FERTILITY AMONG URBAN BLACKS

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Descriptions of the demographic transition frequently mention that urbanization played a role in bringing about the switch from high fertility rates to low fertility rates. It is difficult to be certain how far along in the process of demographic transition is the black population of the United States, but it is clear that fertility rates have changed rapidly. Black women who were born around the middle of the last century completed their childbearing with an average of seven children.[1] Women born during the first decade of this century—that is, women who attained childbearing ages during the Depression—averaged about two and one-half children.[2] This downward trend was reversed and the black women born during the 1930's will average about four children.[3] For a decade now fertility rates among blacks have fallen and women born during the 1940's have gotten off to a slower start in forming their families than women born during the previous decade, suggesting a downward trend in family size.[4]

It is not possible, in one paper, to completely specify the consequences of urbanization upon fertility. This paper has two aims. First, trends in the fertility rates of blacks in urban and rural areas are described and, second, factors influencing fertility are examined to account for the observed changes.

TRENDS IN URBAN AND RURAL FERTILITY

It would be convenient if one table could show trends in the fertility rates of specific age groups of women in urban and rural areas. Unfortunately, this cannot be done. Until 1933, no national system existed

for registering births and, for some time after that, the registration of black births was not very complete.[5]

The censuses provide data from which fertility rates may be inferred. If the age distribution of a population and something about its mortality level are known it is possible to estimate fertility levels. The enumerated population under age five can be used to determine how many births occurred in the five-year period preceding the census and the enumerated number of women of childbearing age can be used to ascertain how many women were eligible to bear children. Census data were used in conjunction with the official life tables to calculate a commonly used fertility measure, the general fertility rate; that is, the ratio of annual births to women aged 15 to 44 years.

Figure 1 shows these estimates of the general fertility rate. Because this paper concerns urban fertility trends, rates were computed for blacks who lived in the North and West, for the total southern black population and, for dates for which information was available, for the urban and rural South.[6] Within the North and West blacks have always been highly urbanized; 70 per cent lived in cities in 1900, and 95 per cent in 1960. Within the South, the proportion urban has been much lower, increasing from 17 per cent in 1900 to 58 per cent in 1960.[7] The Census of 1960 was the first to show that among southern blacks, the urban population exceeded the rural.

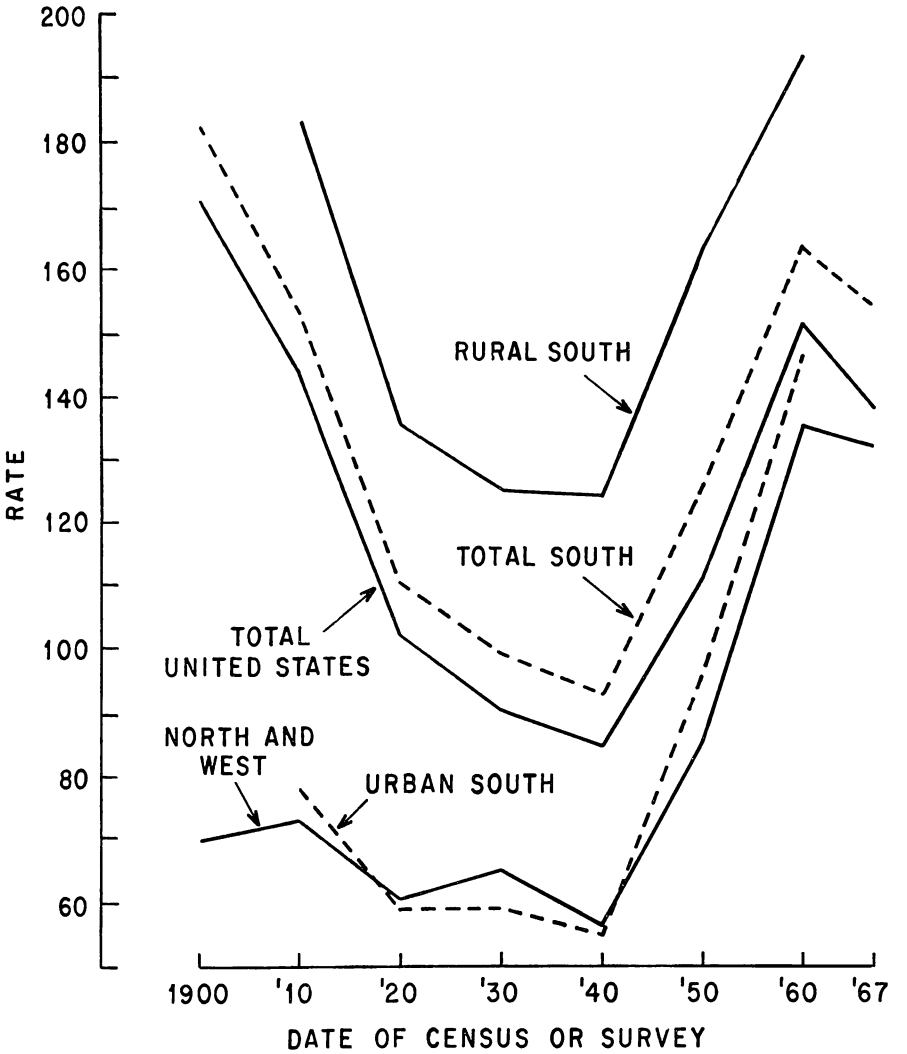
Figure 1 indicates that fertility rates among urban blacks were low early this century and declined only a little between 1900 and 1940. These general fertility rates for urban areas—about 60 births annually per 1,000 women of childbearing age—are extremely low. For instance, they are lower than the general fertility of the white population of the United States during the Depression when this rate was at a minimum[8] and they are as low as the general fertility rate is at present in such slowly growing countries as Hungary and Japan.[9] The very low level of these general fertility rates raises questions about the accuracy of the estimation procedure.

Problems of Measurement

Determining fertility rates from an age distribution obtained by a census can be misleading for the quality of demographic data for blacks is low. At least three sources of error may confound the fertility rates shown in Figure 1.

