NBER WORKING PAPER SERIES
ON
HISTORICAL FACTORS IN LONG RUN GROWTH

FERTILITY AND MARRIAGE IN NEW YORK STATE IN THE ERA OF THE CIVIL WAR

Michael R. Haines
Avery M. Guest

Historical Paper No. 70

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
July 1995

This research was funded in part by the National Institute of Aging (1-R01-AG10120). This paper is part of NBER's research program in the Historical Development of the American Economy. Any opinions expressed are those of the authors and not those of the National Bureau of Economic Research.

NBER Historical Paper #70
July 1995

FERTILITY AND MARRIAGE IN NEW YORK STATE IN THE ERA OF THE CIVIL WAR

ABSTRACT

This paper analyzes a five percent systematic sample of households from the manuscripts of the New York State Census of 1865 for seven counties (Allegany, Dutchess, Montgomery, Rensselaer, Steuben, Tompkins, and Warren). The sample was selected to provide a diversity of locations, settlement dates, and types of agricultural economy. Two substantial urban areas (the cities of Troy and Poughkeepsie) are in the sample. This census was the first in the United States to ask a question on children ever born. These parity data, along with own-children estimates of age-specific overall and marital fertility rates, are used to examine the relation of fertility with rural-urban residence, occupation, ethnicity, literacy, and location within the state. Singulate mean ages at first marriage and other nuptiality measures are also estimated. The parity data provide direct evidence of fertility decline in the United States during the first half of the nineteenth century. Township data are added to the individual records to provide contextual variables. The issue of ideational versus socioeconomic and structural factors in fertility is discussed.

Michael R. Haines
Department of Economics
Colgate University
13 Oak Drive
Hamilton, NY 13346
and NBER

Avery M. Guest
Center for Studies in Demography
and Ecology
Department of Sociology, DK-40
University of Washington
Seattle, WA 98195

INTRODUCTION

One of the major issues in demography is the study of fertility transitions across time and societies [Bulatao and Lee, 1983; Cleland and Scott, 1987]. Much of the historical work on this has focussed on Europe and has concentrated on the last two or three decades of the nineteenth century, when fertility commenced its decline in many presently developed nations [Coale and Watkins, 1986]. There is also a body of research on the earlier fertility declines in France and in the United States, areas which innovated in the transition to the small family [van de Walle, 1978, 1980; Wrigley, 1985; Easterlin, 1977; Vinovskis, 1979, pp. 1-25; Smith, 1987]. Despite the increasing number of studies, there presently exists little consensus on the causes of the fertility decline in Europe [Knodel and van de Walle, 1979; Watkins, 1986].

For the United States in the nineteenth century, the literature has emphasized increasing land scarcity and rising land prices as causes for the fertility decline in rural areas [Yasuba, 1962; Forster and Tucker, 1972; Easterlin, 1976, 1977; Easterlin, Alter, and Condran, 1978; Leet, 1976; Schapiro, 1982, 1986]. But there has been controversy about the influence of education, religion (and other cultural variables), non-agricultural employment opportunities, and the fact that the land availability hypothesis does little to explain parallel decline in urban fertility [Vinovskis, 1976, 1979, pp. 1-25; Leasure, 1982; Sundstrom and David, 1988; Smith, 1987]. The role of nuptiality in the American fertility transition has also been given less attention, since the Federal census, the main source of information on nineteenth-century fertility (using child-woman ratios), did not publish information on population by age, sex, and marital status until 1890 [Smith, 1987].[1]

The state censuses of New York in the middle of the nineteenth century can provide additional insight into the historical American fertility decline. These censuses, especially those of 1855, 1865, and 1875, are rich sources for social and demographic analysis. In addition to the published volummes, many of the original manuscripts have been preserved in county clerk's offices and

have been microfilmed by The Genealogical Society.[2] The census manuscripts have been used by a number of researchers to study fertility, migration, mortality, and family structure [e.g., Bash, 1955; Stern, 1987; Ryan, 1981; Glasco, 1978; Davenport, 1984, 1985; Haines, 1977; Parkerson, 1982]. These censuses were often in advance of the Federal enumerations in the questions asked and the information obtained.

The present paper will utilize individual and household level data from the manuscripts of the 1865 New York State census to investigate patterns of fertility, nuptiality, and family formation in that era. Contextual variables for town of residence from the published census are also used. Particularly useful for that analysis and the reason for the choice of this particular census are the data on children ever born (parity), collected for adult women as part of the regular enumeration in June, 1865. This census seems to have been the first regular enumeration to have asked such a question.[3] The manuscripts also contain information on the name, age, sex, race, marital status, place of birth, race, and relationship to head of household of each household member. These data are valuable for constructing own-children estimates of age-specific overall and marital fertility rates [Cho, Grabill, and Bogue, 1970, ch. 9]. The information on marital status also makes possible estimation of singulate mean ages at first marriage and other measures of nuptiality [Hajnal, 1953].

THE DEMOGRAPHIC TRANSITION

Interpretations of the general Western fertility transition have varied greatly. Some [Caldwell, 1982] have viewed the transition as causally related to the process of social and economic transformation occurring in Europe, particularly the declining economic utility of children, while others [Knodel and van de Walle, 1979; Lesthaeghe, 1983] have argued that the structural changes were only weakly related to the transition. Rather, they have emphasized such factors as the diffusion of technical knowledge about fertility control and cultural receptiveness to the idea of relatively small families.

The U.S. fertility transition of the nineteenth century constitutes an

important, although somewhat unique, part of the general European transition. By 1800, the white population of the United States apparently had one of the highest fertility rates in the world, certainly in Europe and North America [Sanderson, 1979]. During the nineteenth century, a long-term decline in U.S. fertility occurred, although it was by no means continuously sustained [Tolnay et al., 1982; Smith, 1987]. In addition, earlier and more rapid decline was especially characteristic of the New England and Middle Atlantic states, including New York.

Research on the causes of the U.S. transition has traditionally been somewhat detached from studies of the European transition, although they involved similar time points and cultural groups. A central scholarly question has been why the United States had a fertility transition when it was still predominantly rural. More traditional demographic transition theory has viewed rural conditions as generally incompatible with fertility decline for a variety of reasons, including the relatively high economic utility of children in agricultural production and the difficulty of farm women in developing distinctive work roles which would provide clear alternatives to childbearing.

In dealing with the causes of the American rural fertility decline, research by economists has stressed shortages of available farmland as a major factor [Easterlin et al., 1978; Forster and Tucker, 1972; Leet, 1976; Schapiro, 1982; Yasuba, 1962]. As the century progressed, farmland became scarcer and more expensive, especially in the older, longer settled portions of the United States. Thus, families are hypothesized to have experienced cost increases which led to fertility restriction. These included difficulties in providing endowments (especially land) to children when family size was large, and also problems among the younger generation in marshalling resources to afford marriage. Resulting delayed marriage would have restricted the time in the reproductive life cycle for childbearing.

Other research [Leasure, 1982] has explained the American fertility decline as a consequence of the rise of individualism, which allowed families to reject traditional high fertility norms. Leasure has primarily measured

individualism across geographic areas in terms of the proportion of residents who belonged to Protestant Churches with a strong emphasis on free will in religious commitment, especially Congregationalists, Friends, Presbyterians, Unitarians, and Universalists. Leasure's approach is somewhat similar to that of Lesthaeghe [1983] which explains the continental European decline in terms of cultural factors such as the secularization of the society.

