention of the planters was focused on augmenting their stock of cheap plantation labour by indenture immigration. In the main this was the



policy followed up to the late 19th century. But when, towards the close of that century, the Jamaican sugar industry was threatened by growing competition from cane sugar grown in Cuba and other sources as well as by beet sugar from Europe, Jamaica, like the other countries of the West Indies, experienced a marked economic setback, which was reflected in a halt in immigration. As the decline in the fortunes of sugar coincided with other external conditions favourable to emigration, we have after 1880 a new phase of external migration, precipitated at once by the shrinking demand for sugar and the opening of economic opportunities in Panama, Costa Rica and Cuba. Easy access to the rapidly expanding economy of the United States also constituted an important stimulus to this outward drift. This important phase came to an end with the appearance of another set of external forces: the introduction of the Quota Laws in the United States in 1921 and 1924, and the completion of the expansion projects in neighbouring Latin American countries. In recent times heavy demand for labour in post-war Britain, coupled with free access to that country, induced another important stream of emigration. Apart from the self-evident effects of these movements on the size and composition of the island's population, they led to the receipt of considerable remittances from abroad, and also influenced consumption patterns as well as raising the society's levels of aspirations — all of which are forces making for social change in the society.

Likewise developments within the island itself have contributed and are contributing materially to social and economic changes which it has experienced. These have been effected mainly through differential rates of growth of the several parishes, and pronounced areal re-distribution of the population, much of this taking the form of urbanisation. It was largely due to the establishment of the banana industry that the growth of small towns such as Port Antonio, Port Maria and Oracabessa can be traced. The necessity of having ports near to the cultivations from which the highly perishable fruit could be exported led to the creation of port facilities at these towns, which in turn made the latter easy points of departure for emigrants.

Further, the more recent spread of tourism in the Montego Bay area has produced a sizeable concentration of population which has affected the entire parish of St. James. Again, Manchester has been strongly influenced by the bauxite industry to which must be traced the expansion of Mandeville and the changes in occupational structure which this new industry called for. In view of all these changes it seems justified to argue that any proposed economic schemes to be set in motion in the west of the island, especially in St. Elizabeth, will induce marked changes there as well. For instance it is conceivable that the expected demand for skilled labour by these new industries cannot be met from the present population of this parish, largely because of its low educational status. This parish has long shown very low levels of education by comparison with others. This situation may mean a considerable in-migration into this parish, an influx which may, among other things, induce declines in fertility.

Just as important as the foregoing are developments within the Kingston-St. Andrew metropolitan centre itself. This rapidly expanding urban area supports in 1970 about one-third of the island's population and the evidence suggests that the near future will witness an acceleration of its growth. To be sure, its central portion, now the focus of commercial activity, is undergoing some reduction in the size of the population within it. Urban renewal plans directed towards its waterfront area will undoubtedly enhance commercial activity within Kingston proper, whether or not this is accompanied by a stabilisation of its population. But as the scale of commercial activity increases in the metropolitan centre, so will the demand for labour, and this will lead to a spread of the suburban area as well as to denser settlement within certain of its strictly residential sections. The latter tendency will be further accentuated by the policy of developing the region straddling the Spanish Town Road, from Kingston up to Spanish Town itself, as an industrial area. An inevitable consequence of this will be the extension of the urban centre into St. Catherine, constituting one large metropolis embracing both Kingston-St. Andrew and Spanish Town.

While a considerable concentration within Kingston-St. Andrew is in process, other smaller urban centres are also increasing, to add to the overall growth of the island's urban population. Such smaller towns as Montego Bay and St. Ann's Bay, which depend mainly on the tourist industry, will continue to increase in size if this industry continues to expand. Similarly, enhanced activity on the bauxite front may be reflected in further expansion of Mandeville.