Official life tables were employed to estimate the number of births from the census tabulations of population under age five. Prior to

FIGURE I. ESTIMATES OF THE GENERAL FERTILITY RATE FOR NEGROES



Sources: United States Bureau of the Census, NEGRO POPULATION IN THE UNITED STATES: 1790 TO 1915, Washington, United States Government Printing Office, 1918, pp. 161, 182, 324–325; ———, UNITED STATES LIFE TABLES: 1890, 1901, 1910 and 1901–1910, Washington, United States Government Printing Office, 1921, pp. 76–77; ———, UNITED STATES LIFE TABLES: 1930, Washington, United States Government Printing Office, 1936, pp. 10–11, 26–27; ———, SIXTEENTH CENSUS OF THE UNITED STATES: 1940, Characteristics of the Nonwhite Population by Race, Table 3; United States Life and Actuarial Tables: 1939–1941, Table 9; ———, CENSUS OF POPULATION: 1950, P-E, No. 3B, Table 1; ———, CENSUS OF POPULATION: 1960, PC(2)-10, Table 1; United States National Office of Vital Statistics, Life Tables for 1949–51, Special Report Series, 41, No. 1, Table 9; United States National Center for Health Statistics, *United States Life Tables 1959–61,* 1, No. 1, Table 9; ———, *Vital Statistics of the United States: 1966,* II, Part A, Table 5–2.

1930, these life tables were based on data for Negroes in the Death Registration Area, not the entire black population.[10] If mortality rates for the total black population were greatly different from those of blacks in the Death Registration Area, the estimated fertility rates may be in error. In addition, the same life tables were used for urban and rural areas and if rural-urban differences in mortality existed the estimated fertility rates would be affected.

Census undercount is a second problem. Many demographers have described serious discrepancies in the count of blacks.[11] If undercount rates for women and children were very different, the estimates of fertility may be incorrect.

Finally, another difficulty is that not all mothers keep their children with them. If black women in northern cities send many of their offspring to live with relatives in the South, as some writers believed,[12] it will have the consequence of reducing estimates of urban fertility and increasing those for the rural South.

To investigate these difficulties, various assumptions were made about mortality, undercount and the absence of children from their mothers.

Mortality Assumptions

In recent years new estimates of mortality trends among blacks have been made using a technique that does not rely upon registered deaths.[13] The population enumerated at one census date is survived to the next census date by a variety of model life tables. Estimated populations for the later census date are then compared to the enumerated population for that census date to determine which model life table best represents the mortality of the interdecennial period. The use of this census survival procedure results in estimates of the expectation of life that are considerably shorter than those indicated by the official life table based on registered deaths. For example, the official life table for the first decade of this century shows a life expectation of 36 years for black females, but life tables derived by the census survival procedure indicate about 28 years as life expectation.[14] Much of this difference is accounted for by the higher infant and childhood death rates of the census survival life tables. Census survival life tables do not necessarily provide more accurate indications of the mortality rates. These tables have their own liabilities for they are sensitive to problems of census undercount.

General fertility rates were estimated twice; once using the official

life tables and once using life tables developed by the census survival procedure. These general fertility rates are shown below.[15]

	1910	1920	1930	1940
Assuming official life tables	143	102	90	84
Assuming census survival life tables	166	127	112	92

The use of census survival life tables raises the estimated fertility rates at each date and suggests the Depression decade was one of rapidly declining fertility. It does not, however, alter the general picture of fertility change. Therefore, quite different assumptions about mortality do not lead to different conclusions about fertility trends.

It is possible that urban death rates were higher than rural death rates and this could be another source of error. Some evidence suggests that blacks in cities had shorter life expectations than blacks in rural areas, but this evidence is ambiguous and many studies showed that mortality rates were high among rural blacks.[16] Few rural blacks were included in the Death Registration Area until the 1920's so it is difficult to investigate this topic rigorously. The assumption was made that the same magnitude of urban-rural mortality differences that characterized whites in 1910, also characterized Negroes. General fertility rates were then computed for three areas in 1910, assuming, first, that the official life tables represented mortality levels in all areas and, second, that urban-rural differences in mortality existed. These are shown below.

	North and West	Urban South	Rural South
Assuming official life tables in all areas	73	78	183
Assuming urban-rural differences	74	79	178

These figures suggest that urban-rural differences in mortality had very little effect upon the observed fertility differences in 1910. In later years, regional and rural-urban differences in mortality grew smaller, further limiting any impact such differences may have had upon fertility rates.[17]

Census Undercount

Following the censuses of 1940, 1950 and 1960, extensive studies were made of the undercount of blacks. They indicate that although the overall enumeration of Negroes was poor—undercount rates of ten to 15 per cent are reported[18]—black children were missed to about

the same degree as women of childbearing age. For the years 1940 through 1960, the general fertility rates were estimated assuming, first, no undercount and, second, undercount to the degree indicated by the studies of Ansley Coale for 1940 and 1950, and by the Bureau of the Census for 1960. For each census year, the two different estimates of the general fertility rate were nearly equal. This is because the undercount of children was offset by a similar undercount of women. Urban-rural differences in census undercount are not known, but it is improbable that difference in the patterns of undercount by age would be sufficient to seriously affect the observed rural-urban differences in fertility. Similarly, it seems improbable that the pattern of undercount by age at earlier dates was greatly different from that observed for the 1940 to 1960 period.

The general fertility rates shown in this paper are lower than those for nonwhites contained in the national vital statistics volumes. The rates in those publications are erroneously large for they have been computed with birth data corrected for underregistration, but with no adjustment for the undercount of women of childbearing age.

Children Living Apart from Their Mothers

Finally, the possibility that many northern black women sent their children to the South must be examined. Tabulations from the Censuses of 1950 and 1960 indicate place of current residence by place of birth. These data demonstrate that little interregional movement of young blacks has occurred. Only 2.5 per cent of the blacks born in the North in the five years preceding either 1950 or 1960, lived in the South when the census was taken. Approximately one per cent of the population under age five in the South in 1950 or 1960 was born in the North.[19] Even if the interregional movement of youngsters was two or three times as great in 1910 as after World War II, it would have had little effect on the estimated fertility rates.

These investigations lead to the conclusion that although the precise level of fertility rates cannot be ascertained, the trends indicated by Figure 1 are valid. Among urban blacks, fertility rates reached a low level early this century and remained at a low level until after 1940. Rural fertility rates declined throughout the period before 1940. These findings are consistent with those of other studies and other data. Warren Thompson, in analyzing trends for his 1920 census monograph, observed the low fertility of urban black women and concluded that only

rural Negroes were bearing enough children to replace themselves.[20] The National Health Survey, conducted in 1935–36, discovered that in most cities the fertility rates of blacks were low, lower even than those of native or foreign-born white women.[21] After the Census of 1940, reports were issued showing women by age and number of their own children present in their households. These tabulations can be used to calculate gross reproduction rates.[22] In the North and West the estimated gross reproduction rate for blacks changed from 1.02 in 1910, to .86 in 1940, but in the rural South the drop was from 2.74 to 1.78.

After 1940, fertility rates in all areas increased very rapidly. By 1960, urban fertility rates were apparently higher than those in rural areas 50 years earlier and rural fertility rates in 1960 were as high as or higher than at any previous time this century.