Still other research [Guest, 1981; Guest and Tolnay, 1983] has attempted to relate the U.S. transition in the late 1800's more directly to causes which have been discussed in relationship to the European continental transition. Two factors have been especially emphasized: first, the growing trend toward urbanization and industrialization, and, second, the growing economic costs of children through increasing enrollment in school during the teenage years, rather than employment. Since the growth of U.S. educational systems was not always closely associated with urbanization or industrialization [Guest and Tolnay, 1985], it could exert an independent influence on fertility in a relatively rural society. In addition, the farm mechanization of the United States has been viewed as an important social force which reduced the need for agricultural labor, and thus limited the economic utility of farm children [Guest, 1981]. Also related is the recent work of Sundstrom and David [1988] which stresses the increase in employment opportunities for farm children resulting from the growth of urban areas and non-agricultural industries. This increased the size of the inducement necessary to keep children nearby in farming activities. Some of this research suggests that the availability of improved farm land affected fertility through delaying marriage, rather than directly within marriage. In other words, land availability itself may have had only a weak causal relationship to variations in marital fertility.

There are several problems with previous research on the American transition. The vast bulk of the studies before 1880 are aggregative in nature, typically relying on crude measures of fertility such as child-women ratios [see Smith, 1987]. One notable exception to this are the studies of the northern United States in 1860 using the Bateman-Foust sample by Easterlin

[1976] and Easterlin, Alter, and Condran [1978].[4] The fertility measures were, however, simple marital child-woman ratios. While aggregative studies are useful, it has generally been impossible to determine the degree to which fertility was related to broad aspects of the environment (included in the analysis) as opposed to more immediate household characteristics which have typically not been included. Some important household predictors might be measures of social-economic position and farm organization. In addition, the studies have frequently considered a limited range of aggregate predictors, typically providing poor coverage of such characteristics as urbanization-industrialization, and the development of educational systems. Clearly, the measurement of fertility could also be improved.

Studies of U.S. fertility at the end of the nineteenth century, when the decline was well underway, also have problems. While studies based on manuscripts permit the inclusion of household characteristics in the analysis, only a limited number of attributes are available for analysis. In particular, we have little knowledge of how characteristics of agricultural households affected their fertility. Thus, while farm characteristics were collected in 1900 at the time of the census, most of the forms were destroyed so it has been impossible to link the reports from the population and agricultural forms. In addition, these studies focus on a period when the fertility transition was already well-advanced (at least in the Northeastern United States), and thus do not clarify relationships at earlier stages in the transition.

NEW YORK STATE IN THE NINETEENTH CENTURY

Data from the federal and state censuses of New York permit some very rough estimates of crude birth rates for various time points in the early and middle 1800's. Federal data are available for years ending in 0, while state data are based on years ending in 5. Using the published sources, we have estimated the ratio of enumerated infant children under 1 per 1,000 total population. These numbers undoubtedly underestimate fertility in the population, due to inability to adjust directly for high infant mortality and

also probable high underenumeration of children under 1 year of age, but they provide a first approximation to fertility trends.

The data suggest little linear trend in fertility. The relatively high fertility in the late 1830's and early 1840's was followed by sharp decline in the late 1840's. Fertility then increased again in the early 1850's, to be followed by another decline from 1855 to 1865. The infant-woman ratios by year are 1835, 35.5; 1845, 34.5; 1850, 24.3; 1855, 29.6; 1860, 26.7; 1865, 24.3. Certainly, the figures for 1835 and 1845 indicate quite high fertility, especially given the fact that the total births have not been adjusted upward to account for the (probably) high rate of infant mortality. For the 1850 through 1865 enumerations, it was also possible to calculate more refined rates based on the age of women in the reproductive years. These measures suggest the same general conclusions as the cruder infant-woman ratio.

Some of the fluctuations in fertility may have reflected the importance of foreign migration to the United States; the immigrants, especially drawn from Ireland and Germany, clearly had higher fertility than the U.S. natives in the Northeast. In addition, fertility changes from 1860 to 1865 undoubtedly indicated the influence of the American Civil War, which drew large numbers of men from their local communities. Some portion of the fluctuations was probably due to changes in accuracy of enumeration of infants and fluctuations in infant mortality (such as that possibly caused by the cholera epidemic of 1849).

Overall, then, while New York was apparently in a fertility decline in 1865, the trend was uneven. In addition, Bash [1963] has shown that the longitudinal correlations between child-women ratios over townships in New York State were quite high for the periods 1855, 1865, and 1875. Apparently, the factors related to stage in the transition at one time point were similar to those at the other time points. Fortunately, there are several available studies which use data from the New York state census to investigate historical fertility patterns. These studies may be divided on the basis of whether they primarily focus on individual or aggregate-level social

correlates of fertility.

Perhaps the major original analysis of the 1865 census data was Bash's [1955] study of Madison County, in the central Finger Lakes area of the state. His study was especially important because he related various household and individual social characteristics to fertility variation, albeit within one geographic area. Predominantly rural, Madison County was characterized by relatively (although not strikingly) low fertility in comparison to the rest of the state. Of the "independent" variables considered, foreign birth was a strong positive predictor of fertility, while white collar workers had somewhat lower fertility than unskilled workers. Interestingly, farm owners and farm tenants-laborers did not stand out for especially low or high fertility. While perhaps unanticipated, this finding was reasonable, given the fact that predominantly agricultural Madison County did not stand out for high overall fertility within the state. Another good correlate of fertility was the value of the dwelling, with owners of the cheapest dwellings having the highest fertility.

Madison County, as many parts of the Northeast, was characterized by an especially high rate of childlessness [Tolnay and Guest, 1982]. There has been some interest in the question of whether this pattern was due to voluntary choice or involuntary factors such as poor health or nutrition. Interestingly, Bash [1955, P. 179] reports that much of the negative relationship of home value to fertility was due to the childless. Childlessness was especially concentrated among the well-to-do, except at the highest wealth levels.

Bash also considered the role of farm characteristics in differentiating fertility among the agricultural population. Neither value of the farm nor value of farm tools and implements was especially useful for differentiating fertility behavior; interestingly, fertility was highest among the poorest and richest farms. He did not report data on the relationship between farm size and land availability, on the one hand, and fertility variations, on the other hand.

On the whole, then, the data suggest that measures of social status and birthplace were more useful for understanding fertility than measures of variations in agricultural life. Such results imply that aspects of social and economic aspirations for themselves or their children may have been important in understanding New York fertility variation, at least in Madison County. Or, household roles of men and women may have varied by social status, affecting fertility behavior.

A somewhat different empirical perspective on fertility variations at the time is provided by Stern [1987] in his study of Erie County, which includes the large city of Buffalo. Using child-women ratios (children aged 0-4 divided by reproductive age women) for 1855, Stern finds relatively small fertility differences over 10 urban occupational classes, except for the low fertility of professionals [Stern, 1987, P. 52]. These occupational groups include a diversity of white collar and blue collar groups. Although not analyzing the 1865 data, Stern did discover that occupational differences emerged much more clearly by 1900. Similar to Bash, Stern [1987, P. 56] ascertained that foreign born women had somewhat higher fertility than the natives in 1855.

Some of Stern's most interesting findings relate to fertility differentials among farm families in Erie County in 1855. Contrary to the land availability thesis, farmers with small amounts of unimproved land were not characterized by especially low fertility. For farm owners, most agricultural characteristics related to their wealth, mechanization, and land availability made little difference in fertility. However, among tenants the high fertility of the poorest farmers stood out. Overall, only poor tenant farmers had unusually high fertility [Stern, 1987, p. 124], a finding which would seem quite incompatible with the idea that fertility restriction occurred due to the difficulty of assembling one's or children's land. One problem is, however, that Erie County had been settled for a number of decades before 1855, altering its value as a test of the land availability hypothesis.