Shifts in population expected to result from the foregoing conditions, all essentially aspects of accelerated urbanisation, will mean a still further reduction in the proportion of the rural population proper, that is the population living outside of the major and minor towns of the island. The degree to which the metropolitan area has, within recent years, come to dominate population growth can be illustrated by tracing from the late 19th century up to 1970 the shrinking role played by the rural parishes in recruitment of the population in Jamaica as a whole; these consist of the twelve parishes, exclusive of Kingston and St. Andrew. This is summarised in Table 7.1. From this it will be seen that up to 1921 the rural parishes accounted for well over 90 per cent of the total natural increase occurring in the island, the highest proportion (97 per cent) being that for the decade 1911-21. The decline in the proportion of the natural increase contributed by rural parishes since then has been pronounced. In 1921-43 it was down to 89 per cent; in 1943-60 it fell still further to 75 per cent; and in the most recent decade, 1960-70, it was reduced to 66 per cent. Thus at present it can be said that the metropolitan area of Kingston-St. Andrew is responsible for more than one-third of the total natural increase of the island. And when the contributions of other smaller urban and semi-urban centres are taken into account the total of the natural increase taking place within all of the urban areas probably amounts to about 40 per cent of the island's total. On the other hand the contribution of rural parishes to the island's overall growth in the

TABLE 7.1 CONTRIBUTIONS OF NATURAL INCREASE, EXTERNAL MIGRATION AND INTERNAL MIGRATION TO GROWTH OF JAMAICA'S POPULATION, AND CONTRIBUTIONS OF ITS RURAL POPULATION TO TOTAL NATURAL INCREASE AND TO TOTAL POPULATION OF THE ISLAND, 1881-1970

Period	Annual Movements in Rural Population				Annual Movements in Total Population		% of Total Increase Contributed by rural population
	Annual Gain (+) or Loss (-)				Natural Increase	Net Inter-Intercensal Increase	
	Natural Increase	Internal Migration	External Migration	Net Inter-Intercensal Increase			
1881-91	7,900	-1,200	- 2,100	+ 4,600	8,300	5,900	78.0
1891-1911	11,000	- 800	- 1,800	+ 8,300	11,800	9,600	86.5
1911-21	10,100	-1,400	- 6,500	+ 2,200	10,400	2,700	81.5
1921-43	14,300	-3,100	+ 600	+11,800	16,100	17,200	68.6
1943-60	25,100	-6,200	- 7,700	+11,300	33,400	26,600	42.5
1960-70	34,800	-7,100	-15,000	+12,700	53,100	23,900	53.1

Note: The rural population is defined here as the populations of the 12 parishes excluding Kingston and St. Andrew

intercensal intervals (that is growth due to natural increase as well as to external migration) has come down drastically over the past 90 years. The proportion for the latest decade is 53 per cent.

It may be safely inferred that changes of the foregoing nature constitute sure indications that fertility declines are impending. In the period 1911-21 the two urban parishes of Kingston and St. Andrew accounted for 12 per cent of all births in the island, whereas the corresponding proportion for the decade 1960-70 is up to one-third. The much lower levels of fertility in urban areas therefore lead one to assume that progressive urbanisation will be accompanied by clear falls in fertility for the island as a whole. Urbanisation is of course a complex process, which emerges in response to economic and social forces, and which in turn institutes changes in value systems and behaviour patterns inherent in which are small family norms and other factors that will contribute towards the overall reduction in fertility.

To the foregoing must be added the programmes of fertility control, which may be taken to be closely linked to policies of social change, but which provide in their own right two elements which are also to be classified as positive contributions towards fertility reduction. The first of these covers the provision of contraceptive services on as wide a basis as possible. The second takes the form of comprehensive campaigns to inculcate in the population the advantages of small families and induce them to take steps necessary to achieve such family size. As at present conceived, the latter element is envisaged as wide in scope, extending from the provision of sex-education in schools to campaigns aimed at the adult populations of working and childbearing age. While the contraceptive services now available involve only the usual methods such as the condom, the pill, the IUD and the injectables, large scale provision of facilities for sterilisation is contemplated. Moreover, although at present there is some doubt as to the legality of abortions performed under prevailing laws of the country, there are strong efforts being made by many interests in the society to have these laws changed so that abortion can be performed by qualified medical personnel under proper aseptic conditions, thus making resort to the dangerous course of illegal abortion unnecessary.