FACTORS EXPLAINING FERTILITY TRENDS

Demographers have used various explanations to account for the shift from high to low fertility rates in western societies. One of the explanations widely used at present is that during the nineteenth century, upward social mobility became possible for many individuals. Middle- and upper-class urban residents realized this and observed that if they had many children they would be unable to provide them with the education and training that were necessary if these children were to be socially mobile. Thus, middle-class urban residents were the first to limit their family size both by marrying at older ages and by controlling marital fertility. Gradually, these practices of family limitation spread to other groups within the society.[23]

Formerly, a quite different explanation for the transition had been given. Many writers speculated that with urban living certain biologic changes occurred that lessened the reproductive capability of men and women. In their view fecundity changes accounted for the fertility trends.[24]

This suggests that to understand why urban fertility rates were low for much of this century and to know why they changed in the manner they did, it is necessary to examine how three types of factors influenced fertility: first, socioeconomic variables; second, age at marriage and marital status variables and, third, biologic factors that are related to fertility.

Types of Data

The available demographic data do not facilitate the direct study of fertility changes; nevertheless, certain tabulations pertain to this topic. Most decennial censuses have obtained some information about the socioeconomic status of men and women who lived in different parts of the country. For instance, until 1940, a question was asked about literacy and since then questions about educational attainment have been asked. At all dates information was secured about the types

TABLE I. NUMBER OF CHILDREN EVER BORN FOR SELECTED GROUPS OF NEGRO WOMEN, BY PLACE OF RESIDENCE, 1940 AND 1910

	1910			*1940*		
Socioeconomic Variables	*North and West*	*Urban South*	*Rural South*	*North and West*	*Urban South*	*Rural South*
Literacy[a]						
Literate	1,362	1,698	3,036		n.a.	
Illiterate	1,813	2,024	3,155			
Educational attainment[a]						
One year high school or more				949	986	1,586
Elementary 5 to 8 years				1,212	1,268	2,269
Less than 5 years elementary				1,243	1,385	2,293
Occupation of husband[a,b]						
White collar	1,550			1,216		
Blue collar	1,860			1,515		
Unemployed or not in labor force	1,948			1,908		
Marital Status Variables						
Marital status of married women[a]						
Other than married-once-spouse-present	1,290	1,729	2,392	1,034	1,154	1,542
Married-once-spouse-present	1,963	2,378	3,791	1,629	1,596	2,653
Duration of marriage[b]						
Less than 5 years	678	821	1,211		n.a.	
5 to 9 years	1,655	1,948	2,942			
10 to 14 years	2,690	3,058	4,597			
15 or more years	4,267	4,806	5,390			
Age at marriage[b]						
25 or over		n.a.		798	714	1,685
20 to 24				1,423	1,214	2,472
18 and 19				2,077	1,820	3,025

[a] These rates have been standardized for age using the age distribution of black women aged 15 to 44 in 1960 as a standard.

[b] These fertility rates refer only to women who were married-once-spouse-present.

Source: United States Bureau of the Census, SIXTEENTH CENSUS OF THE UNITED STATES: 1940 Population Differential Fertility: 1940 and 1910, Women by Number of Children Ever Born. Tables 80, 82, 86, 90, 112, and 118; Fertility by Duration of Marriage, Tables 32 and 34.

of jobs held by men, providing another indicator of social status.

Since 1880, censuses have asked about marital status and this gives some information about marital stability. In addition, certain censuses have asked about age at marriage or duration of marriage.

Except for those of 1920 and 1930, each of the decennial enumerations since 1890 has included a question asking ever-married women the number of children they had borne. Comprehensive tabulations of replies to this question have been made only for the Census of 1910 and the censuses since 1940. These tabulations, however, do indicate the fertility of women at different socioeconomic levels and in different marital status categories.

Table 1 presents a summary of some of the information analyzed for this paper. It shows fertility for women grouped by place of residence in 1910 and 1940, and by socioeconomic or marital status. For example, figures on the top panel of this table show the average number of children ever born by literacy of women in 1910 who lived in three areas of the country: the North and West, the urban South and the rural South. These data refer to black women in the age range 15 to 44 years. The average number of children born to women in this age group is sensitive to the distribution of women by age. If most of the women in one area are close to age 40, their average number of children will likely be much greater than in another area where most of the women are 20 years old. To surmount this problem, the data in Table 1 have been standardized for age using the age distribution of Negro women aged 15 to 44 in 1960 as the standard. These figures show the average number of children born to groups of women. How many of these children may have been born to a woman before or after she moved to the place at which she was enumerated in 1910 or 1940 cannot be determined.

The Influence of Socioeconomic and Marital Status Variables

The figures in Table 1 lead to four conclusions. First, socioeconomic differentials can be seen in the childbearing of urban black women. In 1910, the number of children ever borne by literate women in the North and West—1,362 children per 1,000 women—was much lower than the number of children born to illiterate women—1,813. In 1940, urban women who had some high school education had much lower fertility than women who had not gone beyond elementary school. In both 1910 and 1940, wives of white-collar workers had borne fewer children than had wives of blue-collar workers. This demonstrates

that as early as 1910 socioeconomic differences existed in the fertility of black women in northern cities.

Second, the figures in Table 1 indicate that the lower overall fertility levels of urban areas were not simply the result of the socioeconomic characteristics of urban women. Controlling for socioeconomic characteristics revealed rural-urban fertility differences. In 1910, for instance, literate women in cities had borne far fewer children than had literate women in the rural South, and in 1940, women with some high school education in urban areas had fewer children than did similarly educated women in the rural South.

Third, within both urban and rural areas, marital status influenced fertility. In one set of tabulations shown in Table 1, women who had married were divided into two groups; those who were presently married to their first husbands and those who were in other marital categories. This latter category includes divorced and widowed women as well as some who were married to their second husbands. In both 1910 and 1940, women who lived with their first husbands had many more children than did women in other marital statuses.

The census inquiry about age at marriage or duration of marriage was altered between 1910 and 1940. Nevertheless at both dates, women who had married recently had fewer offspring than did women who had married many years before the census was taken.

Fourth, the figures in Table 1 demonstrate that the lower fertility of urban areas was not simply the result of the fact that a higher proportion of women in cities were in disrupted marriages or because they married later in life. Within each of the marital status and marital duration categories, urban women had substantially lower numbers of children ever born than did women in the rural South.

The lower fertility rates of urban areas, therefore, apparently cannot be attributed singularly to socioeconomic or marital status variables, although these factors played some role in keeping urban fertility rates at a low level. The low fertility of urban areas must be a consequence either of some combination of these variables or of other variables.