Overall, then, Bash and Stern's work provide somewhat inconclusive

findings on the relationship of individual attributes to fertility variations in mid-nineteenth century New York. The relationship of farm characteristics to fertility is ambiguous, and the relationship of urban social status to fertility is mixed. It is tempting, of course, to argue that the social status differentials (or lack of them) may have reflected the contextual influence of the local environment. For instance, school attendance may have been more universal across social classes in Erie County, thus leading to fewer differences in the role of children.

The pioneer aggregate study of historical fertility patterns in New York was conducted by Bash [1963] who analyzed variation in child-women ratios for townships throughout the state in 1855, 1865, and 1875. Using analysis of variance techniques, he found that population density, proportion native born, farm land value, and value of home dwellings were all negative predictors of fertility levels. While he did not especially emphasize the fact, the value of dwellings stood out as the strongest predictor. However, his procedures did not involve tests for the importance of other variables; furthermore, the independent variables were not all considered together as predictors.

Guest [1990] has also analyzed the aggregate-level correlates of New York fertility for counties in 1865, using data reported in the state census on parity distributions of native and foreign-born ever-married women, regardless of age. The probability of having any births and the probability of advancing from the fifth to the sixth births were the major dependent variables. These two separate variables were considered separately because childlessness might be a different phenomenon than other fertility decisions. Indeed, the geographical distribution of the two progression ratios was somewhat different. Interestingly, childlessness was especially high in some of the most rural parts of the state, especially in the central region (such as Madison County).

One virtue of Guest's study is the large number of independent variables in the analysis. Not surprisingly, parity progression ratios across counties were influenced by the female age structure and the prevalence of early,

universal marriage. There were also a large number of social and economic variables which correlated with both progression ratios, including measures of economic development, educational orientation, land availability, urbanization and industrialization, orientation to religion and religious individualism, and the state-national birthplace origins of the residents. While a number of these variables were correlated with parity progression ratios, the number of variables with a clear independent influence on fertility was relatively small. In particular, the value of homes was a striking negative correlate of both progression ratios. This was true for both native and foreign-born women. In addition, the importance of school attendance as a positive predictor of childlessness for native women was clearly evident.

The finding in both aggregate studies about the importance of home value to understanding fertility variation is quite consistent with previous studies of France and Massachusetts about the same time [McQuillan, 1984; Van de Walle, 1978, 1980; Vinovskis, 1978, 1981]. In addition, it is consistent with two non-aggregate studies [Ryan, 1981; Stern, 1987] which emphasize the relationship of economic prosperity and materialism in nineteenth century New York to changes in the nature of families, especially in the business and professional classes. Stern's study of Erie County (Buffalo) and Ryan's of Oneida County (Utica) argue that growing prosperity was associated with a breakdown in traditional communal or patriarchal families. Opportunities to achieve economic prosperity led families to emphasize the acquisition of goods and material possessions rather than children, and to concentrate their wealth on enhancing the occupational and educational opportunities of a limited number of children. Large numbers of children simply contributed little directly to the family economy, and the family's material prosperity was primarily enhanced by the efforts of the husband in a market-oriented economy.

From this review of studies, it seems clear that areal variations in New York state fertility in the mid-1800's probably related most strongly to "modernization" variables, especially associated with economic development and the importance of educational systems. On the whole, strong evidence for the

direct importance of agricultural systems cannot be clearly discerned, especially when one focuses on the role of land availability. Indeed, the importance of land availability arguments is not supported at the individual level either. The studies of individual-level variation in fertility seem confusing on the major social correlates of low fertility.

Further research on the individual level manuscripts would be especially useful for studying the question of which individual level characteristics were most strongly correlated with low fertility. Also, it will be possible to obtain estimates of nuptiality behavior at a much earlier date than permitted by the Federal census returns. Finally, it is of interest to examine the effects of contextual versus individual-level characteristics on fertility.

SAMPLE AND METHODS

The present analysis will proceed from a five percent systematic sample of the 1865 census manuscripts for seven counties: Allegany, Dutchess, Montgomery, Rensselaer, Steuben, Tompkins, and Warren. These particular counties were selected to represent various regions of the state with different dates of settlement dates and varied economies. So, for example, Allegany is located in the far western part of the state, while Warren is located by the Adirondack mountains in the northeastern portion of the state. Both were relatively newly settled (by New York standards) and rather rural. Dutchess and Rensselaer are located in the Hudson valley and were long settled and rather urban. Montgomery was located somewhat west of Albany in the Mohawk valley and had a good deal of manufacturing, while Steuben and Tompkins are located in the Finger Lakes district of central New York and were relatively rural and agrarian. The ample contains two urban areas of significant size, the cities of Troy (with a population of 39,293 persons in 1865) in Rensselaer county and Poughkeepsie (with 16,073 inhabitants in 1865) in Dutchess county. The overall sample contains 16,360 individuals in 3,325 households and 4,034 families.[5]

The context of the fertility decline in the seven counties is given by

Table 1. Child-woman ratios (children aged under 5 per 1,000 women aged 15 to 49) are calculated for the white population (the total population in 1855 and 1865).[6] They are based on both the published Federal and state census documents. It is clear that (a) New York State was experiencing a fertility transition in this era, albeit uneven (e.g., the 1850s); (b) fertility ratios were lower in New York than the average for the nation as a whole; (c) fertility outside New York City was generally higher than in the city; (d) this difference tended to converge over time; and (e) the experience of the seven sample counties tracked that of New York outside New York City, although the decline in the seven counties was a bit more rapid between 1830 and 1875.

Table 2 provides some characteristics of the sample counties in comparison with New York State in 1865. Both Allegany and Warren counties had below average population density, with a high proportion of adult males as farmers, rather low urbanization, lower fractions of agricultural land improved, and above average fertility (as measured by child-woman ratios). In contrast, the longer settled counties of Dutchess, Montgomery, and Rensselaer had much higher levels of urbanization and population density, lower proportions of farmers among the adult male population, and high proportions of total agricultural land improved. The longer settled counties also had average or below average child-woman ratios. Allegany, Steuben, and Warren counties were rather less urban and more agricultural with lower proportions of agricultural land improved. Tompkins was notable for its quite low child-woman ratios, in contrast to close-by Steuben.[7] Overall, it seems that this sample provides a reasonable representation of the variety of economic and demographic conditions of at least New York State exclusive of New York City at the time of the American Civil War.

The procedures used here are based on own-children methods [Cho, Grabill, and Bogue, 1970, ch. 9; United Nations, 1983, pp. 182-195], which require the matching of children to their mothers. This was done at the time of the original sampling. In this paper, the assigned own children variables and the family files are only used in the regression analysis. The data on parity,

nuptiality, and childlessness are taken from data on individuals from the census sample and do not utilize the matched own-children.

FERTILITY IN NEW YORK STATE, 1865

When provided with such data on children ever born, one of the first questions to be asked concerns average parities by age.[8] Table 3 tabulates average parity by age of women for the total sample as well as for the rural and urban and the native and foreign-born populations. Parities are calculated for both total women and for ever-married women (i.e., currently married, widowed, or divorced).