The combination of the foregoing forces suggests that fertility falls are to be expected, although there is little concrete information from which to deduce rates of decline within specified time intervals.

### **Mortality**

The survey of mortality in the island in Chapter 5 has shown the considerable improvements in the past decades, resulting in the present position being not far removed from the experience of some European populations. It may be said that it is among children under 5 and in particular among infants that the greatest possibility of further reduction lies. Rates of infant mortality are lowest

within the Kingston-St. Andrew area and highest in the western sectors of the island. Presumably one factor that may help to redress the marked parish differential is the programme of industrial development being worked out for parishes in this area. Despite limitations in the available data on cause of death, these are sufficiently reliable to emphasise that the existing pattern in the island conforms fairly closely to that which now characterises the industrialised societies. This signifies that deaths from degenerative diseases are now the major elements of mortality, while the infectious diseases tend to show reductions in relative importance. There is in fact some further room for improvement in mortality in general, but it is doubtful whether at this stage of the island's demographic evolution, much gain in growth rates can be expected from falls in mortality. Indeed it is possible that the expected falls in levels of fertility will lead to gradual rises in crude death rates as the proportion of aged populations increases. The conclusion is that, although some improvement in mortality is possible, the island now stands at a level sufficiently close to European experience to suggest that further falls will have no marked impact on its reproductive capacity.

### **External migration**

If the very considerable part played by this component of growth in Jamaica after World War II does in fact come to an end in the near future, this will profoundly alter the prospects for growth in Jamaica. In the past 30 years external migration, in the form of emigration, first to the United Kingdom, then to the United States and Canada, has served as a powerful curb on growth. With the cessation of the movement to the United Kingdom and the slowing down of that to Canada, there has been some limiting of this component. Should the still sizeable movement to the United States be halted by moves now being made by Congress to curb this influx, then the country will be faced with the problem of catering for massive accessions to the working force.

Apart from the small movements of domestic workers to Canada, all emigration from Jamaica has so far been at the initiative of individual emigrants, and at their own expense. Whether or not an element of financial or other type of support is involved in any future scheme of substantial emigration, it seems evident that only through some agreement with another country to accept emigrants from Jamaica can substantial emigration be resumed. Indeed a case can be made out for a policy which explicitly seeks to secure from a foreign country agreement for it to accept, over a period of years, migrants on a scale that would affect some relief to the island in the form of a loss of persons of working age. Emigration thus appears as one component which can certainly curb rates of population growth until such time as the anticipated falls in fertility work themselves sufficiently through the upper ages of the population.

Such a policy may however command only limited support. In the first place it may involve the loss of skilled and professional groups, which the

country can ill afford. For even though, conceivably, emigration may be the subject of some bilateral agreement, the receiving country may impose conditions as to the composition of the emigration it is prepared to accept. If one of the conditions turns out to be that the emigration stream agreed on must contain sizeable amounts of skilled and professional personnel, this may mean an appreciable loss to Jamaica. Secondly, an agreement of this nature involves in effect foisting one of the country's major problems onto another and this again may prove a policy that does not meet with wide approval.

It should be emphasised however that the assumptions made for these Projections are purely illustrative and made without any reference to issues of policy.

### Assumptions for Framing Projections<sup>1</sup>

Results of population Projections incorporating seemingly reasonable expectations of trends of the three components of growth – fertility, mortality and external migration – serve the useful purpose of showing the consequences of growth in terms of population size and age and sex composition. This can most conveniently be carried out for the period 1970-90.

The assumptions made with respect to future fertility movements are two in number. The first assumes that the age specific fertility rates of 1969-70 continue unchanged up to 1990. The second is that some appreciable declines take place between 1970 and 1985. By the latter date the island is assumed to achieve a net reproduction rate of unity, roughly a two child family and that the present family size (in terms of period rates) of about 5 children will fall as follows;

- 1970 family size of 5 children
- 1975 family size of 4 children
- 1980 family size of 3 children
- 1985 and later years family size of 2 children

With regard to mortality, it is certain that some improvements can be counted on. But these will have very little effect on rates of growth and all that is assumed here is that the levels of mortality revealed in the provisional life tables of 1969-70 will remain unchanged to 1990.