Health Conditions

It is extremely difficult to assess changes in the capability of couples to bear children for fecundity is not easily measured and only a few studies provide information about the prevalence of diseases that may affect fecundity. Despite this, many descriptions of childbearing trends among urban blacks before World War II mentioned that fecundity

impairments were common. Thompson speculated that sterility was one reason why black women in cities were bearing so few children around 1920.[25] In 1933, Kiser studied fertility among Harlem blacks, discovered their fertility rates were low and suggested that health problems, particulary the venereal diseases, might explain this.[26] In 1935, the National Health Survey found that pregnancy wastage was common among urban blacks and suggested that this might be associated with the high prevalence of venereal diseases.[27]

During the late 1930's, when public health activities rapidly expanded, studies found that venereal disease afflicted many blacks. One summary of this literature concluded that during the 1930's 20 per cent of the adult black population had venereal diseases and that because of poverty and the absence of medical facilities, very few Negroes received any treatment.[28] Among the early recruits and draftees for World War II, about 27 per cent of the blacks had syphilitic infections.[29] Myrdal, in his classic study of American blacks, observed that in addition to the venereal diseases, many blacks suffered from such diseases as pneumonia, influenza, tuberculosis and pellagra.[30]

It is possible that the poor health conditions and prevalent venereal diseases produced the high rates of childlessness observed among black women in 1940. Shown below are the proportions of women childless, by age, for 1910 and 1940.[31]

	1910		1940	
	Ages 40 to 44	Ages 45 to 49	Ages 40 to 44	Ages 45 to 49
Total women	11%	9%	24%	22%
Women in the North and West	20	17	24	32
Women in the urban South	15	11	26	24
Women in the rural South	7	6	14	13

Between 1910 and 1940, childlessness increased and by the end of the Depression rates of childlessness were very high. Approximately one-third of the married women in cities who attained menopause around 1940 had borne no children. It is not known how many children these women wished to bear, but most studies have found that few married women intentionally remain childless. In addition, one major study of contraceptive use by black women during the 1930's involved 5,600 urban black women who bore a child in 1931 or 1932. This investigation found that five-sixths of the black women had never used any contraception and that the one-sixth who had used contraceptives

were unsuccessful in spacing or preventing pregnancies.[32] This provides further support for the contention that the high rates of childlessness indicate the frequency with which health impairments limited Negro childbearing.

Factors Associated with Changes in Fertility : 1940 to 1960

Following the end of the Depression, the demographic characteristics of the black population changed in ways that one might expect would be associated with the persistence of low fertility or even further declines in childbearing. The proportion of blacks living in urban areas went up from 40 per cent in 1940, to 70 per cent in 1960.[33] However, as Figure 1 indicates, fertility rates within both urban and rural areas increased after 1940, and the magnitude of the changes in urban and rural areas seems similar.

Besides urbanization, the educational attainment of blacks improved. For example, the proportion of urban Negro women aged 25 to 44 who were high school graduates went up from 14 per cent in 1940, to 36 per cent in 1960. Within rural areas, the change in proportion who were high school graduates was from five per cent to 18 per cent.[34] Apparently, the economic condition of many blacks also improved. The median income of male nonwhite workers increased by a factor of seven between 1939 and 1960, while consumer prices doubled during the same period.[35]

Despite these changes, fertility rates did not fall; rather they increased. A further analysis of the data (figures not shown in this paper) indicates that both within cities and rural areas fertility went up among the poorly educated as well as among the extensively educated; among women married to white-collar workers as well as among women married to blue-collar workers. A general rise in fertility occurred that involved all areas and all social classes.

It is likely that these changes in fertility occurred in part because of improved health conditions. Beginning in the late 1930's many government agencies sought to eliminate contagious and dietary deficiency diseases. Large-scale programs for the control of venereal disease began in the late 1930's expanded during the 1940's and then became much more effective after penicillin treatment was perfected.[36] A trend toward the hospitalization of births also occurred and the proportion of nonwhite births occurring in hospitals went up from one-quarter in 1940, to 85 per cent in 1960.[37] Decreases in the death rate are indicative of the improved conditions. The age-standardized crude death

rate dropped from 16 per 1,000 in 1940, to ten per 1,000 in 1960; the infant mortality rate fell from 74 to 43 dealths per 1,000 births; and the maternal mortality rate fell from 77 deaths per 10,000 live births to nine.[38]

CURRENT DIFFERENTIALS IN FERTILITY

One might speculate that with a general rise in fecundity, differentials in fertility, at least those not arising from differences in age at marriage or marital stability, might diminish. It is possible to study differentials in urban fertility in 1960 much more extensively than fertility differentials could be studied in 1910 or 1940. Tabulations from the Census of 1960 included a one-in-one-thousand sample of the population.[39] This source provided data for 97 variables for each of 180,000 individuals indicating their family status, their economic position and their geographic location. This permits an analyst to put together any tables he wishes or to study the independent effects of variables in any manner he chooses.

To describe differentials in fertility in 1960, ever-married black women 15 to 44 were considered. The sample included 2,706 of these women. For each woman, six variables were selected. These are listed below as well as the way they were scored to facilitate analysis.

1. Fertility: Fertility equals the total number of children the woman reported she had borne by the time of the Census of 1960.
2. Marital Stability: Each woman who had married only once and who lived with her husband in 1960 was scored one on this variable. All other women, that is, women who were not living with a husband or who had been married more than once, were scored zero on this variable. This distinguishes women who were in unbroken marriages from all other women.
3. Age at Marriage: Age at marriage is the woman's reported age at first marriage.
4. Educational Attainment: Each woman was given a score on this variable equal to the total number of school years she had completed.
5. Region of Birth: Each woman born outside the South was scored one on this variable; each woman born in the South received a score of zero. This distinguishes women born in the South from women born in other regions.

6. Geographic Location: In some parts of this study, women were grouped by place of residence in 1960; namely, those in the North and West, those in the urban South and those in the rural South.

The region of birth variable comes closest to measuring whether a woman came from an urban or rural background. Almost all the women who were born outside the South were born and, presumably, raised in cities. On the other hand, between two-thirds and three-fourths of the women born within the South were born in rural areas.

