Abstract: It is hypothesized that labor availability and related low levels of demand for women in agricultural work explain the high incidence of nuclear family formation in some Caribbean slave societies, as well as occasional high birth rates. Three paired comparisons, reflecting differing levels of labor supply, are examined: The Leewards and the Bahamas; Martinique and Barbados; and Cuba and Jamaica. As hypothesized, women were drawn more into field labor with increasing labor shortages. There is no relationship, however, between labor surplus and nuclear family formation or high crude birth rate. The hypothesized relationship between labor shortage, mother-child domestic units and low crude birth rate is confirmed in only one case. Nor is family organization consistently related to reproduction patterns for the six slave societies. It is suggested that Caribbean slavery is structurally different from other social systems studied by materialist scholars, who have found fairly constant relationships between women's contributions to production and their conjugal and reproductive experiences.

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WOMEN'S WORK, FAMILY FORMATION AND REPRODUCTION AMONG CARIBBEAN SLAVES

INTRODUCTION

The organization of slave families in the American South has received new, sustained attention from Genovese (1976), Fogel and Engerman (1974), Gutman (1977) and others. These studies argue that slave families were more likely to be nuclear—a male, female and their children—than matrifocal as previously proposed and that families maintained intergenerational ties. Both of these conditions are indicators of family stability among American slaves. This contradicts the findings of Stampp (1956) and others who argued earlier that slavery broke up families, that with "these conditions—the absence of legal marriage, the family's minor social and economic significance, and the father's limited role—it is hardly surprising to find that slave families were highly unstable" (Stampp 1956: 344). It also challenges Patterson's (1979) more recent hypothesis that slaves were "natally alienated," or symbolically estranged from natal ties by the slave condition.

It is more difficult to establish the existence of "stable" family patterns among slaves in the West Indies. Slaves in the West Indies were rarely able to reproduce their numbers and certainly not at the level found among slaves in the United States (Fogel and Engerman 1974). Statistical evidence of high levels of nuclear family formation has been found, however, for Jamaica (Higman 1976a), Trinidad (Higman 1978, 1979), and the Bahamas (Craton 1978, 1979). Indeed, Craton concludes that patterned family life, "even in patterns recognizable to Europeans," was sometimes the norm for West Indian slaves (1979: 2).

The evidence for conjugal domestic units among British West Indian slaves is an important empirical breakthrough in the study of the family, although there is still little quantifiable evidence of intergenerational kinship. But a body of criticism has developed, focusing on the failure of contemporary quantitative research to fully identify the meaning and origins of nuclear families among Caribbean slaves and, thus, to account for the considerable variation in Caribbean slave family organization (Patterson 1976, 1982). That is, why did nuclear families form, instead of other arrangements? And why are nuclear families found in some settings, while the mother-child unit predominates elsewhere?

This paper reviews major findings on Caribbean slave families and critical reactions to them. It is suggested that both propositions of stable nuclear family formation among Caribbean slaves and critical commentary have failed to consider women as a complementary unit of analysis to the family and, thus, have missed a crucial source of explanation for changing patterns of Caribbean slave families.

RESEARCH ON NUCLEAR FAMILIES AMONG BRITISH WEST INDIAN SLAVES

The recent examination of slave registration figures presented to British colonial authorities shortly before Emancipation extends aggregate
and plantation-specific research on nuclear family formation. The methodological approach and findings differ dramatically from those of earlier research on slave families based on occasional and incomplete plantation records, diaries of slave owners and travelers, and other documents of the period.

Higman studied three plantations in Jamaica and aggregate figures for Trinidad. He concludes that the nuclear family was the modal type on the three estates in Jamaica on the eve of Emancipation (Higman 1976a). His findings for Trinidad in 1813 are similar (Higman 1978, 1979). Craton's study of the Bahamas echoes Higman's work in methods and substance (Craton 1979). According to the 1821-22 census, most Bahamian slaves lived in nuclear families.

Three tentative hypotheses about the origins of West Indian nuclear families have been offered by historians and demographers.

First, it has been argued that nuclear families were sometimes a demographic possibility, for example, where sex ratios were even or populations stable and isolated (Craton 1979). Thus, it is suggested that in the absence of material and ideological constraints, and given the demographic opportunity, nuclear families developed. This explanation is so broad as to be nearly tautological: nuclear families exist, therefore they can exist. It does not offer in sufficiently specific terms the conditions that unite a variety of New World national and plantation settings that produced nuclear families.

Second, it has been hypothesized that African traditions predisposed slaves to stable, co-residential conjugal patterns. Indeed, Africans appear to have been more likely than creoles to establish stable conjugal households in urban Trinidad (Higman 1978: 170), although contradictory evidence has been found in other settings, e.g., Martinique (Dobien 1960). Still, no evidence is offered of what particular African family forms were represented in nuclear units, so no hypotheses can be developed about the meaning of slave families based on links to the slaves' African past. Higman suggests, however, that African-born slaves may have perceived the nuclear family as a "building-block of extended or polygynous family types rooted in lineage or locality" (1978: 171).

Third, it has been suggested that, for high status males or males with productive garden plots and well-developed marketing skills and opportunities, nuclear families served an economic function not unlike that of early Western nuclear families (Patterson 1969; Higman 1976a). This is an important explanation of Caribbean nuclear family formation, supported by the statistical evidence of nuclear and polygamous families among slaves with prestigious occupations and/or lighter skin color in Trinidad and Jamaica, but it applies only to some Caribbean slaves. Field hands were found in equal proportions among all family types in Higman's Jamaican sample, suggesting that the family economic function may have reinforced other tendencies towards nuclear family formation.
WOMEN AS A UNIT OF ANALYSIS

The new scholarship on women has made clear that women's roles as producers and reproducers of the future labor force have profound effects on family organization (Goody 1976; Quick 1977). A materialist analysis suggests that women's roles are established through the system of production, the labor market, in particular, and reinforced by ideological agents such as the state and church (Boserup 1970; Blumberg 1977). An important question for the analysis of West Indian slave families is the extent to which the peak need for labor relative to the availability of slaves on the world market in New World slave societies influenced women's work, family membership, and fertility. Craton, Higman and others have distinguished between the demographic profiles of older and newer slave societies, using sex ratios in particular, in accounting for different patterns of family formation and reproduction among Caribbean slaves; I suggest refining that distinction to the more fundamental one of societies with a labor shortage and those with a labor surplus.