Two assumptions are made with respect to external migration. One is that the population is not affected by this factor; the second is that for each year to 1990 some emigration takes place. The latter, in the form of rates calculated for 1970 on the basis of an emigration of 15,000 males and 5,000 females for that year, is somewhat lower than the average annual outflow during 1960-70. The age distribution of emigrants applied is that shown by emigrants from Jamaica during the years 1953-5. A combination of emigration and relevant mortality rates yields overall rates of loss due to these two sources of decrement, on the assumption of

<sup>1</sup>The rest of this chapter is based largely on G.W. Roberts "Provisional Estimates of Population Movements in Jamaica to 1990", 1973.

continued emigration. Appropriate rates of migration are also calculated in order to estimate numbers leaving the island within successive quinquennial periods.

The three Projections involved are taken up to 1990, beyond which it serves no practical purpose to proceed. The first Projection is designed to illustrate the consequences of uncontrolled growth between 1970 and 1990. It assumes that no loss from emigration is experienced and that both mortality and fertility remain unchanged at the levels shown in 1969-70. The second Projection depicts the consequences of introducing the falls in fertility postulated above. But in respect of the other two components – emigration and mortality – the same assumptions used for the first Projection are accepted. For the third Projection the joint effects of reductions in fertility and continued emigration are examined. Emigration at rates equivalent to an absolute level of 20,000 at 1970 is applied throughout the years following 1970. Population movements according to these three Projections, together with the components of growth they imply form the subject of Table 7.2.

### Projection I

This Projection emphasises that, with the achievement of a level of mortality close to that of European populations, the continuance of the fertility of 1970 would result in massive accretions to the island's population. As will be seen from Table 7.2, during the 20 years from 1970 to 1990 the population would nearly double itself, increasing from 1.85 million to 3.56 million. While death rates of the order of 7 prevail, crude birth rates would rise appreciably, amounting to as much as 41 per 1,000 by 1985-90. This movement in the birth rate stresses that its level in the late 1960s and early 1970s appreciably understates the current level of fertility. In other words, the filling out of the inroads made in the age structure by earlier emigration presages greatly augmented numbers of births. In fact by the end of the period these are running at an annual level of 136,000 or about twice that at the opening of the period. Very substantial increases within certain age ranges are indicated as will be seen from Table 7.3. Between 1970 and 1990, the population under age 5 more than doubles, rising from 296,000 to 651,000. The population in the accepted school age range (5-14) undergoes an increase of 1.8-fold, from 559,000 to 981,000. The population of working and childbearing age more than doubles, expanding from 644,000 to 1,462,000 during the 20 years after 1970. The filling out of the age interval 15-44 is the outstanding change in age composition revealed by this Projection. This is achieved by 1980, after which the structure tends to stabilise. It is convenient to examine movements above age 15 more thoroughly in the discussion on Projection II, as the pattern of the age structure for adults is the same in both Projections.

Entered in Table 7.4 are the age and sex distributions of the projected population for 1975, 1985 and 1990, as well as those of the initial census population of 1970.

TABLE 7.2 SUMMARY OF ESTIMATED POPULATION MOVEMENTS IN JAMAICA, 1960 TO 1990, ACCORDING TO CENSUSES OF 1960 AND 1970, AND THREE PROJECTIONS FROM 1970 TO 1990 (IN 000's)