A perusal of Table 3 indicates that there was a relatively regular increase of parities with age, lending confidence to the reliability of the data. This result also provides important direct confirmation of the fertility decline in the United States in the first half of the nineteenth century. Among ever-married native-born women, the declines in average parity were from seven for women aged 75-79 (i.e., born 1786/90 and in their peak childbearing years during the period approximately 1806/1825) down to 4.6 children per woman aged 45-49 (i.e., born 1816/20 and in their peak childbearing years during about 1836/1855). Also of interest is the fact that declines were apparently taking place in both rural and urban areas and among both the native and the foreign-born populations. Unfortunately, the sample sizes at the oldest ages for these subsamples are relatively small and thus subject to larger sampling errors. Nonetheless, the results from analysis of child-woman ratios and other aggregate census tabulations are strongly supported by these parity data, both in terms of differentials and trends in fertility. Doubts about the reality of the decline of fertility among white American women in the antebellum period can be assuaged by these data.

Another point of note is that the average parities among women of completed fertility (i.e., ages 45 and older) were, in New York in 1865, considerably higher than the average parities among similar age groups reported in either the public use sample of the 1900 Federal census or in the published results of the 1910 census [U.S. Bureau of the Census, 1943]. So,

for example, women aged 55-64 in 1865 had 5.48 live births, on average. This was 5.85 births for ever-married women. Comparable figures for 1900 were 4.73 for total white women and 5.14 for ever-married white women for the nation as a whole. For 1910, the results for white women in the northeastern states were 3.95 and 4.44 livebirths respectively.[9] This provides additional confirmation of the rapid reduction in fertility occurring over the mid- and late nineteenth century.

The New York State censuses in the middle of the nineteenth century also preceded the Federal census in eliciting information on marital status. The first Federal census to ask a question on marital status was in 1880, and no results on marital status were published until the census of 1890.[10] The present sample permits direct evidence on marriage considerably earlier in the century. One of the problems with the study of the fertility transition in nineteenth century America is to disentangle the effect of nuptiality and marital fertility. Earlier work by Sanderson [1979] used the Coale and McNeil [Coale, 1971] and Coale and Trussell [1974] models of marriage and marital fertility to decompose the fertility decline into contributions of declining marital fertility versus increasing age at marriage and proportions never marrying. The conclusion was that, over the period 1800-1890, about two thirds of the decline in overall fertility was due to changes in marital fertility rates and about one third to changes in marriage rates [Sanderson, 1979, Table 2]. Because of the lack of direct data, however, Sanderson was forced to make estimates of nuptiality prior to 1890, including an assumption of a female age at first marriage of 20 in 1800.

Table 4 has some nuptiality measures calculated from the present sample. They include the singulate mean age at first marriage (SMAM) [Hajnal, 1953], the proportion married at ages 20-24, the percent single at ages 45-54, and (for females only) Coale's index of proportions married, Im [Coale & Watkins, 1986, Appendix B]. Overall, it can be noted that, not unexpectedly, the male SMAM (26.5 years) was considerably higher than that for females (23.7 years). This latter is very close to the SMAM calculated for all white females in the

United States in 1890 (23.83 years). Similarly, age at marriage for females was lower among the native population (23.6 years) than among the foreign-born population (24.3 years) in our 1865 New York sample. This was also true for native white and foreign-born white females for the country as a whole in 1890 (with SMAM's of 23.7 and 24.0, respectively). Rural women appear to have married earlier than urban women -- by a full year on average. The same differentials did not apply to males who also had ages at first marriage 2-3 years older than those for females. Rural-urban and native-foreign differences were not noticeable among men. Again, this accords with results at the end of the century. Finally, the proportion single at ages 45-54 for this New York sample in 1865 was similar to that for the United States in 1890, being 7.4 percent for females in New York in 1865 and 7.3 percent for the white population of the United States twenty five years later.

Despite the higher SMAM among foreign-born females in these New York counties, they exhibited a higher level of Im, largely because of higher proportions married at older ages. This is reflected in the relatively low proportions of foreign-born women at ages 45-54 who had never married (i.e., who were single). This pattern of both a higher SMAM and a higher Im value among the foreign born was true for the United States in 1890.

In general, the measures of female nuptiality presented in Table 4 are similar to those for the white population of the United States in 1890. They reflect, however, the general differences between the United States and western Europe in the nineteenth century, with American women marrying earlier and with fewer remaining unmarried during their reproductive years. So, for example, the female SMAM was 24.5 years in France in 1866, 25.4 years in England and Wales in 1861, 26.0 years in Scotland in 1861, 26.3 years in Germany in 1871, 28.0 in Belgium for 1862/66, and 27.7 years for Sweden in 1850 [van de Walle, 1974; Teitelbaum, 1984; Knodel, 1974; Lesthaeghe, 1977; Mosk, 1983]. Similarly, Im was .530 for France in 1866, .502 for England and Wales in 1861, .422 for Scotland in 1861, .405 for Ireland in 1871, .454 for Germany in 1867, .403 for Belgium in 1866, and .409 for Sweden in 1880 [Coale

and Watkins, 1986, Appendix A]. Finally, proportions single among females at ages 45-54 were generally higher in western Europe: 11.9 percent in England and Wales in 1861, 20.1 percent in Scotland in 1861, 14.8 percent in Sweden in 1870, 11.9 percent (at ages 50-54) in Germany in 1871, and 13.8 percent in the Netherlands in 1869 [Mitchell and Deane, 1971; Sweden, 1955; Knodel, 1974; Netherlands, 1970]. This contrasts with the 7.4 percent found among New York women in 1865.

A final look at the data for individual women in the New York sample is provided in Table 5, which examines childlessness by age. These are women who reported on children ever born and gave an answer of zero. Of greater interest are ever-married women who were aged 45 and above in 1865. Generally, these numbers are quite low, and, with due allowance for small cell sizes in many cases at older ages, likely indicate little voluntary childlessness. So, for example, the tabulations of parity from the 1910 Federal census manuscripts done by the Bureau of the Census reveal, for ever-married white women, 9.6 percent childless for women aged 45-49 and 7.9 percent for women aged 70-74. This was 11.1 percent and 9.1 percent, respectively, for women residing in the Middle Atlantic Region (which included New York) [U.S. Bureau of the Census, 1943]. The 1911 Census of Marriage and Fertility of England and Wales revealed that only 5.8 percent of women married in the period 1861-1870 and married at ages 20-24 remained childless. Among the same marriage cohort but married at ages 25-29, 9.9 percent remained childless [Leridon, 1977]. Tolnay and Guest [1982] note percentages childless beyond reproductive ages among women in natural fertility populations of 3 to about 10 percent, depending on marriage age. Such comparisons would indicate that older ever-married white women in New York State in 1865 were not controlling fertility generally with voluntary childlessness. Such women at zero parity at ages above 45 probably experienced biological sterility either themselves or through their spouses.

A number of factors can impinge on fertility, as discussed above. The final set of results in Tables 6 and 7 represent an effort to place a number

of these factors in a multivariate analysis to assess the marginal impact of some of the characteristics of women, their spouses, their families, and their locations. Whereas previous tables have been based simply on the sample of individuals from the seven counties, this analysis uses aggregations of individuals into families. (For definitions of households and families used here, see footnote 5.) The technique is simple ordinary least squares regression. This is not wholly inappropriate. Previous experience indicates that logit or probit estimation when the dependent variable is number of own young children present adds little to the results [Haines, 1979, ch. 4]. Parity (equation (3) in Table 7) has a sufficient number of values to avoid the limited dependent variable problems, although it is lower bounded at zero. Finally, equation (4) in Table 7 is estimated with maximum-likelihood logit, given that it is a binary dependent variable and also heavily weighted towards zero (i.e., childless is coded as one).