To study fertility trends among different groups of women, the Negro women 15 to 44 in 1960 were divided into three groups; those in the North and West, those in the urban South and those in the rural South. Table 2 shows the mean and standard deviation for each of the variables used in this study. Overall, about one-fifth of the women

TABLE 2. MEANS AND STANDARD DEVIATIONS OF VARIABLES USED IN ANALYSIS OF FERTILITY AMONG NEGRO WOMEN AGED 15 TO 44 IN 1960*

	Total Women	*Women in North and West*	*Women in Urban South*	*Women in Rural South*
Region of birth				
Mean (per cent born outside South)	.19	.38	.05	.02
Standard deviation	.39	.48	.21	.14
Years of schooling				
Mean	9.46 years	10.25	9.37 years	7.81 years
Standard deviation	3.10	2.59	3.25	3.20
Age at first marriage				
Mean	20.13 years	20.51	20.05 years	19.41 years
Standard deviation	4.50	4.58	4.47	4.25
Marital stability				
Mean (per cent living with first husband)	.60	.59	.57	.69
Standard deviation	.49	.49	.50	.46
Children ever born				
Mean	2.85	2.40	2.71	4.16
Standard deviation	2.67	2.28	2.49	3.26
Size of sample	2,706	1,190	1,001	515

* Text indicates how variables were scored.

Source: United States Bureau of the Census, CENSUSES OF POPULATION AND HOUSING: 1960, 1/1,000, 1/10,000, Two National Samples of the Population of the United States, Description and Technical Documentation. Certain data used in this paper were derived from a computer tape file furnished under a joint project sponsored by the United States Bureau of the Census and the Population Council and containing selected 1960 Census information from a 0.1 per cent sample of the population of the United States. Neither the Census Bureau nor the Population Council assumes any responsibility for the validity of any of the figures or the interpretations of the figures published herein based on this material.

were born outside the South; they completed an average of nine and one-half years of school; they married at about 20 years of age; approximately 60 per cent of them lived with their first husbands; and they had borne an average of just under three children. The regional and rural-urban differences are in the anticipated directions. Women living outside the South in 1960 completed the most years of school, married at the oldest ages and had the fewest children.

Table 3 presents information about the intercorrelations of these variables. When interpreting these coefficients, it must be kept in mind that marital stability and region of birth were scored as dummy variables. Women born outside the South were assigned a score of one on the region of birth variable and women in unbroken first marriages were scored one on the marital stability variable.

The correlation coefficients in Table 3 indicate that being born outside the South was linked to greater educational attainment. The regression coefficient for the total sample reveals that northern-born women completed an average of one and one-half more years of schooling than did southern-born women. A woman's age at first marriage was related both to her region of birth and her education. Women born outside the South and women who completed many years of school typically married at older ages. Marital stability was linked to a young lady's age at marriage and to her educational attainment, but Table 3 yields no convincing evidence that region of birth influenced marital stability. Fertility was related to each of the variables discussed. Northern-born women averaged fewer off-spring than did southern-born women; the regression coefficient for the total sample indicates a difference of more than three-quarters of a child. Increases in educational attainment and delays in marriage both had the effect of lowering fertility. Women who were in unbroken marriages had larger numbers of children than did women whose marriages had been interrupted, the average difference being about one-third of a child.

The coefficients for the women in the different areas suggest that, in general, the direction and magnitude of the effects of the variables are similar. In each area, being born outside the South, attending school for many years and marrying at an older age were negatively related to fertility; marital stability led to increases in childbearing.

Although the zero order coefficients are of interest, multiple regression models provide additional information about these variables, for their independent effects can be examined. Table 4 shows the coefficients that result from the regression of fertility upon the other

TABLE 3. ZERO ORDER CORRELATION AND REGRESSION COEFFICIENTS, VARIABLES USED IN ANALYSIS OF FERTILITY AMONG NEGRO WOMEN AGED 15 TO 44 IN 1960

	Correlation Coefficients				*Regression Coefficients*			
Independent Variables	*Years of Schooling*	*Age at Marriage*	*Marital Stability*	*Children Ever Born*	*Years of Schooling*	*Age at Marriage*	*Marital Stability*	*Children Ever Born*
Total women (N = 2,706)								
Region of birth	+.19	+.05	+.00	−.11	+1.54*	+.56*	+.00	−.78*
Years of schooling		+.11	+.09	−.22		+.16*	+.01*	−.19*
Age at marriage			+.11	−.21			+.01*	−.12*
Marital stability				+.07				+.37*
Women in North and West (N = 1,190)								
Region of birth	+.19	+.03	+.03	−.07	+1.00*	+.27	+.04	−.35*
Years of schooling		+.07	+.11	−.16		+.13*	+.02*	−.15*
Age at marriage			+.15	−.23			+.02*	−.11*
Marital stability				+.04				+.18
Women in urban South (N = 1,001)								
Region of birth	+.01	−.00	−.02	−.03	+.19*	−.08	−.04	−.32
Years of schooling		+.10	+.15	−.16		+.13*	+.02*	−.12
Age at marriage			+.12	−.18			+.01*	−.10*
Marital stability				+.04				+.21
Women in rural South (N = 515)								
Region of birth	+.06	+.01	−.05	−.05	+1.40	+.41	−.15	−1.10
Years of schooling		+.11	+.05	−.17		+.14*	+.01	−.18*
Age at marriage			−.00	−.18			−.00	−.13*
Marital stability				+.09				+.61

* Regression coefficients marked with asterisks are at least twice as large as their standard errors.
Source: See Table 2.

TABLE 4. COEFFICIENTS RESULTING FROM THE REGRESSION OF CHILDREN EVER BORN ON OTHER VARIABLES USED IN THE ANALYSIS OF FERTILITY AMONG NEGRO WOMEN AGED 15 TO 44 IN 1960

	Partial Correlation Coefficients	*Partial Correlation Coefficients Standard Form*
Total women		
Region of birth	−.46*	−.07
Years of schooling	−.17*	−.19
Age at marriage	−.12*	−.20
Marital stability	+.58*	+.11
R^2	.10	
Women in North and West		
Region of birth	−.20	−.04
Years of schooling	−.13*	−.15
Age at marriage	−.12*	−.23
Marital stability	+.42*	+.09
R^2	.08	
Women in urban South		
Region of birth	−.29	−.02
Years of schooling	−.12*	−.15
Age of marriage	−.10*	−.17
Marital stability	+.43*	+.09
R^2	.06	
Women in rural South		
Region of birth	−.73	−.03
Years of schooling	−.16*	−.16
Age at marriage	−.12*	−.16
Marital stability	+.65*	+.09
R^2	.06	

* Partial regression coefficients marked with an asterisk are at least twice as great as their standard errors.

Source: See Table 2.

variables considered in this analysis. This table contains partial regression coefficients in raw score as well as beta coefficients or standardized partial regression coefficients. Coefficients of determination are also indicated. They are not large, but they are similar to those reported in other research involving fertility as a dependent variable.

First, note the regression model for the total sample. The partial regression coefficients indicate that each of the independent variables had a significant effect upon fertility. Significant partial regression coefficients are those that are at least twice as great as their standard errors. These coefficents demonstrate that for each year marriage was delayed, fertility was reduced by about one-eighth of a child. Each

year of additional education implied a reduction in fertility of approximately one-sixth child. More surprising, perhaps, are the large consequences that region of birth and marital stability had for family size.