Year	Total population	Movements between successive intervals					Rates per 1000 average population			
		Increases	Births	Deaths	Natural increase	Net emigration		Birth	Death	Natural increase
						No.	% of natural increase			
1960	1,609.8	-	-	-	-	-	-	-	-	-
1970	1,854.3	244.5	676.5	141.3	535.2	290.7	54.3	39.1	8.2	30.9
<u>Census Populations</u>										
1975	2,143.1	288.8	363.0	74.2	288.8	-	-	36.3	7.4	28.9
1980	2,517.7	374.6	459.7	85.1	374.6	-	-	39.5	7.3	32.2
1985	2,994.5	476.8	575.0	98.2	476.8	-	-	41.7	7.1	34.6
1990	3,561.7	567.2	679.0	111.8	567.2	-	-	41.4	6.8	34.6
<u>Projection I</u>										
1975	2,102.7	248.4	320.9	72.5	248.4	-	-	32.4	7.3	25.1
1980	2,338.0	235.3	313.9	78.5	235.4	-	-	28.3	7.1	21.2
1985	2,535.4	197.3	281.9	84.6	197.3	-	-	23.1	6.9	16.2
1990	2,712.5	177.1	268.6	91.5	177.1	-	-	20.5	7.0	13.5
<u>Projection II</u>										
1975	1,994.7	140.4	311.7	68.4	243.3	102.9	42.3	32.4	7.1	25.3
1980	2,078.9	84.2	264.1	65.7	198.4	114.2	57.6	25.9	6.5	19.4
1985	2,107.5	28.6	227.8	67.1	160.7	132.1	82.2	21.8	6.4	15.4
1990	2,122.4	14.9	236.5	73.6	162.9	148.0	90.9	22.4	7.0	15.4

Note: Discrepancies in some totals are due to rounding



TABLE 7.3 CHANGING AGE STRUCTURE OF THE POPULATION OF JAMAICA TO 1990, ACCORDING TO PROJECTION I (IN 000's)

Age intervals	Populations						% distributions					
	Census		Projections				Census		Projections			
	1960	1970	1975	1980	1985	1990	1960	1970	1975	1980	1985	1990
	<b>Male</b>											
0-4	135.0	149.0	176.3	223.3	279.3	329.8	17.5	16.5	16.8	18.0	18.9	18.7
5-14	197.7	280.6	302.5	321.6	395.0	496.8	25.5	31.0	28.8	26.0	26.7	28.1
15-44	298.6	305.9	390.0	503.3	607.2	727.1	38.6	33.9	37.2	40.6	41.0	41.1
45-64	113.7	122.7	127.2	130.1	132.5	144.4	14.7	13.6	12.1	10.5	8.9	8.2
65+	28.5	45.1	53.9	61.1	66.6	69.6	3.7	5.0	5.1	4.9	4.5	3.9
Total	773.4	903.3	1,049.9	1,239.4	1,480.6	1,767.7	100.0	100.0	100.0	100.0	100.0	100.0
	<b>Female</b>											
0-4	132.9	146.8	171.6	217.3	271.8	321.0	15.9	15.4	15.7	17.0	17.9	17.9
5-14	197.0	278.0	299.0	315.1	384.9	484.1	23.5	29.2	27.3	24.6	25.4	27.0
15-44	347.7	338.5	418.1	524.7	623.1	735.0	41.6	35.6	38.3	41.1	41.2	41.0
45-64	117.6	130.7	138.5	147.5	151.5	165.4	14.1	13.8	12.7	11.5	10.0	9.2
65+	41.1	57.0	66.0	73.7	82.6	88.5	4.9	6.0	6.0	5.8	5.5	4.9
Total	836.4	951.0	1,093.2	1,278.3	1,513.9	1,794.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: This Projection assumes constant mortality and fertility as of 1969-79 and no external migration. Discrepancies in some totals are due to rounding.

TABLE 7.4 POPULATION OF JAMAICA ACCORDING TO 1970 CENSUS AND PROJECTION I  
(000's)