The equations are estimated for different subsamples of the family sample. Equation (1) uses all currently married women aged 15-49 with husband present for whom parity was known. The dependent variable is the number of surviving own children aged 0-4 present in the family. The subsample for equation (2) is similar, except that the dependent variable is the number of own children aged 5-9 present in the family and it uses currently married women aged 20-54 with husband present and for whom parity was known. Equation (2) was included because of the effect on the Civil War on recent fertility. It measures surviving children from births during the period 1856/60, just prior to the war. Equation (3) has parity as its dependent variable and is estimated for currently married women with husband present aged 45 and older for whom parity was known. The same sample was used for equation (4), which has a dependent variable which takes on the value of one of the woman was zero parity and zero otherwise.

Among the independent variables introduced are the wife's age and, in the case of equations (1) and (2), the square of the wife's age to take into account the evident non-linearity of fertility and age. Equations (1) and (2)

also contain a variable "Prior Fertility", which, for equation (1), is children ever born minus own children aged 0-4 present in the family. It is an effort to test the view that women with higher parity prior to the period in question would have higher current fertility. The same variable for equation (2) is parity minus own children aged 0-9 present in the family. Additional independent variables include husband's literacy (illiterate equals zero, literate equals one), wife's nativity (native equals zero, foreign born equals one), whether the wife was born in New England (coded as one, otherwise zero) wife working (wife working in a stated occupation equals one, otherwise zero), occupation of husband, whether there was help in the family, rural-urban residence (rural equals zero, urban equals one), county of residence, value of home (whether owned or not), and whether the family head was a landowner (no equals zero, yes equals one).[11]

The expectations about signs would be generally that age should have a curvilinear relationship in equations (1) and (2) and a positive relationship in equation (3), reflecting the time trend in fertility decline. Prior fertility is expected to affect current fertility positively. Higher fertility is expected among urban women, foreign-born women, illiterate women and husbands, non-white women, and non-working wives. There is some expectation, based on the literature, that women born in lower fertility areas (like New England) would have had lower birth rates. Families with more wealth (i.e., landowners) would be expected to have lower fertility, and families living in more costly dwellings might be expected to have lower fertility based on higher housing costs (assuming the children are space extensive). Families with male heads in professional and white collar occupations (professional and technical; managers, officials, and proprietors; clerical) are expected to have had fertility lower than semiskilled and unskilled manual workers (operatives; laborers; service workers). The position of skilled manual workers (craftsmen and foremen) and farmers (agricultural) is less clear in the hierarchy of expected differentials. The omitted dummy variable is for clerical and kindred workers, the group with the

lowest fertility. There is no real sign expectation about counties of residence, except that the more urban counties (Rensselaer and Dutchess) should have had lower fertility than the more rural and remote counties (such as Warren and Allegany). Families with more available household help should have found it easier to have had more births.

In the second specification of each equations, several local contextual variables were introduced. These are town-level variables from the published state census. The expectation is that families living in areas with more costly housing values (Log of average house value) should have reduced fertility. The density measure is a crude measure of the land availability hypothesis. Families living in higher fertility areas (i.e., areas with a higher child-woman ratio) should have had higher birth rates, partly because they may have selected themselves into locations which were more amenable to larger families (e.g., more capacious housing, local availability of servants, etc.). The percent born in New England was included, as were variables on the percentage of church accomodations from Universalists, Baptists, and Methodists to the total population. This latter is to examine the view that a preponderance of particular individualistic religious denominations prompted lower fertility.

A perusal of the equations for current or recent fertility in Table 6 reveals that some expectations are met whereas others are not. A fair number of coefficients are statistically insignificantly different from zero. Wife's age was significantly related to recent fertility in a parabolic form with the expected orientation (concave from below). Prior fertility was also significantly and positively related to recent fertility. Knowing that a woman had higher parity is a predictor of higher current fertility. Foreign-born women had significantly higher fertility, while New England origins had a negative effect on births, albeit never statistically significant. The literacy variable did not perform well. Husband's literacy (literate=0) had the predicted sign but was statistically insignificant throughout. Working wives had lower fertility. The variable for household help was neither

significant nor consistent.

The series of dummy variables for husband's occupation yielded no good set of statistically significant results. The stratification scheme used to organize the several hundred occupational titles encountered in the sample was taken from the 1950 U.S. Census. There were nine substantive occupational categories, plus one for miscellaneous (unclassifiable occupations) and one for non-occupational responses (e.g., student, landlord, retired, gentleman, etc.). Of these groups, the largest were agricultural (mostly farmers) with 42 to 43 percent respectively of the samples used to estimate equations (1) and (2), laborers (with 15 percent of the samples), and craftsmen and foremen (with 19-20 percent of the samples, respectively). Between them, they accounted for over three quarters of all family heads. The omitted dummy variable (and hence the reference group) was that for clerical and kindred workers, the group with the lowest fertility

In general, farmers had higher current fertility, and this was statistically significant for children aged 0-4 and children aged 5-9. Operatives (semi-skilled manual workers) also had somewhat higher fertility, which was also significant throughout. Wives of laborers had significantly higher fertility in one instance. In general, the fertility of farmers, laborers, and manual and workers seemed higher than that of white collar, professional, clerical, and supervisory workers.

Urbanization poses a bit of a puzzle. The urbanization coefficient exhibited the correct sign (pointing to lower birth rates in urban relative to rural areas) in the equations without the contextual variables, but it was insignificant throughout. Part of this may be due to the inclusion of county dummy variables, which may have been taking up part of the effect. Further, the variables for landownership and value of home represent, in part, the effects of rural residence (landownership) and higher urban land values (value of home).[12] Nonetheless, urbanization, at least as defined here, did not <u>per se</u> seem to have much influence on fertility differentials. The urbanization variable was even more affected by the inclusion of the selected town-level

variables. Including the natural logarithms of town average house value and population density, both closely related to urbanization, diminishes the urban variable to a very small, positive, and statistically insignificant parameter estimate.[13]

Finally, landownership had an insignificant negative coefficient in equation (1) but a significant positive one in equation (2), while home value had a insignificant positive sign in equation (1) and a significant negative one in equation (2). In equation (2), the significant results support the recent aggregate work by Guest [1990] and earlier work by Bash [1963], who found a strong negative relationship between average parity by county and value of home.

Both equations (1) and (2) were modestly successful in explaining the variation in surviving young own children across families with adjust R-square values of .164 and .173. They were also jointly significant at a one percent level (as measured by the joint F-ratio).

Inclusion of contextual variables (the "B" equations) has, as mentioned, dramatic effects on the urban variable. Inclusion of the areal child-woman ratio was, expectedly, positively related to current fertility. Local average housing values and population densities had the expected negative signs, but only density had statistical significance for children aged 0-4. The variable for New England origins had the predicted sign (a damping effect on current births) but was also insignificant. Finally, the proxies for religious composition did not have a consistent or significant impact, although the theory has been framed in terms of factors affecting fertility decline rather than on current births.

Some additional light can be shed on that by looking at the determinants of cumulative fertility and childlessness among older women. Some of the most interesting results appear here. Parity for women aged 45 and older was the left-hand side variable for equation (3). It represented a much smaller sample (876 families) and explained much less of the variation in parity than equations (1) and (2) had of recent fertility. Among women who had born most

of their children in the 1840s and before (when fertility was rapidly declining in New York State), foreign birth made little difference in fertility (as it did for current fertility for younger women). New England birth did have an impact, predicting lower fertility and more childlessness among older women. Age (a proxy for time trend) was strongly related to fertility but only weakly related to childlessness. A strong downward time trend in completed parity is indicated. The coefficient implies a decrease of one child per woman in completed family size about every 22 years.