At times of labor shortage, particularly towards the end of the slave trade when young male slaves were not easily purchased, women were used in increasing proportions as field laborers rather than as household workers. At the same time, slave holders tried to breed new slaves by encouraging nuclear family formation and the production of children. Given the nearly constant historical tendency towards natural decrease of slaves in the West Indies, stimulation of reproduction was generally ineffective, particularly, it seems, when women's production roles in agriculture were also emphasized. It is hypothesized, then, that women's increased contributions to agricultural production mitigated the effects of planter incentives and reduced women's tendency to live in nuclear families and to produce children. In formal terms:

1. At times of severe labor shortage, West Indian slave women:
   a. were employed more often than males in field labor;
   b. lived generally by themselves or with their children;
   c. produced relatively few children (fewer than 30 per 1000 population annually).

2. At times of adequate labor supply, West Indian slave women:
   a. were employed in equal numbers to males, or less often, in field labor;
   b. lived generally in nuclear families;
   c. produced a relatively large number of children (more than 30 per 100).

These propositions will be examined with data from six areas: the Bahamas; the Leeward Islands; Martinique; Jamaica; Barbados; and Cuba. These societies represent three stages in the evolution of New World plantation agriculture. The Bahamas and the Leewards, though different in agricultural and social structure, had sizable labor surpluses by the late eighteenth and early nineteenth centuries, the time of our inquiry.
Therefore, we would expect women to work in the fields as often or less so than males in the Leewards and the Bahamas, nuclear families to predominate, and slave reproduction rates to be high. Barbados and Martinique, the second set of cases, present a second stage in the evolution of Caribbean plantation agriculture. Both areas suffered a labor shortage at the turn of the nineteenth century. Therefore, we would expect a predominance of single female or mother-child units, levels of reproduction below 30 per 1000 population, and the disproportionate presence of women in field work. The competitive position of these islands had diminished, however, in the world sugar market by the era under investigation. Labor shortage was a serious problem, but the high levels of productivity demanded of an earlier slave population in Barbados and Martinique were not required of workers during this era. By introducing a third paired comparison, that of Jamaica and Cuba, we can explore in greater depth the independent variable, labor shortage, and its impact on women's lives. These societies reached peak levels of labor productivity and agricultural capacity as the slave trade ended. We can expect women to predominate heavily in agricultural work, reproduction levels to be extremely low, and mother-child units or women alone to be the most common familial patterns.

The Bahamas and the Leeward Islands

British settlers occupied the Bahamas in the 1650s and contributed to the mercantile character that distinguished the area from the agricultural West Indies to the South. Cotton cultivation by slaves was established, but "[i]n such colonies the conditions did not exist which led, in the West Indies proper, to the development of a fully fashioned slave society of the plantation type" (G. Lewis 1968: 309). The area never experienced severe labor shortages since its agricultural development preceded the intensification and competition of later sugar planting.

As our hypothesis would predict, most of the 10,000 Bahamian slaves (54%) registered from 1821 to 1822 lived in "simple nuclear families" (Craton 1979: 11). Craton argues that three factors contributed to the slaves' likely preference for conjugal domestic units: 1) "Eurocentric, pro-natalist, or publicity-conscious masters"; 2) the widespread existence of provision gardens, apparently in male slaves' control, that required the labor of women and children; 3) the tendency for nuclear families to be on larger, more isolated estates, in a fairly stable cohort.2

These factors lead Craton to suggest a continuum of family types among Caribbean slaves, from the "virtual peasants of the Bahamas, Barbuda, and, perhaps, the Grenadines, with locational stability, a small proportion of African slaves, natural increase and a relatively high incidence of nuclear and stable families. At the opposite pole were the overworked slaves of new plantations such as those of Trinidad, Guyana and St. Vincent, with a high rate of natural decrease, a majority of slaves living alone or in 'barrack' conditions, and a high proportion of 'denuded', female-headed families" (1979: 25). Indeed, Craton reports the reluctance of one group of Bahamian slaves to be moved to Trinidad's more productive plantations, where slaves reputedly worked much harder.
The missing factor in Craton's discussion is how relative productivity effected women's work roles. We have little information about what kinds of work women did on Bahamian plantations. The overall sex ratio was nearly even in contrast to more intensely cultivated areas of the Caribbean where males predominated. This is a probable indication that high productivity was not demanded, as the apparently more productive male slave labor force was still available through trade. Craton (1978: 350-352) offers ample evidence of declining productivity, production and profitability on the large cotton estate of Lord John Rolle, said to be typical of Bahamian plantations after the 1790s. Craton suggests that slave masters took advantage of the nearly even sex ratio to promote pro-natalism, but with only moderate success. Higman (1976b: 67) finds a natural increase among Bahamian slaves of about 16 per 1000 population from 1825 to 1828, up from an earlier period and the highest in the British West Indies at the time. (See Appendix A.) But the birth rate climbed to barely more than 30 per 1000 from 1825 to 1828, well after labor productivity reached its peak in the Bahamas.

The Leeward Islands (St. Christopher, Nevis, Montserrat and Antigua), were settled from 1623 to 1632. These small islands were the site of wars among the French, English and Amerindians until the early 1700s, when plantation sugar production became a consistent, lucrative enterprise. There has been considerable variation among these islands in productivity, sugar export levels, and slave populations. Antigua, with 37,808 blacks (mostly slaves) and more than 25,000 acres in cane, surpassed Barbados in sugar exports in the mid-eighteenth century, (see Table 1.) The other islands had less agricultural land than Antigua and fewer slaves (in 1775, St. Kitts recorded 23,462 blacks; Nevis, 11,000; Monserrat, 9,834) (Sheridan 1973: 150).