Age interval	Male					Female				
	Census 1970	Projections			Census 1970	Projections				
		1975	1980	1985		1990	1975	1980	1985	1990
0-	149.0	176.3	223.3	279.3	329.8	146.8	171.6	217.3	271.8	321.0
5-	155.4	147.5	174.5	221.0	276.4	154.0	145.4	170.0	215.3	269.3
10-	125.2	155.0	147.1	174.0	220.4	124.0	153.7	145.1	169.7	214.8
15-	80.7	124.7	154.3	146.5	173.3	86.0	123.6	153.2	144.7	169.1
20-	60.2	80.1	123.8	153.3	145.5	68.5	85.7	123.1	152.5	144.0
25-	49.7	59.7	79.4	122.8	152.0	54.5	68.1	85.1	122.3	151.6
30-	39.3	49.2	59.1	78.6	121.5	43.7	54.0	67.5	84.4	121.3
35-	38.2	38.8	48.6	58.3	77.6	44.3	43.2	53.3	66.7	83.4
40-	37.8	37.6	38.1	47.7	57.3	41.5	43.6	42.4	52.5	65.6
45-	34.0	36.8	36.6	37.1	46.4	36.7	40.6	42.5	41.4	51.2
50-	33.0	32.6	35.2	35.1	35.5	35.9	35.6	39.3	41.2	40.1
55-	29.8	30.9	30.4	32.9	32.7	30.3	34.1	33.9	37.4	39.2
60-	25.8	27.0	27.9	27.5	29.7	27.8	28.2	31.8	31.5	34.5
65-	19.2	22.2	23.2	24.1	23.7	20.6	25.0	25.3	28.6	28.3
70-	12.4	15.3	17.7	18.5	19.2	14.5	17.4	21.1	21.4	24.2
75+	13.5	16.3	20.1	24.0	26.7	21.9	23.6	27.2	32.5	36.0
Total	903.3	1,049.9	1,239.3	1,480.6	1,767.7	951.0	1,093.2	1,278.3	1,513.9	1,794.0

Note: Discrepancies in some totals are due to rounding.

## Projection II

The outstanding feature here is the consequence of the appreciable reductions in fertility introduced. As these are combined with an assumption of no emigration, their impact moves slowly through the age groups, so that by 1990 in fact only the population under age 20 will be affected. The expansion of the numbers at higher ages is virtually the same as that of Projection I. Nevertheless the falls in fertility do have some influence on overall growth which must be noted. Thus the rise to 2.71 million by 1990 is equivalent to 46 per cent as compared with a two-fold expansion when no reductions in this component are postulated, as is clear from Table 7.2. Falls in fertility imply a substantial lowering of the crude birth rate, which is brought down to 20 by 1990. Even so the resulting rate of natural increase is as high as 1.3 per cent.

As will be seen from Table 7.5, the principal effect of lowered fertility appears in the ages under 5. This age group reaches a maximum of 308,000 in 1975 and then declines, so that by 1990 children within this age range (257,000) represent a fall of 17 per cent from the level of 15 years earlier. A similar position emerges in the case of the population of school age, which attains a maximum of 602,000 by 1975 and then drops to 565,000 by 1990. The latter is only slightly above the corresponding value for 1970 (559,000). But substantial increases appear in the case of the population of working and childbearing age (15-44). For both sexes the numbers within this age group more than double, moving up from 644,000 to 1,422,000. In terms of percentage distribution, the main characteristic is the fall in the proportion at younger ages. For children under 5 this is lowered from 16 per cent to less than 10 per cent, while for the school age group the proportion moves down from 30 per cent to 20 per cent. By contrast, the population of working and childbearing age comes to constitute a much larger proportion of the total by 1990, the increases being from 35 per cent to 52 per cent. The summary position is that, despite the major falls in numbers of children, a substantial addition to the population as a whole is to be expected, the sector experiencing the great gain being the population of working and childbearing age.

Table 7.6 shows the 5-year age groups of the population of the island according to the 1970 Census, as well as for the Projection at 1975, 1980, 1985 and 1990.

## Projection III

Attention is here focused on the extent to which significant curbs exercised through two components of growth determine the demographic situation. The combination of fertility declines similar to those of Projection II and of sizeable rates of emigration results in almost counterbalancing natural increase after 1985. As will be seen from Table 7.2, most of the increase takes place between 1970 and 1975, the subsequent decelerating rates resulting in an increment of only 15,000 in the 5 year period after 1985. However it is only females that



TABLE 7.6 POPULATION OF JAMAICA ACCORDING TO 1970 CENSUS AND PROJECTION II  
(000's)