The wives of craftsmen and foremen had significantly larger numbers of births, as did families living in less valuable homes. There were strong regional effects. Families in Warren Steuben, and Montgomery Counties had significantly larger families. Otherwise, the other variables were not statistically significant, although some (urban, household help, wife's nativity, wife's literacy, wife working) had the expected signs. The wives of most manual workers did have larger completed family sizes relative to wives of professionals, managers, and proprietors. Farmers' wives did not have particularly larger families at these older ages. It appears, as a general matter, that occupation mattered rather less in this location and in this period than later and in other places. Literacy and wife working had the expected signs but failed to meet the significance tests. Urbanization still had a negative sign, but its effect was indistinguishable from zero. Further, it is less clear what residence in 1865 might have meant for births which took place decades before.

Among the area variables, the effects were demonstrable and in the expected direction for childlessness, but were much weaker for achieved parity. Women living in more densely populated areas with higher fertility and more valuable homes were more likely to be childless. A higher representation of Methodists, however, seemed to promote less childlessness and higher fertility, contrary to expectations.

Equation (4) proved more successful in accounting for differences in childlessness. It is quite relevant to note that socioeconomic and structural

variables can do more to explain current fertility and past childlessness than past cumulative fertility. It appears that, among older women in the middle of the 19th century, past fertility was high and more even across groups. This was less true for childlessness. Since much of the childlessness was involuntary, this may suggest improved health conditions. Housing value was now positive and significant and suggested that families living in more expensive homes were more likely to have been childless. The opposite was true for landowners. This is not consistent, however, with the town-level variable on average housing values. In this context, unhealthy urban conditions may have played a role. The density variable and the child-woman ratio for towns would support this interpretation. It would also be consistent, however, with some voluntary childlessness associated with land availability and the cost of children. Finally, a higher proportion of Methodists was associated with higher past fertility and lower childlessness, in contrast with Leasure's predictions.

Some concluding comments and observations are in order. Examination of these microdemographic data from the 1865 census of New York State has given some direct confirmation of fertility decline in early nineteenth century America independent of census child-woman ratios. These results are more general than those provided by Bash [1955]. Important is the fact that foreign nativity and husband's occupation mattered in determining fertility in the 1850s and 1860s, but not earlier in the century. The evidence on rural-urban differentials is weaker and less conclusive, but it is also dependent on the particular (and rather broad) definition of urban used in the 1875 New York census. Both aggregate data and multivariate analysis of the micro data demonstrate that there were rather large regional effects across New York State at this time. One of the most distinctive findings of Guest [1990], that average parities, child woman ratios, and parity progression probabilities across counties were strongly related to value of housing, is confirmed in the regression analysis of individual families for parity for older women but not for current birth rates. Husband's literacy seemed not to

have had strong relations with either recent or completed fertility.[14] Standard demographic variables, wife's age and prior fertility, had significant power in explaining recent fertility. The significant effect of wife's age in predicting completed parity among older women is confirmation of the distinct time trend in cohort fertility.

The data also indicate that nuptiality in New York at this point in time was not greatly different from that found at the end of the nineteenth century for the United States. If this is a more general result, it suggests that most of the fertility decline happening after the Civil War was due to adjustments in marital fertility and not to rising age at marriage or increasing proportions of the female population who never married. This suggests that Sanderson's [1979] results may have to be modified somewhat.

Much more remains to be done. In particular, with the data at hand it is possible to estimate age specific overall and marital fertility rates. Further, the data have been collected to link farm and population schedules. Thus farm characteristics can be linked to recent and completed fertility to see the effects, at a micro level, of specific differences in such things as agrarian wealth and output. Other schedules in the manuscripts can be used, such as those for marriages and military service. The present sample can be augmented and enlarged to improve geographic coverage and reduce sampling variability. These are all on the agenda for near future work.

FOOTNOTES

1. The Federal census first began collecting information on marital status in 1880, but no information on this was published until the 1890 census. As a consequence, our knowledge of nuptiality levels and trends in the nineteenth century is limited [Monahan, 1951]. One recent piece of research to approach this problem is the work of Sanderson [1979] who applied the Coale-McNeil nuptiality model [Coale, 1971] to the American female population for the period 1800 to 1920 and made estimates of age at marriage. The recent availability of a large public use microsample of the 1880 Federal census will help a bit, but still cannot provide much insight into the early years of the century.

2. The complete original set of schedules held by the state were apparently accidentally destroyed in a fire in Albany in 1911. Many duplicate copies were in the hands of county and town clerks, however. The principal ones missing are, unfortunately, for New York City [Lainhart, 1992, pp. 85-88]. New York state took censuses of the total population in 1814, 1825, 1835, 1845, 1855, 1865, 1875, 1892, 1905, 1915, and 1925 [Dubester, 1948].

3. The relevant column on the census manuscript page was headed: "Of how many children the parent?" The instructions to the enumerators stated the following: "This inquiry is to be made on of adult <u>females</u>, and usually of wives or widows. It should, in all cases, include the number of living children the woman has borne, <u>whether now living or dead</u>, and <u>whether present or absent</u> from the family. These children may perhaps be themselves the heads of families, and residents of another State, or they may have died in childhood. The object of the inquiry is to obtain data for determining the natural increase of the population in this State among the various classes, and it should be taken fully and uniformly to possess value. Be careful to note in this column the number of children borne by females now aged, as well as that of those now surrounded by their families. We can thus determine the relative rate of increase of a former age, for comparison with the present." [New York State, 1867, p. lxvii.]

4. Among other studies dealing with fertility in the United States and

which have used micro-census data for the period prior to 1900, see Stern [1987]; Ryan [1981]; Mason, Weinstein, and Laslett [1985]; Zunz [1982]; Haines [1979, ch. 4; 1980]; Hareven and Vinovskis [1975]. For a review of some of these studies, see Ewbank [1988].

5. Households were taken as the primary enumeration units as defined in the manuscripts of the census. Families were subunits of households defined as a conjugal unit or the remains of a conjugal unit (i.e., a husband and wife, a husband and wife with one or more children, a husband or wife with children). Boarders and lodgers were considered as members of separate families. Resident servants were considered part of the primary household unless the servant was part of a resident conjugal unit or the remains of a conjugal unit, in which case they were assigned to a separate family. Such assignments to family units, as well as the matching of husbands and wives and mothers and children (necessary to own-children fertility estimation), were made using such information as name, age, sex, marital status, and relationship to head of household in the census manuscripts.

The total sample of 16,360 individuals represents 4.77 percent of the 343,150 individuals in these seven counties enumerated in the census of 1865. This is a bit less than the sampling fraction of 5 percent because of some missing and illegible manuscript pages and uninhabited dwellings which were encountered in the sampling procedure. The sampling procedure was to take every twentieth household in each enumeration district with a random starting point at the beginning which was different for each county.

6. The population of New York State was overwhelmingly white in this period. For example, the non-white population of 49,000 was only 1.3 percent of the total in 1860. Of the non-white population, 25 percent lived in New York City.

7. Table 2 gives two child-woman ratios, one with children 0-4 and one with children 0-9 per 1000 women aged 15 to 49. The second ratio is provided to account, in part, for the probable effect of the Civil War in reducing birth rates in the five year period prior to 1865. The definition of urban in Table 1 is taken from the New York State Census of 1875 [New York State, 1877, p.