By the end of the eighteenth century, sugar planting had peaked in the British Leewards, and planters enjoyed a relative surplus of labor. "Originally the slave system had been intended to relieve the shortage of field labour for the plantations. But by the end of the eighteenth century its influence had created a pattern of profuse consumption of relatively unproductive forced labour, as well as of wealth, which was proving ruinously expensive to maintain" (Goveia 1965: 150). Goveia offers several indicators of labor surplus. A smaller proportion of slaves was used in field work, leading to a decline in productivity from a mid-century peak. More slaves were employed in domestic service. Twenty-seven percent of the slave population on Montserrat engaged in domestic service or worked as tradesmen or fishermen (Goveia 1965: 146). The custom of hiring out slaves was well-developed; manumissions were relatively numerous; and a cash economy among slaves extensive. Slaves customarily supplemented food and clothing allotments through earnings from provision sales and through hiring out (Goveia 1965: 135-139).

The population of the Leewards was highly creolized by the late eighteenth century. Women outnumbered men on Nevis and probably on Monserrat, and children and old people made up more than a third of the
population on both islands (p. 124). Women's work is not treated directly by Goveia, but we can infer that women were not especially valued as field workers. Most of the numerous domestics were women; some slaves were hired out for domestic service. There were also groups other than women who were not used in the field work in the Leewards. People of mixed ethnicity, in particular, were not attractive to the Leewards' planters for field work.

We would expect the Leewards to exhibit a relatively high proportion of nuclear families and a high birth rate. Higman's population estimates are for the 1800s, well after the peak in sugar production. All of the Leewards had an increase in births from 1817 to 1831, with all except Nevis showing a small natural increase, but never more than Montserrat's increase of 6 births per 1000 population in the period from 1824 to 1827. More relevant to our hypotheses, only Montserrat exhibited a crude birth rate over 30 per 1000.

Slave families are said by Goveia to have consisted of a mother and her children, all belonging to the mother's owner, regardless of the parentage of the children. Goveia does report on the success of Methodist and Moravian churches in the Leewards, both of which advocated "Christian monogamy" for their slave converts (pp. 271-299). Goveia is of an earlier school of thought that rejects on logical grounds the possibility of stable conjugal unions among slaves. One set of nineteenth century observers may partially confirm Goveia's findings. Sturge and Harvey (1838: 76), traveling through Antigua after Emancipation, claimed this about the earlier slave condition: "Husbands and wives are not help-meets to one another; they rarely reside in the same hut, or even on the same estate . . . ."

What, so far, does our exploration of women's roles reveal about their contribution to nuclear family formation in early Caribbean plantation societies? The Bahamas and the Leewards enjoyed an adequate labor supply in the eighteenth century. A majority of Bahamian slaves lived in nuclear families, although we know little about women's work. In contrast, slave women of the Leewards appear to have worked in domestic service and less demanding areas of field work. Yet, nuclear families appear not to have formed in the Leewards, and the crude birth rate was high by early nineteenth century Caribbean standards only in Montserrat.

Barbados and Martinique

Barbados reached its peak productive capacity in the late 1600s and was "the first [English colony] to transform its society from a smallholder, semi-subistence base to a slave-plantation, near-moniculture regime which was dominated by a class of wealthy sugar planters" (Sheridan 1973: 124). An expanding African slave population made possible this dramatic transition. From a reported 6,000 slaves in 1643, the slave population grew to more than 68,000 in 1783 (Sheridan 1973: 133; Watson: 48), primarily through the massive purchase of young male Africans. But by the late 1700s the abolition of the slave trade was certain, and Barbados had entered a stage of productive decline.
Our best source of information on the daily lives of slaves during the transition from highly successful to less lucrative planting in Barbados comes from two Codrington estates, left to the Society for the Propagation of the Gospel in Foreign Parts in 1710 (Bennett 1958). In the early 1700s, Codrington shared the remarkable good fortune of the Barbados plantocracy, depending on the heavy purchase of highly productive slaves and, thus, maximizing their gain from the sugar boom. And, by the end of the century, the Codrington estates suffered labor shortage and financial loss.

The slave trade lost its relevance for the Codrington plantations in 1761. After fifty years of trial the policy of restocking with new African Negroes was discarded. From 1712 to 1761 the Society had purchased about 450 Negroes at a cost of about L15,000. It had spent two and one-half times the value of the Negroes left by Christopher Codrington, and had added one and one-half times the number of slaves that had come from him. The outcome of this investment after five decades was a population smaller by more than one-third.

New categories of workers were now brought to the fields. "Young Negroes who would formerly have been apprenticed to artisans were now kept at work in the secondary great gangs" (p. 19). Other schemes were tried, including "recruiting Africans, hiring slaves on an occasional basis, reducing crops and production, concentrating available strength in the field gangs, purchasing parcels of seasoned slaves . . ." None of these efforts succeeded.

Women became an increased portion of the slave population through purchase and creolization. In 1732 there had been 123 males to 58 females on the Society's estates. Females slightly outnumbered male slaves by the end of the century. At that time "[o]ne-half of the men worked in the fields, but only one-third of the women were spared the heavy duty on the land" (Bennett 1958: 13). Table 2 presents the occupational distribution of males and females at Codrington in 1781. Women did some domestic work (personnel workers), but men had more opportunities to evade field work by serving as skilled workers. Moreover, a 1775 price listing indicates that women were engaged in heavy field work, with most in the first gang, and were valued at the same price as first gang male field hands.

At the same time, estate officials arrived at what they saw as the last resort in solving labor supply problems, "amelioration" of the slaves' conditions. One goal of amelioration was to "encourage the Negroes to breed" (Bennett 1958: 100). Women were sometimes given a small reward for delivering a child. The resulting birth rate of 2% was an improvement, but was still lower than the death rate (2.5%) (p. 95). Better houses and garden plots were offered, and, with the introduction of plows in 1912, field work decreased at Codrington.

Amelioration eventually brought a small natural increase in Codrington's slaves, with a net gain of 3 slaves in 1795, 11 in 1800, 5 in 1804, 7 in
1805. By this time, Codrington had moved beyond other estates in Barbados in amelioration and would shortly adopt ways to ease the emancipation of its slaves. The Codrington records are puzzling on marital patterns, as passing sexual unions were often mistaken for polygamous ones (Bennett 1958: 35). Polygamy was believed to dominate conjugal forms throughout the island. For example, in 1787, Barbados' governor claimed that male slaves generally had several wives (Watson: 176). It is likely that women and children were often housed separately from men; there are examples in the Codrington records of slaves helping a "new mother" to build a house (Bennett 1958: 33). But a mix of women alone, mother-child and polygamous residential patterns probably prevailed, with only some "enduring monogamous unions" (p. 35).