Age interval	Male					Female				
	Census 1970	Projections				Census 1970	Projections			
		1975	1980	1985	1990		1975	1980	1985	1990
0-	149.0	155.9	152.4	136.9	130.5	146.8	151.7	148.4	133.3	127.0
5-	55.4	147.5	154.3	150.9	135.5	154.0	145.4	150.3	147.0	132.0
10-	125.2	155.0	147.1	153.8	150.5	124.0	153.7	145.1	150.0	146.7
15-	80.7	124.7	154.3	146.5	153.3	86.0	123.6	153.2	144.7	149.5
20-	60.2	80.1	123.8	153.3	145.5	68.5	85.7	123.1	152.5	144.0
25-	49.7	59.7	79.4	122.8	152.0	54.5	68.1	85.1	122.3	151.6
30-	39.3	49.2	59.1	78.6	121.5	43.7	54.0	67.5	84.4	121.3
35-	38.2	38.8	48.6	58.3	77.6	44.3	43.2	53.3	66.7	83.4
40-	37.8	37.6	38.1	47.7	57.3	41.5	43.6	42.4	52.5	65.6
45-	34.0	36.8	36.6	37.1	46.4	36.7	40.6	42.5	41.4	51.2
50-	33.0	32.6	35.2	35.1	35.5	35.9	35.6	39.3	41.2	40.1
55-	29.8	30.9	30.4	32.9	32.7	30.3	34.1	33.9	37.4	39.2
60-	25.8	27.0	27.9	27.5	29.7	27.8	28.2	31.8	31.5	34.8
65-	9.2	22.2	23.2	24.1	23.7	20.6	25.0	25.3	28.6	28.3
70-	2.4	15.3	17.7	18.5	19.2	14.5	17.4	21.1	21.4	24.2
75+	13.5	16.3	20.1	24.0	26.7	21.9	23.6	27.2	32.5	36.0
Total	903.3	1,029.5	1,148.3	1,248.0	1,337.5	951.0	1,073.4	1,189.7	1,287.4	1,375.0

Note: Discrepancies in some totals are due to rounding.

increase throughout the period. The movement shown by males is of a maximum at 1980, followed by notable reductions thereafter. In fact the total male population of 947,000 at 1990 is somewhat below that of 1975 (See Table 7.7). Appreciable increases in the estimated numbers of emigrants, coupled with falls in natural increase, result in emigration constituting a very powerful control on growth by the year 1990. If we express the net emigration as a percentage of the natural increase, we obtain a measure of the degree of control which the former exercises over population growth in general. In the situation under review, the proportion is pushed up from 42 per cent in 1970-5 to 91 per cent in 1985-90. There are downturns in the estimated birth rates, but in view of the disturbances in age structure, produced by this Projection, this index is not a reliable indicator of shifts in fertility.

Profound effects on the age structure appear, as can be seen from Table 7.7. From 1975 onwards numbers of children under 5 drop steadily from a total of nearly 300,000 to about 227,000, that is by about one-quarter. The fall in the population of school age between 1975 and 1990 is equally impressive, from about 600,000 to 465,000 or by about 22 per cent. Only within the age range 15-44 is there evidence of steady increments up to 1990 and even in this case the expansion is of an order much below that of Projections I and II. Between 1975 and 1990 this age group increases from 724,000 to 1,072,000, or by nearly one-half, which is a much more modest increment than that observed in the other Projections. Among males the age group 45-64 shows a sharp fall from 116,000 in 1975 to 72,000 by 1990. This contraction of 30 per cent characterises only males; among females the position is one of almost unchanging size. The main consequences of continued high emigration and falls in fertility are fully depicted in the altered percentage distributions. It is only the age group 15-44 that constitutes a rising proportion of the overall population.

The full effects of changes in the two components of growth involved in this Projection — fertility and external migration — are depicted in Table 7.8, which shows the population for this Projection in 5-year age groups according to the census of 1970 and the Projection.