Multiple regression models permit conclusions to be drawn that would be unwarranted if no more information were available than cross-tabulations such as those shown in Table 1. For instance, the partial regression coefficients in Table 4 indicate clearly that some socioeconomic differences in fertility cannot be attributed to variations in age at marriage or marital stability. After these variables were taken into account, educational attainment was negatively related to childbearing.

The effect of being in a stable marriage, apart from the effects of the other variables, was to increase fertility by an average of six-tenths of a child. Using this information and figures showing the distribution of women by marital status, it was estimated that the aggregate number of children born to black women aged 15 to 44 would be increased by ten per cent if all women were married once and had the fertility rates of women in stable marriages.

The coefficients in Table 4 show that coming from an urban background had an important effect upon fertility. This is not just because urban women went to school longer or because they married at older ages. Rather, being born outside the South had the independent consequence of reducing fertility by an average of one-half a child. A fuller exposition of this model indicated that being born outside the South, in addition to having a direct effect upon fertility, had a sizable effect through educational attainment. Northern-born women averaged about one and one-half more years of school than did women born in the South and this additional education reduced fertility.

The standardized partial regression coefficients allow the relative importance of the independent variables to be assessed. They suggest that, as used in this model, educational attainment and age at marriage were more important determinants of fertility than were region of birth or marital stability.

Table 2 indicated that substantial fertility differentials existed among the three areas of the country. Some, or perhaps all, of the areal differentiation may result from area differences in such things as the average years of school completed or average age at marriage. That is, hypothetically, the effects of the independent variables are identical

in each area and fertility differences are the result of differences in the mean score of the independent variables in each area. Partial regression coefficients from the equations involving total women can be used with the mean scores of the independent variables for the individual areas to determine what fertility rate would be expected within each area were the hypothesis true. Shown below are the observed and expected fertility levels for each area.

	Observed	Expected	Difference
North and West	2.39	2.56	−.17
Urban South	2.71	2.91	−.20
Rural South	4.16	3.33	+.83

These figures indicate that some of the areal difference in fertility can be attributed to differences in the mean levels of the independent variables. Expected fertility was lowest outside the South and highest in the rural South. However, the figures also demonstrate that not all fertility variation can be attributed to this cause. Observed fertility outside the South was actually lower than would be expected were the variables to have the same effect in each area; within the rural South observed fertility was really much higher than expected. This suggests that either the independent variables have different effects in the three areas or that areal differences affect the way other variables influence fertility.

To investigate these possibilities, multiple regression models were developed for women within the three different areas. The results are shown in Table 4. An examination of the partial regression coefficients indicates the independent variables had quite similar effects in each of the areas. Increase in educational attainment and delays in the timing of marriage reduced fertility, whereas marital stability led to higher fertility in each area. It can be concluded that the direction of the effects of these variables is the same in each area; however, some areal variation was seen in the magnitude of their effects.

This analysis has not completely explained why fertility rates in 1960 were lower in cities than in rural areas. It has demonstrated that socioeconomic and marital status factors had independent effects upon fertility within both urban and rural areas. Further investigations of such topics as contraceptive use, fecundity differences and the selective migration of low-fertility women to cities are needed to account for the rural-urban differences in fertility.

SUMMARY AND CONCLUSIONS

Black fertility rates in cities were at a low level 60 years ago, whereas the rates in rural areas were quite high. The socioeconomic characteristics of urban women and their more frequent marital disruptions help to explain why urban fertility rates were lower than were rural. Poor health conditions, however, were an additional and very important reason for the low fertility in cities. Prior to the mid-1930's, public health activities were modest in scope and little was done to control venereal disease. Descriptions of the life style of blacks in farm areas suggest that for some decades prior to 1940, rural blacks were becoming more impoverished as crops failed and farm prices fell.[40] These lower standards of living and the spread of disease helped to reduce rural fertility rates although they always exceeded urban birth rates by a wide margin.

The available evidence indicates that before World War II relatively few black women used birth control. In spite of this, growth rates were moderate and many women reached menopause with no children or with only a few children. This was particularly true of the Negro women who lived in cities. After World War II this changed and black women who did not use birth control undoubtedly found themselves bearing many children. The black women who were born in the early 1930's may complete their fertility with as many children as the women born during Reconstruction.

The transition to controlled fertility and to lower fertility rates among blacks has been occurring for some time, but this transition has been accelerated in the past decade. The analysis of data from the Census of 1960 showed that educational attainment and coming from an urban background both had substantial independent consequences for fertility. This suggests that well-educated urban black women were among the first to effectively limit their family size. The Growth of American Families study, a survey that included a sample of 270 nonwhite couples in 1960, provided further support for this view. A very large proportion of the nonwhite women in the North and women with a college education had used contraception, but less than half of the women on farms or with no more than an elementary education had used birth control. Nonwhite women who had a high school education and who were not from a rural background had fertility rates and expectations similar to those of white women, but nonwhite

women from a rural background or with a grade school education expected to have many more children than comparable white women.[41]

Between 1959 and 1967, the general fertility rate for nonwhites and each of the age-specific fertility rates, declined by about 30 per cent.[42] This is an indication of the fertility transition that is now occurring. It is likely that these fertility rates will continue to fall. Surveys such as the 1960 Growth of American Families study and the 1965 National Fertility study have discovered that nonwhite women desire to bear no more children than do white women.[43] In fact, black women apparently desire smaller families than do white women. The control of fertility will be fostered by demographic and social changes occurring within the black population. First of all, educational attainment has increased. The cohorts of blacks born 1938 to 1942 are the first in which a majority will obtain a complete high school education[44] and the school enrollment of teen-age blacks has continued to rise throughout the 1960's.[45] Second, urbanization of the black population has continued[46] and, because of the urbanization that followed World War II, a greater proportion of the women who begin their childbearing in the future will come from an urban background. Third, the development of new and apparently more effective contraceptives such as oral contraceptives and the intrauterine device is likely to lead to the more accurate control of childbearing. Although the oral contraceptives had been on the market for only five years, one-fifth of the black respondents contacted by the 1965 National Fertility study reported having used this method of birth control.[47] It is reasonable to presume that these changes will lead to lower fertility rates and slower growth of the black population.

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Dr. Paul R. Williams: My comments on Dr. Farley's paper will be quite brief, and hopefully will leave room for much discussion.

First, of course, I found the paper to be very interesting and informative. Negro fertility rates for the past 50 years are clearly indicated. The differences between urban and rural rates are also quite clear, and it is evident that some of these differences have persisted over time, although there have been many other changes which might have caused them to diminish.