The evidence for a natural increase of slaves on the Codrington estates would seem to contradict our hypothesis that labor shortage inhibited reproduction. By 1834 women substantially outnumbered men (173 females to 135 males, counting boys and girls) and worked almost exclusively in field labor, as did girls and boys. Yet, "[t]he breeding program had brought spectacular results in Barbados generally after the abolition of the slave trade in 1807, [with] the Codrington gain thought to be unequaled by any other sugar estate" (Bennett 1958: 131). Still, the number of new slaves born yearly was small, particularly in comparison with the number purchased earlier. The net gain in slaves was also influenced by the absence of new adult Africans; about 43% of African slaves died soon after reaching Codrington.

Our information on Barbados as a whole, from a later period, points again to the relative success of amelioration. Higman (1976b) calculates Barbados' rate of natural increase at about 10 per 1000 population by 1823, more than the Leewards' at the same time, but less than the Bahamas'. But as many as 40.7 births and 30.6 deaths per 1000 population were registered in 1823 (p. 68). Indeed the number of slaves increased from 69,400 in 1809 to 82,000 in 1834 (Curtin 1969: 59). On Codrington, manumissions increased along with task labor as the estate prepared for Emancipation. Slaves were also permitted to buy free days (Bennett 1958: 125). Eventually slaves were granted plots on which to grow provisions. They paid rent to estate owners in exchange for labor (p. 129). Women continued to predominate in field work, but it is likely that overall productivity fell as slaves became "apprentices" and those with lots devoted time to cash crops (pp. 132-133).

It appears, then, that our hypothesis is only partially supported for Barbados. Women experienced an increased role in agricultural production, although reproduction also increased. It is likely, however, that by the 1800s increases in crude birth rate accompanied reductions in labor productivity for both men and women. While nuclear families seem to have been largely absent, it is unclear whether mother-child units and single females or polygamous family forms prevailed.

Martinique was settled by the French in 1635. Plantation agriculture was quickly established, with more than 21,000 slaves by 1700. Martinique
reached its zenith in sugar production from 1763 to 1789 by trading with the United States. On the eve of the French Revolution, Martinique exported more than 8,000 tons of sugar annually, surpassing Barbados (see Table 1). With the start of the nineteenth century, the French West Indies suffered the abolition of the slave trade, changes in colonial administration and the effects of European wars. By 1815 the sugar industry had recovered but not to its earlier level of prosperity. French planters purchased some slaves illegally until Emancipation in 1848, but maintained a small work force and relatively little agricultural land in cane.

Debien's research on Martinique may offer the most complete assessment of women's work roles and family formation for Caribbean slave societies of the mid to late eighteenth century. Debien studied records from a single plantation, l'Anse-a-l'Ane, from 1743 to 1778. As early as 1746, adult males and females were about equal in number, with 56 men and 52 women (Debien 1960: 5). No purchases of slaves were made after 1753, resulting in a small natural population increment after 1763 and continuing near parity in sex ratio. This gender distribution was typical of Martinique's estates in the 1800s (Tomich 1976: 106).

There was never a labor surplus on l'Anse-a-l'Ane, so both men and women were used as field laborers, mostly in the first gang, with teen-agers and children in second and third gangs. This distribution of personnel became common on Martinique's estates (Tomich 1976: 185-188). Indeed, in 1772, the first gang of 60 field slaves at l'Anse-a-l'Ane was comprised of 20 males and 40 females (Debien 1960: 18). As in Barbados, many male slaves worked in skilled tasks and sugar refining. Debien argues further that women's reproduction was not highly valued since price data indicates that female slaves were considerably less costly than males aged from 18 to 40. "Their relatively low price underscores that their reproductive function was secondary; and the constant decline shows that masters were not concerned with an increase in women in order to increase the number of children. Children were always numerous at l'Anse-a-l'Ane, but not as a result of a demographic policy. Simply it is a general custom of the island" (Debien 1960: 44-45). The high rate of planter absenteeism and resulting low need for domestic service, in addition to labor shortage, meant that women had few paths out of field work. Other evidence of labor shortage is manifest in eighteenth century Martinique: for example, children increasingly performed field labor in the first gang after 1763 (p. 23).

Other indicators suggest, however, that labor shortage was not acute or was mitigated by declining production. For example, while women and children were increasingly drawn into field work, the overall number of field workers fell. Proportionately more slaves were old, sick, freed or in skilled jobs after 1763. The first gang had 98 workers in 1746, and only 66 by 1773 (p. 5). Moreover, women did hire themselves out for domestic work, a phenomenon not generally associated with an intense need for female labor on New World plantations.
There is evidence of low fertility accompanying high levels of nuclear family formation at L'Anse. There were 58 children born of about 50 slave women at L'Anse from 1762 to 1777, a period for which records were fairly well kept (Debien 1960: 77). The number of children per 100 women from 1753 to 1773 is recorded in Table 3, and ranges from 69.38 in 1753 to 98.14 in 1763, and then falls to 81.48 in 1767 and 60.41 in 1773. This suggests a decline in fertility, perhaps associated with women's expanding agricultural role. Extending data from L'Anse to the society level, the annual crude birth rate would not be high from 1762 to 1777, only about 21 births per 1000 population. Debien speculates that infant mortality rates were artificially low in plantation computations. Listings by slaves' names suggest high infant mortality with the death of 29 of 58 babies born from 1762 to the end of 1777 (p. 77).

Successes in reproduction at L'Anse were largely limited to conjugal families, about 52 of which are recorded for the period from 1761 to 1776. These families produced 215 children, slightly more than four per couple (Debien 1960: 58). Conjugal families predominated among creoles, who made up nine-tenths of the L'Anse population from 1746. "Maternal families" were less numerous than conjugal units, but more numerous than "passing units." The relationships "approached" conjugal units, with a male maintaining a provision garden for the woman and her children. Still, women in such families were less fertile than those in conjugal families.

There was a labor shortage in Martinique from 1763 to 1789, and, like Barbados, it confirms some dimensions of our hypothesis. Women participated in field work disproportionately to their numbers at L'Anse, predominating in the first gang. As expected, the birth rate was well below 30 per 1000 population. Nevertheless, many couples, particularly creoles, lived in nuclear families. Their birth rate was probably higher than 30 per 1000.