9]. Urban areas included (a) all areas designated as cities; (b) all towns adjacent to cities; and (c) towns containing villages of population over 1,000 population.

8. The New York Census of 1865 provided no information on number of years married, as did the Federal censuses of 1900 and 1910. Thus it is not possible to analyze mean parity by marital duration as well as age.

9. The comparison is made using the white population, since such a small fraction of the 1865 sample here (less than one percent) were reported as black, mulatto, or other races.

10. The availability of a large public use microsample of the 1880 census obviates the issue of unpublished tabulations, but only carries measurement back another decade.

11. Husband's occupation was mapped onto the 1950 U.S. Census system of occupational categories. Husband's literacy was somewhat problematic, since it technically only applied to the voting population (males aged 21 and over) but was often reported for younger males. It was irregularly reported for females. The default report was illiteracy. Otherwise nothing was reported in the census. The variable "Household Help" was computed as the number of females aged 25-85 in the family and not employed plus female servants.

12. The zero-order correlations between value of home and the urbanization variable were significant but not too strong, having been .282 for the overall sample of women in equations (1) and (2). There was also a modest negative correlation between urbanization and landownership: -.260 for the same sample.

13. The zero-order correlations between the urban variable and the log of average housing values in the town for the sample underlying equations (1) and (2) was .710. The correlation for the log of population density was .611.

14. The number of non-white women in this sample (less than one percent) is too small to get a reliable reading on the effect of race.

REFERENCES

Bash, Wendell H. 1955. "Differential Fertility in Madison County, New York, 1865." The Milbank Memorial Fund Quarterly. Vol. 33. pp. 161-186.

Bash, Wendell H. 1963. "Changing Birth Rates in Developing America: New York State, 1840-1875." The Milbank Memorial Fund Quarterly. Vol. 41, No. 2 (April). pp. 161-182.

Bulatao, Rodolfo A., and Ronald D. Lee, eds. 1983. Determinants of Fertility in Developing Countries. 2 vols. New York: Academic Press.

Caldwell, John C. 1982. Theory of Fertility Decline. New York: Academic Press.

Cho, Lee-Jay, Wilson H. Grabill, and Donald J. Bogue. 1970. Differential Current Fertility in the United States. Chicago, Illinois: Community and Family Study Center, University of Chicago.

Cleland, John, and Chris Scott, eds. 1987. The World Fertility Survey: An Assessment. New York: Oxford University Press.

Coale, Ansley J. 1971. "Age Patterns of Marriage." Population Studies. Vol.25, No.2 (July). pp.193-214.

Coale, Ansley J., and T. James Trussell. 1974. "Model Fertility Schedules: Variations in the Age Structure of Childbearing in Human Populations." Population Index. Vol. 40, No. 2 (April). pp. 185-258.

Coale, Ansley J., and Susan Cotts Watkins, eds. 1986. The Decline of Fertility in Europe. Princeton, N.J.: Princeton University Press.

Davenport, David Paul. 1984. "Tracing Rural New York's Out-Migrants, 1855-1860." Historical Methods. Vol. 17, No. 3 (Summer). pp. 59-67.

Davenport, David Paul. 1985. "Duration of Residence in the 1855 Census of New York State." Historical Methods. Vol. 18, No. 1 (Winter). pp. 5-12.

Dubester, Henry J. 1948. State Censuses: An Annotated Bibliography of Censuses of Population Taken After the Year 1790 by States and Territories of the United States. Washington, D.C.: G.P.O.

Easterlin, Richard S. 1976. "Population Change and Farm Settlement in the Northern United States." The Journal of Economic History. Vol. 36, No. 1 (March). pp. 45-75.

Easterlin, Richard S. 1977. "Population Issues in American Economic History: A Survey and Critique." In Robert Gallman, ed. Recent Developments in the Study of Business and Economic History: Essays in Honor of Herman E. Krooss. Greenwich, CT: JAI Press. pp. 131-158.

Easterlin, Richard A., George Alter, and Gretchen Condran. 1978. "Farms and Farm Families in Old and New Areas: The Northern States in 1860." In Tamara K. Hareven and Maris Vinovskis, eds. Family and Population in Nineteenth-Century America. Princeton, NJ: Princeton University Press. pp. 22-84.

Ewbank, Douglas C. 1988. "The Marital Fertility of American Whites before 1920." Unpublished paper. Population Studies Center, University of Pennsylvania.

Forster, Colin, and G.S.L. Tucker. 1972. Economic Opportunity and White American Fertility Ratios, 1800-1860. New Haven CT: Yale University Press.

Glasco, Laurence. 1978. "Migration and Adjustment in the Nineteenth-Century City: Occupation, Property, and Household Structure of Native-Born Whites, Buffalo, New York, 1855." In Tamara K. Hareven and Maris A. Vinovskis, eds. Family and Population in Nineteenth-Century America. Princeton, NJ: Princeton University Press. pp.154-178.

Guest, Avery M. 1981. "Social Structure and U.S. Inter-State Fertility Differentials in 1900." Demography. Vol. 18, No. 4 (November). pp. 465-486.

Guest, Avery M. 1990. "What Can We Learn About Fertility Transitions from the New York State Census of 1865?" Journal of Family History. Vol. 15, No. 1. pp. 49-69.

Guest, Avery M., and Stewart Tolnay. 1983. "Children's Roles and Fertility: Late Nineteenth-Century United States." Social Science History. Vol. 7, No. 4 (Fall). pp. 355-380.

Guest, Avery M., and Stewart E. Tolnay. 1985. "Agricultural Organization and Educational Consumption in the U.S. in 1900." Sociology of Education. Vol 58. pp. 201-212.

Haines, Michael R. 1977. "Mortality in Nineteenth Century America: Estimates from New York and Pennsylvania Census Data, 1865 and 1900."

Demography. Vol. 14, No. 3 (August). pp. 311-331.

Haines, Michael R. 1979. Fertility and Occupation: Population Patterns in Industrialization. New York: Academic Press.

Haines, Michael R. 1980. "Fertility and Marriage in a Nineteenth Century Industrial City: Philadelphia, 1850-1880." The Journal of Economic History. Vol. 40, No. 1 (March). pp. 151-158.

Hajnal, John. 1953. "Age at Marriage and Proportions Marrying." Population Studies. Vol. 7, No. 3 (November). pp. 111-136.

Hareven, Tamara K., and Maris A. Vinovskis. 1975. "Marital Fertility, Ethnicity, and Occupation in Urban Families: An Analysis of South Boston and the South End in 1880." Journal of Social History. Vol. 8 (March). pp. 69-93.

Knodel, John. 1974. The Decline of Fertility in Germany, 1871-1939. Princeton, NJ: Princeton University Press.

Knodel, John, and Etienne van de Walle. 1979. "Lessons from the Past: Policy Implications of Historical Fertility Studies." Population and Development Review. Vol 5, No. 2 (June). pp. 217-245.

Lainhart, Ann S. 1992. State Census Records. Baltimore, MD: The Genealogical Publishing Co.

Leasure, J. William. 1982. "La Baisse de la Fecondite aux Etats-Unis de 1800 a 1860." Population. Vol. 37, No. 3 (May/June). pp. 607-622.

Leet, Don R. 1976. "The Determinants of the Fertility Transition in Antebellum Ohio." The Journal of Economic History. Vol. 36, No. 2 (June). pp. 359-378.

Leridon, Henri. 1977. Human Fertility: The Basic Components. Translanted by Judith F. Heizner. Chicago: University of Chicago Press.