What is not made so clear in Dr. Farley's analysis is how the demonstrated trends in Negro fertility compare with the overall trends for the United States during the same period.

This is an especially important consideration because, as has been pointed out on several occasions here, when discussing various characteristics of the black community, we need to know whether we are dealing with some general phenomenon that has a slightly different set of parameters, or whether we are dealing with an entirely different set of phenomena. In this connection, it is very important to specify what the general trends in fertility were over the period in consideration, and then to determine the extent to which black fertility followed or deviated from the trends.

A second question that is closely related to the one raised above is the nature of the absolute differences between the black and white segments of the population during the past 50 years. If Dr. Farley's analysis is correct, particularly where he corrects for underenumeration of the black female population, the absolute differences in fertility might not have been so great as is ordinarily assumed.

If we can assume that the estimates of white fertility as contained in various official publications are more or less correct, a comparison of those with Dr. Farley's estimates for the nonwhite population over the 50 years in question indicates that differences have been quite minimal. A plotting of the "official" fertility rates for the white population on Figure 1 for the years 1920 through 1950 supports the above contention. Differences were quite minimal, and in fact, in one period, around 1920, white fertility actually exceeded the estimate for nonwhites.

A third question that might be raised is, what accounts for the trends that are observed? If there are white-nonwhite differences in trends,

what accounts for these? Are there systematic "lags" in changes in black fertility?

It is interesting to note that the greatest upsurge in black fertility during the period studied occurred at a time when blacks were becoming more urban. Why did this happen? Was urbanization itself somehow contributing to the rise in fertility? Perhaps not, inasmuch as it is clear that both urban and rural fertility were increasing. However, it would be interesting to determine the extent to which the rise in urban rates was simply a displacement of the high rural pattern to urban areas.

Finally, in his effort to explain the differences that are observed in rural and urban fertility, Dr. Farley examined several variables, including marital stability and region of birth. He demonstrates the importance of the latter. A woman's fertility is clearly influenced by whether she was born in the South.

The above seems to highlight an additional problem. Precisely what do we mean when we speak of "urban" or "urbanization?" Is it simply the movement from a rural area to a city, or is some more elaborate process involved? If we think of urbanization as involving some sort of alteration in attitudes and values, as suggested by Dr. Farley, then it becomes clear that urbanization does make a greater difference in fertility than some of the trend lines would suggest.

To summarize, more comparative data are needed. Much more needs to be said about differences in black-white trends. Finally we need to know more about how much of the recent upward trend in urban fertility was simply a movement of high-level rural fertility into urban areas, and how much is explained by factors not yet explored.

Dr. Ryder: I cannot find compelling the argument about future trends in Negro fertility if that argument is based largely on what has happened to black fertility over the past six or eight years. Precisely the same thing has been happening to white fertility over the same period.

With regard to the regression analysis, the coefficient of determination is very low. Also, with regard to the regression analysis, I am bothered by the use of region of birth as a variable in parallel with the other kinds of variables that Dr. Farley was talking about. It seems to me that although region of birth may, in a technical or statistical sense, turn out with high values, it has the unsatisfying quality of being a very mysterious black box, and it represents not much more than a challenge to us. It is not really an explanation.

Dr. Karl Taeuber: I wonder why age is not included in the regression analysis. Fertility is indeed related to age at first marriage, years of schooling and so forth, each of which is also related to age. Its absence may confound some of the apparent findings.

Dr. Hauser: I have two or three kinds of questions but I am not sure Dr. Reynolds has the data to answer them. If one looks at the total fertility picture to which Dr. Ryder has contributed a good deal, we know at the present time that the proportion of women who do most of our childbearing, those 20 to 29 years of age, is increasing by 35 per cent in the eight years 1968–1975. We know that for several months in a row, in the most recent data, the number of births in the preceding 12 months has exceeded that for the same 12 months of the previous year. These situations suggest that we may be right at the forefront of the second post-war baby boom as an echo effect of the first. This is the total fertility picture. We know, also, on the basis of Dr. Ryder's analysis of the data, that much of the decline since 1957 has been the result of tempo rather than of quantity. Therefore, it seems to me that until Dr. Farley has similar kinds of data analyzed for the black population, he is on very tenuous grounds in making any kind of projections about the future course of black fertility.

Dr. Liebow: In regard to the fertility rates for the next ten years, I wonder whether something of the magnitude of Vietnam has an effect. Two million men were out of the country at any one time during this past year. Would this make any difference at all?

Dr. Hauser: Dr. Ryder has just said no, but I would like to differ in this respect: it is contributing to raising the age of marriage, which would definitely make a difference in the fertility of the total population, indirectly if not directly.

Dr. Notestein: We are aware that venereal disease is supposed to reduce fertility, but we do not have actual evidence that it was responsible for the previously low fertility of urban Negroes.

Dr. Edwards: I have been trying to find statistics on the subject. One study I found suggested that 15 per cent of the Negro women were childless because of disease. There are no hard data to back that up, and I wonder if the wrong inference has been made.

Chairman Kiser: It is true that the evidence for the responsibility of venereal disease for the high proportions childless among urban Negroes 30 years ago is largely circumstantial. However, I believe the circumstantial evidence is rather strong. Thirty years ago the prevalence of venereal disease among nonwhites was relatively high especially in

cities. The clean-up of venereal infection during the early 1940's was followed by marked reductions in childlessness among young nonwhite married women. This was also the period of the baby boom, but declines in childlessness and increases in fertility were more marked for young nonwhites than for whites.[1] As Dr. Farley has indicated there is little likelihood that contraceptive practice was a factor in the excessive childlessness of urban nonwhites 30 years ago. Although there is no large inductive study of the effect of venereal disease on fertility there have been small studies and numerous expressions of medical opinion.

Dr. Irene Taeuber: If you go through on a cohort analysis on fertility in the metropolitan areas of the North, something like 25 to 30 and in some cases even 35 per cent of the nonwhites reported having "no liveborn children."

If you run these cohorts through for children ever born per thousand total women, per thousand ever married women and per thousand mothers, the differences are reduced to an extraordinary extent. That is, whatever its influence, it had its major impact not on childbearing but on childlessness.

There were continuing increases in percentages single and percentages of the ever married without children in the birth cohorts from the earlier part of the nineteenth century to the cohort completing reproduction in 1960. The percentage of women who had never participated in reproduction was very high. The per cent of the women aged 45 to 49 who had never borne a child—i.e., the single plus the ever-married childless—was 24.5 for the white population and 34.0 for the nonwhite in New England. Comparable percentages were 24.6 and 37.8 in the Middle Atlantic States, 22.4 and 35.3 in the East North Central States, 16.8 and 23.0 in the South Atlantic States, and 19.6 and 26.8 in the East South Central States.