Jamaica and Cuba

Jamaica reached its peak in number of slaves, gross output of sugar and labor productivity from 1805 to 1809. In 1808, 324,000 slaves were owned by Jamaican planters. Owners found it cheaper to purchase slaves than to breed them and tried to purchase males from about 15 to 30 years of age. With the rise of sugar production in the French islands and erosion of Jamaican soil, sugar production became more intense. At the same time, labor was in short supply with the abolition of the slave trade in 1807. This labor shortage greatly influenced the demographic profile of the slave population, as it had in Barbados and Martinique.

Like slave populations in our earlier cases, Jamaica's slave population became proportionately more female, older and lighter through the early 1800s. The sex ratio favored women on Jamaican estates by 1820. For example, at Worthy Park, records from which have been studied extensively by Craton, 65% of the field labor force was female by 1832 (Craton 1977: 142). At Rosehall, half of the women but only one-eighth of the men were in the field. Women also remained in the fields longer than did men (Higman
At the Irwin estate in St. James, females were the majority in the first and second gangs (p. 199). At Maryland, a coffee plantation in St. Andrew, women worked in the fields longer than did men; of those in the 20 to 59 year age group, only nine women were not in the fields, while 20 men were not (p. 196). There was also an increase in lighter-skinned slaves, and light skin ceased to be an easy path to manumission or to more highly skilled occupations. Slave owners complained also that too many slaves were over 40 or under 20. Higman comments:

After 1807 the structure of the slave population of Jamaica changed in a manner contrary to the planters' ideal. It became less 'effective' and less 'flexible'. Not only was the number of slaves in the most productive age groups decreasing absolutely and relatively, but the slaves in these groups were also increasingly female and coloured (p. 211).

What was the effect of intensification of women's role in production on fertility and family form? Higman (pp. 156-173) found the following relationships on three properties: Old Montpelier; New Montpelier; and Shettlewood Pen.

1. More than half of the 864 slaves on the three properties studied lived in units with a man, woman and her children or in a related family type consisting of a woman, her children, and others, while "probably 100 of the [slave] households . . . contained mates" (p. 164).

2. Other significant household types included the slave living alone or with friends (about 30%), polygamous units (in which about 11% of slaves resided), and mother-child households (about 11% of slaves) and male-female households (including about 11% of the slave population).

3) Africans were more likely to live alone or in simple nuclear families (man, woman, children) than were creoles.

4) Slaves of color "with their privileged occupations and blood allying them to the great house and the whites, formed households in which slave men had no part and which were tightly organized around the maternal connection" (p. 162).

At the plantation level there was little relationship between a tendency for a female to work in the fields and to live in a nuclear family. There was a strong tendency for domestics, mostly colored, to live in female-dominated units and for mulatto and quadroon slaves (with white fathers) to live in female-dominated units. Male slaves with authority in the field constituted the male group most likely to be in a household with women and children. Although "co-residence of a mate was conducive, though not essential, to relatively high fertility," colored females were significantly more fertile than black women. The colored population of Jamaica was only about 10% in 1832, yet colored births constituted 18% of registered slave births from 1829 to 1832. Among 15 to 19 year olds, the fertility of colored women was five times that of blacks (Higman, 1976a: 194).
154). Higman concludes that the colored woman, with a higher status occupation and economic security through her likely links to a white male, was more willing to bear children than was the black woman.

Thus, because of the essential economic impotence of the slave, the normal relationship between social status and fertility was reversed. The slave woman of colour and status was therefore more prepared to expose herself to the risk of pregnancy than was the black woman (Higman 1976a: 155).

There is no direct evidence that colored women were more fertile because they did not work in the fields. On the other hand, the evidence that domestic workers produced more children than field workers on the three plantations studied by Higman is consistent with our hypothesis of a tension between female agricultural work and reproduction. Moreover, Jamaican planters did make some efforts to encourage breeding. By the 1820's planters exempted women from field work as soon as pregnancy was suspected. After birth women were permitted to remain in the second gang for as long as they nursed their children, which could be two years (Higman 1976a: 206-207).

Higman presents some evidence that production did intensify on Jamaican plantations during the 1830's. While supposedly less productive slaves, i.e., women and teenagers, were now used in the fields, productivity remained fairly consistent from 1800 to 1834. "[P]rodactivity declined less rapidly than the slave population and even more slowly than gross output" (p. 213). On the other hand, where slave women were fertile, productivity fell, a relationship supporting our hypothesis. "[T]he more the slaves were able to maintain and augment their numbers the lower their productivity" (p. 221). Higman hypothesizes further that manumissions fell and slave rights were eroded as masters faced labor shortages. Jamaican slaves were tied increasingly to plantation sugar production. Probably 90% were on agricultural units in the 1830s; even in 1834, more than 70% of the active slave labor force was field labor (pp. 36-42).

Craton's (1977) findings for Worthy Park echo Higman's. Worthy Park was one of the largest and best managed of Jamaica's sugar estates, one of twelve with more than 500 slaves in 1820. With the abolition of the slave trade in 1808 the number of slaves at Worthy Park fell and with that the profits from sugar production declined. The demographic profile of the field gangs also changed. Women were relied upon increasingly for field labor, with males making up 92.4% of the work force in skilled occupations. In the 1790s women made up 58% of the field labor force; and 65% in the 1830s. Craton comments: "It was indeed a curious society, as well as an inefficient agricultural economy, in which women for the most part were the laborers and men the specialist workers" (p. 146).

Efforts to ameliorate slaves' lives eased the natural decrease of slaves at Worthy Park, but the birth rate remained less than the death rate. Planters tried to intensify production in response to falling sugar prices.
Productivity actually fell with the "increasing frailty of the slave labor force," but so did the number of slaves at Worthy Park (p. 172).

The effect of amelioration on overall fertility in Jamaica cannot be accurately assessed. Roberts (1957) speculates that Jamaica's rate of natural decrease fell from a higher, though unspecified, rate in the 1700s to about 5 per 1000 slaves annually in 1829. Given a close ratio of sexes and a fairly young population, it is likely that a rise in fertility accounts for much of the fall in natural decrease (p. 245). Roberts notes, however, that planters reported disappointment in the results of their amelioration programs. M.G. Lewis, for example, complains that despite his various efforts in the early 1800s to improve the birth rate on his estates, there was little change. No more than twelve or thirteen new babies were born annually to 330 slaves (M.G. Lewis 1834: 320). Registration figures (Appendix A) indicate little change in the birth rate, despite the improved sex ratio, but an increase in slave deaths.