### Conclusion

These Projections reveal potentials of substantial growth if prevailing vital rates continue unchanged and emigration ceases. In fact the combination of mortality at a level approaching that of Europe and fairly high fertility suffices to produce increments on a scale never previously experienced in the island. However this situation is radically altered when the assumption of falling fertility is introduced. Thus if, as seems certain, social and economic changes now under way, helped on by the programmes of the Ministry of Health, the National Family Planning Board, the Jamaica Family Planning Association and similar bodies, lead to the adoption of small family size ideals by the population at large, a substantial drop in fertility can be anticipated. It seems that the realisa-



TABLE 7.8 POPULATION OF JAMAICA ACCORDING TO 1970 CENSUS AND PROJECTION III  
(000's)

Age Interval	Male						Female			
	Census 1970	Projection			Census 1970	Projection				
		1975	1980	1985		1999	1975	1980	1985	1990
0-	149.0	151.4	128.3	110.6	115.0	146.8	147.4	124.8	107.7	112.0
5-	155.4	147.5	149.9	127.0	109.5	154.0	145.4	146.0	123.7	106.7
10-	125.2	154.4	146.5	148.9	126.1	124.0	153.3	144.7	145.3	123.1
15-	80.7	121.6	149.9	142.3	144.6	86.0	122.1	150.9	142.5	143.1
20-	60.2	69.9	105.3	129.8	123.2	68.5	81.7	116.0	143.4	135.4
25-	49.7	44.5	51.7	77.8	96.0	54.5	62.4	74.5	105.6	130.6
30-	39.3	34.4	30.8	35.7	53.9	43.7	48.9	56.0	66.8	94.8
35-	38.2	28.2	24.7	22.1	25.7	44.3	39.7	44.4	50.8	60.7
40-	37.8	30.0	22.1	19.4	17.4	41.5	41.0	36.7	41.0	47.0
45-	34.0	31.3	24.8	18.3	16.1	36.7	38.8	38.2	34.3	38.3
50-	33.0	29.5	27.2	21.6	15.9	35.9	34.6	36.5	36.0	32.3
55-	29.8	29.2	26.1	24.0	19.0	30.3	33.5	32.3	34.1	33.6
60-	25.8	26.3	25.7	23.0	21.2	27.8	27.8	30.8	29.7	31.3
65-	19.2	22.2	22.6	22.2	19.8	20.6	25.0	25.0	27.7	26.7
70-	12.4	15.4	17.8	18.1	17.7	14.5	17.4	21.1	21.2	23.4
75+	13.5	16.3	20.2	24.2	26.5	21.9	23.8	27.5	32.8	36.1
Total	903.3	952.1	973.6	965.0	947.5	951.0	1,042.6	1,105.3	1,142.5	1,174.9

Note: Discrepancies in some totals are due to rounding.



tion of a two-child family by 1985 or earlier may be put forward as a reasonable goal in this context. Even so, quite steep reductions in fertility take a long time to work themselves through the entire age structure of the population. The initial impact of small families is on the population under age 5, after which the group within the school age range comes under its influence; but probably it will take more than 40 years for the population of working and childbearing age to be materially affected.

Nevertheless, if in conjunction with declining fertility a sufficient level of emigration can be counted on over the next 20 years, then marked restraints on population growth will be realised in the next 15 years. As is shown in Projection III, such a combination can result in a virtual cessation of growth by 1985. Whether the promotion of emigration at the levels envisaged is acceptable on grounds other than as an agent for containing population growth remains debatable. For the largely selective features of this movement mean not only that particular sectors of the age range are heavily involved, but also that it is generally the most highly trained and the professional types are involved in these emigration streams. In fact with the shift towards Canada and the United States in the late 1960s as the destination of emigrants, a greater measure of selectivity is operating than was the case when their principal destination was the United Kingdom. The depletion of the ranks of the skilled and professional has to be weighed against the general curbs on population growth in appraising the advantages of large scale emigration.

Thus the consequence of the attainment of a level of mortality approaching that of European societies has to be faced. Even if this is matched by early attainment of much lower levels of fertility, such as is postulated under Projections II and III, important additions to the population can be expected for some time to come. Only a policy of fostering emigration at an appreciable scale over the next two decades will make it possible to contain expansion of the working force until the full effects of declining fertility work themselves sufficiently through the upper ages of the island's population.

G.W. ROBERTS

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