If births are related to women who were or had been married, the differences between whites and nonwhites were greatest for all ever-married women, far less for mothers. The major factor in the high nonparticipation in reproduction was the childlessness of the married. This was far more prevalent among the nonwhites than the whites outside the South. In the divisions of the South, the prevalence was greater among the nonwhites though the extent of the differences was less.

Dr. Karl Taeuber: I wonder if Dr. Farley can comment on the fact that many of the fertility differentials we know work in reverse direction from what one would expect from his health hypothesis. Highly

educated Negro women, for instance, had very high rates of childlessness, but this is hardly attributable to malnutrition or venereal disease. Perhaps the answer is that the total number of Negro women at any socioeconomic level above the minimum was so small that these differentials are irrelevant to the main hypothesis. But I am bothered by the need to discount the importance of differentials that contradict his hypothesis, particularly because of the paucity of direct evidence for it.

Chairman Kiser: In the case of the nonwhite college women there are other relevant factors. In our article on this subject Myrna Frank and I mentioned the somewhat later marriages and more marital instability and broken marriages among the nonwhite than among white ever-married women of college attainment.[2] There were also appreciably higher proportions of nonwhite than of white married women in the labor force. Interestingly, among the professional employed ever-married women, the proportion of school teachers was higher for nonwhites than for whites and the nonwhite school teachers were conspicuous for their low fertility in 1960. Finally, the inappropriateness of the venereal disease hypothesis would seem to be evident for the women of college status because at lower educational levels the fertility of nonwhites surpasses that of whites and the excess is largest at the lowest educational levels.

Dr. Price: Is not the critical question here whether the lower fertility of the college-educated Negro female is the result of childlessness or smaller size families?

Chairman Kiser: The proportion of childlessness tends to be higher among nonwhite than among white women of college status 25 years of age and over. However, childlessness does not completely account for the relatively low fertility of nonwhite as compared with white women of college attainment. For instance, for ever-married women 25–29 years old reporting four years of college, the 1960 Census indicated not only lower fertility and higher proportions childless among nonwhites than whites but also lower fertility of *mothers* among the nonwhites than whites.

Dr. Hauser: I would like to ask Dr. Farley whether he has been able to include the proportion of women in the labor force as one of his variables. I remember a study of differentials in the Chicago area in 1930, in terms of social and economic groupings based on Census tract materials, that found that the age-specific birth rate of black females was below that of the white in every age group except under

20. We argued that the explanation might be largely a health matter and, also, the result of the two-to-one relation of the proportion of black females to white females employed in the labor force. It would seem to me that to trace what has happened to black fertility since 1930 in the urban setting would definitely require information on this very significant trend of employment in the labor force.

Dr. Beasley: I would just like to allude to some data on the gonorrhea question. Recently we have been working with the Public Health Service to try to determine the percentage of women who actually do have gonorrhea.

As you know, gonorrhea in a female is a disease that frequently has, or may have, dire complications for her in relation to fertility as well as health.

The problem in determining the prevalence of the disease has been that there have not been adequate culture media to grow the bacteria. A new culture medium has been developed at the Communicable Disease Center of the United States Public Health Service, and we are using that culture medium to estimate the percentage of women with gonorrhea.

On a preliminary basis it would appear to be quite high, somewhere in the area of eight or ten per cent. If this is the case and the medium is a valid medium in terms of diagnosis, I think this could be a quite important factor.

Relative to fertility, what compounds the problem is that it is difficult to determine the pathology of scarring that occurs from gonorrhea in a patient or when the pathology in the pelvis, because of the changes brought about by chronic gonorrhea infection, causes her to move from a fertile to a subfecund to an infertile state. If this incidence can be determined, that would be one step in the right direction.

Dr. Farley: I can comment about some of the questions that have been raised. First, let me comment about the similarity of fertility trends among Negroes and whites. It was during the 1920's and 1930's when the age-specific fertility rates of the two racial groups were most nearly equal. On a cohort basis, the women born 1910 to 1915 were the ones who completed their childbearing with the most nearly equal number of children. In general, black fertility rates have moved in the same direction as white fertility rates, although the magnitudes of the changes have not been the same. For instance, after the end of the depression Negro fertility rates increased more rapidly than white fertility rates giving rise to a larger racial difference in fertility. In the

past ten years, black fertility rates have fallen a bit more slowly than white fertility rates meaning that the racial difference has persisted or even grown larger.

In discussing white fertility rates, we should bear in mind that there were important differences by nativity as well as the rural-urban differences. We know, for instance, that the native-white women of New England had low fertility rates by the 1880's. Declines in the fertility of foreign-born women and declines in rural fertility played a very important role in the pre-depression drop in white fertility rates.

Second, I would agree that we must be very careful when we talk about urbanization. This idea may have different meanings to different people. In this paper I have used region of birth as an index of whether or not an individual came from an urban background. Most adult blacks who were born in the North presumably were born and raised in cities, whereas most adult blacks who were born in the South came from a rural background. I have attempted to measure the effects of region of birth for education, age at marriage and fertility. For instance, coming from a southern background handicaps a black in that southern-born blacks complete on the average about 1.5 fewer years of school than do northern-born blacks. Southern background also has a substantial impact upon fertility as I have indicated in the paper. I believe this is one example of how we can put into operation ideas related to urbanization and measure their effects.

A third question concerned the future trends in black fertility. As I indicated, the fertility surveys find that most black women intend to have moderate or small sized families. Working with Professor Freedman leads me to have faith in fertility expectations. When women say that they are going to have few children, I think maybe they are giving us an indication of how they are going to act. Consequently I think we will see a continued decrease in the fertility rates of blacks in the near future.

A fourth question concerned my explanation for the low fertility of blacks before 1940. My explanation developed as a residual kind of explanation. I examined all the variables that might be used to explain low fertility rates and found that they could not explain the observed rates. However, there were a few field studies that did find very high rates of disease among blacks. Many diseases were reported, not just the venereal diseases. Pellagra was common as was tuberculosis and other diseases that may have had some impact upon general health levels and the ability of women to bear children. I might add

that Romaniuk has studied fertility among the Congolese population and has come to the conclusion that disease, particularly gonorrhea, is responsible for the high rates of sterility and low rates of fertility.

Finally, a suggestion was made by Professor Hauser that I examine the consequences of labor force participation of black women. I do indeed have statistics showing that women who are in the labor force have fewer children than women who are not working. However, I really do not know how to draw any sound conclusions from them. I cannot determine whether the women are working because they have few children or whether they are having few children so that they can work. Labor force participation is a variable that is difficult to incorporate into any model of fertility.

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