Cuba, the last great sugar island, reached its peak well after the abolition of the slave trade, and thus, with Jamaica, suffered dramatic consequences of labor shortage. Seventeenth and early eighteenth century Cuba had been only a modest sugar producer. Tobacco was the main Cuban export crop. From 1762 to 1838, a transition to large-scale sugar production was completed (Knight 1970: 6). During that period, 400,000 slaves were imported to Cuba; the slave population increased from nearly 39,000 in 1774 to well over 400,000 in 1841 (p. 21).

As Cuban sugar production intensified male slaves were favored; many estates had an exclusively male labor force. Half the population was aged from 16 to 25, and the rest, from 26 to 40 (Moreno Fraginals 1978: 39). This highly productive demographic profile changed when the slave trade was abolished, and as the Spanish metropolitan government urged the importation of African women to curtail the perceived violence and homosexuality of the heavily male slave population. With the new techniques of sugar production adopted in Cuba, women and children could be more productively employed than ever before in sugar agriculture. From 1850 about 45% of African slaves imported to Cuba were women, and nearly all worked in some phase of sugar production with virtually no mobility to more skilled positions. Moreno Fraginals contends that productivity per capita dropped as the sex ratio equalized, but indicates also that productivity levels demanded of Cuban women slaves surpassed that of other Caribbean slave societies.

As slaves became more difficult to procure, planters attempted to encourage the reproduction of slaves. Nuclear families were rare, Moreno Fraginals tells us, because couples were so often broken up for sale; mothers and children constituted the basic kinship unit. Some planters encouraged monogamy to increase the birth rate. Several slave breeding farms were established. But the housing of slaves in barracks on many plantations, the related eradication of garden plots to supplement plantation rations, and the supervision of children in plantation nurseries all inhibited nuclear family formation. Nor were many births effected
through planters' coercion. Pregnant women received few rewards for giving birth until the 1860s and 1870s when they were permitted to work only ten hours a day, and received prizes for children who survived to two years (Moreno Fraginals 1978: 43-57).

Amelioration efforts of the mid-nineteenth century did reduce slave mortality, especially among infants, and reproduction rates increased. The overall mortality of Cuban slaves from 1835 to 1841 was 63 per 1000 population, falling to 61 per 1000 from 1856 to 1860; infant mortality fell from 575 per 1000 annually to 283 per 1000 for the same periods. The natural decrease of population improved only slightly from a loss of 44 per 1000 population annually for the years 1835 to 1841 to a loss of 33 per 1000 annually for the years 1856 to 1860 (Moreno Fraginals 1978: 88). From 1860 to the emancipation of Cuban slaves in 1880, amelioration measures increased, but numbers of slaves continued to decline through natural decrease and manumissions. In 1863 there were somewhat fewer than 100,000 slaves registered in Cuba.

The Cuban and Jamaican cases offer the same mixed results as do Barbados and Martinique. Cuban and Jamaican planters used more women than men in agricultural production, and these women had few alternatives or avenues for mobility; these tendencies are not significantly greater for Jamaica and Cuba than Barbados and Martinique. It appears, however, that women were under more pressure to maintain high labor productivity in Cuba and Jamaica than in Barbados and Martinique. In neither Jamaica or Cuba were even low levels of natural increase achieved. As is the case for Martinique and Barbados, family patterns were not related to reproduction in the expected way for either Jamaica or Cuba. Nuclear families were common, if not prevalent in Jamaica, but nearly non-existent in Cuba. The Cuban case, along perhaps with Barbados, confirms the hypothesized relationship between labor supply and family formation, while neither Jamaica nor Martinique does so.

SUMMARY AND CONCLUSIONS

The two major hypotheses examined are:

Hypothesis 1: At times of labor shortage, West Indian slave women:

a. were employed in larger numbers than male slaves in field labor;
b. lived mainly by themselves or with children;
c. produced relatively few children, resulting in a crude birth rate less than 30 per 1000.

Hypothesis 2: At times of adequate labor supply, West Indian slave women:

a. were employed in field labor in the same numbers as males, or less frequently;
b. lived in nuclear families;
c. produced relatively large numbers of children, resulting in a crude birth rate of 30 or more children per 1000 population.
The cases of labor shortage are those of late eighteenth century, early nineteenth century Barbados, Martinique, Jamaica, and Cuba. The results of our analysis of these cases are presented below.

<table>
<thead>
<tr>
<th>Country</th>
<th>(a)</th>
<th>(b)</th>
<th>(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbados</td>
<td>yes</td>
<td>?</td>
<td>no</td>
</tr>
<tr>
<td>Martinique</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Jamaica</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Cuba</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

All four societies used women increasingly in field work as male slaves became scarce. It appears that only slightly larger proportions of the female work force worked in agriculture in Jamaica and Cuba than in Martinique and Barbados. But higher levels of labor productivity were probably achieved by women in Jamaica and Cuba. Only Cuba and perhaps Barbados conform to our hypothesis about family patterns. Jamaica and Martinique exhibited higher levels of nuclear family formation than mother-child and single female units. Extensive provision grounds in Jamaica and Martinique may thus have mitigated the effects of labor shortage on family organization. Reproduction patterns conform more closely to our hypothesis for all societies, although emphasis on amelioration caused dramatic increases in slaves' crude birth rate in Barbados. Nuclear family formation did little to increase reproduction at the aggregate level; amelioration contributed to increased birth rates more powerfully than did nuclear family formation.

The findings related to Hypothesis 2 are presented below.

<table>
<thead>
<tr>
<th>Country</th>
<th>(a)</th>
<th>(b)</th>
<th>(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahamas</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Leewards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antigua</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Monserrat</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>St. Kitts</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Nevis</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

For the Bahamas and the Leewards women performed agricultural work as or less often than did men. In the Bahamas, an adequate labor supply is related to nuclear family formation and increasing birth rate, as predicted, but the relationship is not strong given that the crude birth rate reached little more than 30 per 1000 only after 1825. For the Leewards, adequate supplies of labor did not lead to the creation of nuclear families. Only in
Monserrat is a crude birth rate over 30 per 1000 recorded for the early nineteenth century. These cases suggest that labor supply per se does not explain the birth rate of West Indian slaves, and neither does family organization.

Our investigation of several West Indian cases suggests that labor shortages did draw women into the most rigorous forms of field labor as the abolition of the slave trade approached. Women's presence in agricultural work seems not to have precluded nuclear family formation in Jamaica and Martinique. Women's agricultural work does seem to have discouraged reproduction in the absence of strenuous amelioration efforts such as that of Barbados in the early 1800s. Labor supply, however, did not strongly encourage reproduction, as the cases of the Bahamas and Leewards demonstrate.

Theories that unite production and reproduction assume individual or familial incentives for both (Goody 1976; Boserup 1970; Blumberg). In slavery, owners obtained maximum benefits from slaves' reproduction but had little direct interest in family formation. Although our review of the literature on these subjects remains cursory, it may be that in Caribbean slavery family formation related directly to slaves' self-interest, particularly where provision gardening was possible. On the other hand, children may have brought little joy or comfort to Caribbean slaves, given the conditions of life--more difficult than those of more fertile U.S. slaves--and thus reproduction depended on strenuous planter efforts at amelioration.
### APPENDIX A

Basic Demographic Indices, Early Nineteenth Century Bahamas, Montserrat, Antigua, Nevis, St. Christopher, Barbados, Jamaica

<table>
<thead>
<tr>
<th>Date</th>
<th>Total Slave Pop.</th>
<th>Males per 100 Females</th>
<th>Births per 1000</th>
<th>Deaths per 1000</th>
<th>Natural increases per 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BAHAMAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1819-22</td>
<td>10,908</td>
<td>104.6</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>1822-25</td>
<td>10,036</td>
<td>103.3</td>
<td>26.9</td>
<td>14.2</td>
<td>12.7</td>
</tr>
<tr>
<td>1825-28</td>
<td>9,266</td>
<td>100.2</td>
<td>31.0</td>
<td>14.9</td>
<td>16.1</td>
</tr>
</tbody>
</table>

|          |                  |                        |                 |                 |                           |
| **LEEWAYS** | Montserrat |                          |                 |                 |                           |
| 1817-21  | 6,558            | 86.4                   | 31.0            | 30.4            | 0.6                       |
| 1821-24  | 6,392            | 86.0                   | 31.4            | 32.0            | -0.6                      |
| 1824-27  | 6,270            | 84.6                   | 34.1            | 28.1            | 6.0                       |

|          |                  |                        |                 |                 |                           |
| **St. Christopher (St. Kitts)** |                  |                        |                 |                 |                           |
| 1817-21  | 19,993           | 92.3                   | 25.2            | 28.4            | -3.2                      |
| 1821-25  | 19,667           | 91.9                   | 28.2            | 29.3            | -0.8                      |
| 1825-28  | 19,413           | 91.2                   | 29.3            | 27.5            | 1.8                       |
| 1828-31  | 19,198           | 91.5                   | 28.3            | 26.3            | 2.0                       |

|          |                  |                        |                 |                 |                           |
| **Antigua** |                  |                        |                 |                 |                           |
| 1817-21  | 31,627           | 87.4                   | 18.5            | 22.8            | -4.3                      |
| 1821-24  | 30,650           | 87.9                   | 27.1            | 27.6            | -0.5                      |
| 1824-27  | 30,077           | 88.8                   | 25.5            | 25.2            | 0.3                       |

|          |                  |                        |                 |                 |                           |
| **Nevis** |                  |                        |                 |                 |                           |
| 1817-22  | 9,432            | 96.6                   | 22.5            | 25.9            | -3.4                      |
| 1822-25  | 9,274            | 97.9                   | 23.9            | 24.9            | -1.0                      |
| 1825-28  | 9,273            | 97.7                   | 22.9            | 22.6            | 0.3                       |
| 1828-31  | 9,201            | 97.8                   | 23.3            | 24.6            | -1.3                      |

|          |                  |                        |                 |                 |                           |
| **BARBADOS** |                  |                        |                 |                 |                           |
| 1817-20  | 77,919           | 86.1                   | 31.7            | 28.3            | 3.4                       |
| 1820-23  | 78,581           | 86.5                   | 34.9            | 28.5            | 6.4                       |
| 1823-26  | 79,684           | 84.9                   | 40.2            | 28.1            | 12.1                      |
| 1826-29  | 81,227           | 85.1                   | 38.0            | 28.0            | 10.0                      |
| 1829-32  | 81,701           | 85.8                   | 40.7            | 30.6            | 10.1                      |

|          |                  |                        |                 |                 |                           |
| **JAMAICA** |                  |                        |                 |                 |                           |
| 1817-20  | 334,266          | 99.7                   | 23.6            | 24.3            | -0.7                      |
| 1820-23  | 339,318          | 98.7                   | 22.8            | 25.9            | -3.1                      |
| 1823-26  | 333,686          | 97.4                   | 23.0            | 25.1            | -2.1                      |
| 1826-29  | 326,770          | 96.5                   | 22.2            | 25.6            | -3.4                      |
| 1829-32  | 317,649          | 95.5                   | 23.2            | 28.0            | -4.8                      |

Source: Higman 1976b: 67-69
FOOTNOTES

1. This criterion is based on crude birth rates during the early nineteenth century. Klein and Engerman (1978) report that the birth rate among U.S. slaves was 55 per 1000, considered high for mid-nineteenth century populations in general. Jamaica's low crude birth rate of 23 per 1000 from 1817 to 1829 is comparable to European birth rates during the same period.

2. Craton (1978) compared the Rolle estate in Grand Exuma in the Bahamas with Jamaica's Worthy Park. Craton considers many factors important in the higher rates of fertility and nuclear family formation in the Bahamas. Included among them are the closer sex ratio, small number of Africans and favorable age distribution. He concludes, however, that: "The essential difference between the two populations clearly lay in the nature of the economic system in which each was employed. Worthy Park's system was the 'factory-in-a-field' of sugar production, while Exuma's was an almost decayed open plantation system with a negligible 'industrial' component" (p. 349).

3. Higman (1976: 65-66) contends that Caribbean slave populations increased their birth rates as the creole population increased and the sex ratio became more even. "Thus in the sugar colonies it appears that natural increases did not occur until the populations were disproportionately female" (Higman: 66-67). Eventually feminization, "aging and wasting" of the population occurred (Craton 1978), causing a decline in fertility. Sex ratios were similar in St. Kitts, Nevis, Montserrat, and Antigua, and related to an increasing birth rate, but in a strong way only in Montserrat.

4. Martinique was long attractive to France's rival metropoles. English and Dutch attacks had been repulsed in the seventeenth century. The English again tried but failed to capture Martinique in 1759; a British siege succeeded in 1762, but the island was returned to the French by the Treaty of Paris in 1763. The French Revolution threatened Martinique's sugar planters, with talk of rights for black slaves and the free colored population. The French Revolutionary government abolished slavery in 1790. Martinique's and Guadeloupe's elites surrendered themselves to Britain in 1794. With access to British markets, Martinique once again prospered, until 1802, when Martinique was returned again to France by the terms of the Treaty of Amiens. Again the British seized Martinique in 1809, permanently restoring the island to France in 1814. In the meantime, Napoleon had made slavery legal once again.

5. All translations are mine.

6. Debien (1960) comments that, on the more intensely cultivated San Domingue, there were fewer than two or three conjugal families per plantation at any time. The birth rate was also very low.
7. To permit women to nurse their children for two years ran counter to the planters' desire to increase labor productivity. Nursing took women from the fields altogether or removed them to lighter tasks they could complete while breastfeeding a child. Still, planters perceived nursing as a necessary incentive to increase women's fertility and some associated it with infant health and development, major issues in societies with high infant and child death rates.

8. There is considerable evidence that at the plantation level 'nuclear' families did have more children than other family forms. At Montpelier, analyzed by Higman (1976a), and L'Anse-a-L'Anse, studied by Debien (1960), nuclear families had more children than did other families. Craton (1978) made the same discovery about slaves at the Rolle estate in the Bahamas.

9. Food allocation and distribution may hold the key to the small population increments and possible propensity for mother-child units in the Leewards. These islands had little non-estate land although slaves received a small provision garden near their huts to supplement estate-grown and imported provisions. Frequent drought affected the crops in these gardens more than it did sugar (Mathieson 1926: 72; Sturge and Harvey 1838). Rations allotted to slaves were small, "much less, indeed, than was given in the prisons of Jamaica . . ." (Mathieson 1926: 72). Slaves in the Leewards may have lacked both the material basis in extensive and productive provision-gardening for the formation of residential conjugal units; and the health and welfare conducive to rapid population growth. See, also, Dirks (1978).

10. We have no way of knowing how many children were conceived by Caribbean slaves, but were miscarried or stillborn. Craton (1978: 343) reports that 21.8% of "births" among females at Worthy Park in 1795 were said to be miscarriages in plantation records.
Table 1. Sugar Exports of the Ten Leading Caribbean Islands, 1766-70  
(annual averages in tons)

<table>
<thead>
<tr>
<th>Island</th>
<th>Exports (tons)</th>
<th>Area (square miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Dominque</td>
<td>61,247</td>
<td>10,200</td>
</tr>
<tr>
<td>Jamaica</td>
<td>36,021</td>
<td>4,411</td>
</tr>
<tr>
<td>Antigua</td>
<td>10,690</td>
<td>108</td>
</tr>
<tr>
<td>Cuba</td>
<td>10,000</td>
<td>44,206</td>
</tr>
<tr>
<td>St. Christopher</td>
<td>9,701</td>
<td>68</td>
</tr>
<tr>
<td>Martinique</td>
<td>8,778</td>
<td>380</td>
</tr>
<tr>
<td>St. Croix</td>
<td>8,230</td>
<td>84</td>
</tr>
<tr>
<td>Guadeloupe</td>
<td>7,898</td>
<td>619</td>
</tr>
<tr>
<td>Barbados</td>
<td>7,819</td>
<td>166</td>
</tr>
<tr>
<td>Grenada</td>
<td>6,552</td>
<td>120</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>166,936</strong></td>
<td><strong>60,362</strong></td>
</tr>
</tbody>
</table>

Source: Sheridan 1973: 150
Table 2. Occupations of Slaves at Codrington, 1781

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Men</th>
<th>Women</th>
<th>Boys</th>
<th>Girls</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Workers</td>
<td>37</td>
<td>52</td>
<td>34</td>
<td>39</td>
<td>162</td>
</tr>
<tr>
<td>Artisans and Watchmen</td>
<td>17</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Stockkeepers</td>
<td>10</td>
<td>5</td>
<td>7</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>Personnel Workers</td>
<td>3</td>
<td>15</td>
<td>0</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>Non-workers</td>
<td>4</td>
<td>4</td>
<td>19</td>
<td>27</td>
<td>54</td>
</tr>
</tbody>
</table>

Source: Bennett 1958: 12
Table 3. Demographic Indices, L'Anse-a-L'Ane, 1753-1773

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Slaves</th>
<th>Women Older Than 17</th>
<th>Number of Children Younger Than 11</th>
<th>Number of Children per 100 Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>1753</td>
<td>152</td>
<td>49</td>
<td>34</td>
<td>69.38</td>
</tr>
<tr>
<td>1763</td>
<td>--</td>
<td>54</td>
<td>53</td>
<td>98.14</td>
</tr>
<tr>
<td>1767</td>
<td>163</td>
<td>54</td>
<td>44</td>
<td>81.48</td>
</tr>
<tr>
<td>1773</td>
<td>154</td>
<td>48</td>
<td>29</td>
<td>60.41</td>
</tr>
</tbody>
</table>

Source: Debien 1960: 73
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Goody, Jack
Goveia, Elsa V.

Gutman, Herbert

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Knight, Franklin W.

Lewis, Gordon K.

Lewis, Matthew Gregory

Mathieson, William Law

Moreno Fraginals, Manuel
Patterson, Orlando


Quick, Paddy

Roberts, G.W.

Sheridan, Richard B.

Stampp, Kenneth M.

Sturje, Joseph, and Thomas Harvey

Tomich, Dale

Watson, Karl Stewart
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