Lesthaeghe, Ron J. 1977. The Decline of Belgian Fertility, 1800-1970. Princeton, New Jersey: Princeton University Press.

Lesthaeghe, Ron. 1983. "A Century of Demographic and Cultural Change in Western Europe: An Exploration of Underlying Dimensions." Population and Development Review. Vol. 9, No. 3 (September). pp. 411-435.

Lesthaeghe, Ron J. 1977. The Decline of Belgian Fertility, 1800-1970. Princeton, NJ: Princeton University Press.

Mason, Karen Oppenheim, Maxine Weinstein and Barbara Laslett. 1985. "The Decline of Fertility in Los Angeles, California, 1880-1900." Research Report No. 85-83. Population Studies Center. University of Michigan (July).

McQuillan, Kevin. 1984. "Modes of Production and Demographic Patterns in Nineteenth-Century France." American Journal of Sociology. Vol. 89, No. 6 (May). pp. 1324-1346.

Mitchell, B. R., and Phyllis Deane. Abstract of British Historical Statistics. (Cambridge, England: Cambridge University Press, 1971).

Monahan, Thomas P. 1951. The Pattern of Age at Marriage in the United States. 2 vols. Philadelphia.

Mosk, Carl. 1983. Patriarchy and Fertility: Japan and Sweden, 1880-1960. New York: Academic Press.

Netherlands. 1970. Centraal Bureau voor de Statistiek. Bevolking van Nederland naar geslacht, leeftijd en burgerlijke staat, 1830-1969. 's-Gravenhage: Staatsuitgeverij.

New York State. 1867. Census of the State of New York for 1865. Albany: Chalres van Benthuysen & Sons.

New York State. 1877. Census of the State of New York for 1875. Albany: Weed, Parsons and Company.

Parkerson, Donald H. 1982. "How Mobile were Nineteenth-Century Americans?" Historial Methods. Vol. 15, no. 3 (Summer). pp. 99-109.

Sanderson, Warren C. 1979. "Quantitative Aspects of Marriage, Fertility and Family Limitation in Nineteenth Century America: Another Application of the Coale Specification." Demography. Vol. 16, No. 3 (August). pp. 339-358.

Schapiro, Morton O. 1982. "Land Availability and Fertility in the United States, 1760-1870." The Journal of Economic History. Vol. 42, No. 3 (September). pp. 577-600.

Schapiro, Morton Owen. 1986. Filling Up America: An Economic-Demographic Model of Population Growth and Distribution in the Nineteenth-Century United States. Greenwich, CT: JAI Press.

Smith, Daniel Scott. 1987. "'Early' Fertility Decline in America: A Problem in Family History." Journal of Family History. Vol. 12, Nos. 1-3. pp.

73-84.

Stern, Mark J. 1987. Society and Family Strategy: Erie County, New York, 1850-1920. Albany, NY: SUNY Press.

Sundstrom, William A., and Paul A. David. 1988. "Old-Age Security Motives, Labor Markets, and Farm Family Fertility in Antebellum America." Explorations in Economic History. Vol. 25, No. 2 (April). pp.164-197.

Sweden. Statistiska Centralbyran. 1955. Historisk Statistisk for Sverige. Vol. I. "Befolkning, 1720-1950." Stockholm: Statistiska Centralbyran.

Teitelbaum, Michael S. 1984. The British Fertility Decline: Demographic Transition in the Crucible of the Industrial Revolution. Princeton, NJ: Princeton University Press.

Tolnay, Stewart E., Stephan N. Graham, and Avery M. Guest. 1982. "Own-Child Estimates of U.S. White Fertility, 1886-99." Historical Methods. Vol. 15, No. 3 (Summer). pp. 127-138.

Tolnay, Stewart E., and Avery M. Guest. 1982. "Childlessness in a Transitional Population: The United States at the Turn of the Century." Journal of Family History. Vol. 7, No. 2 (Summer). pp. 200-219.

United Nations. 1983. Indirect Techniques for Demographic Estimation. Manual X. New York: United Nations.

U.S. Bureau of the Census. 1943. Sixteenth Census of the United States: 1940. Population. "Differential Fertility, 1940 and 1910: Fertility for States and Large Cities." Washington, D.C.: G.P.O.

U.S. Bureau of the Census. 1945. Sixteenth Census of the United States: 1940. Population. "Differential Fertility, 1940 and 1910: Women By Number of Children Ever Born." Washington, D.C.: G.P.O.

U.S. Bureau of the Census. 1975. Historical Statistics of the United States: Colonial Times to 1970. Washington, D.C.: G.P.O.

van de Walle, Etienne. 1974. The Female Population of France in the Nineteenth Century: A Reconstruction of 82 Departements. Princeton, NJ: Princeton University Press.

van de Walle, Etienne. 1978. "Alone in Europe: The French Fertility Decline until 1850." In Charles Tilly, ed. Historical Studies of Changing

Fertility. Princeton, New Jersey: Princeton University Press. pp. 257-288.

van de Walle, Etienne. 1980. "Motivations and Technology in the Decline of French Fertility." In Robert Wheaton and Tamara Hareven, eds. Family and Sexuality in French History. Philadelphia: University of Pennsylvania Press. pp. 135-178.

Vinovskis, Maris A. 1976. "Socioeconomic Determinants of Interstate Fertility Differentials in the United States in 1850 and 1860." Journal of Interdisciplinary History. Vol. 6, No. 3 (Winter). pp. 375-396.

Vinovskis, Maris A. 1978. "A Multivariate Regression Analysis of Fertility Differentials among Massachusetts Townships and Regions in 1860." In Charles Tilly, ed. Historical Studies of Changing Fertility. Princeton, New Jersey: Princeton University Press. pp. 225-256.

Vinovskis, Maris A. 1979. Studies in American Historical Demography. New York: Academic Press.

Vinovskis, Maris A. 1981. Fertility in Massachusetts from the Revolution to the Civil War. New York: Academic Press.

Watkins, Susan Cotts. 1986. "Conclusions." In Ansley J. Coale and Susan Cotts Watkins, eds. The Decline of Fertility in Europe. Princeton, NJ: Princeton University Press. pp. 420-449.

Wrigley, E.A. 1985. "The Fall of Marital Fertility in Nineteenth-Century France: Exemplar or Exception." European Journal of Population. Vol. 1. pp. 31-60, 141-177.

Yasuba, Yasukichi. 1962. Birth Rates of the White Population of the United States, 1800-1860: An Economic Analysis. Baltimore, MD: The Johns Hopkins University Press.

Zunz, Olivier. 1982. The Changing Face of Inequality: Urbanization, Industrial Development, and Immigration in Detroit, 1880-1920. Chicago: University of Chicago Press.

TABLE 1. CHILD-WOMAN RATIOS. WHITE POPULATION, UNITED STATES & NEW YORK. 1830-1875.

CHILDREN AGED 0-4 PER 1000 WOMEN AGED 15-49

YEAR		UNITED STATES	NEW YORK STATE	NEW YORK LESS NEW YORK CITY	SEVEN NEW YORK COUNTIES(a)
1830		781.0	699.8	727.2	732.3
1840		743.6	615.6	634.8	648.8
1850		613.3	493.5	510.3	511.9
1855	(b)	---	501.4	518.4	519.0
1860		627.0	507.9	514.0	501.8
1865	(b)	---	454.3	460.3	446.9
1870		562.1	436.4	---	---
1875		---	423.5	427.5	415.9

(a) Allegany, Dutchess, Montgomery, Rensselaer, Steuben, Tompkins, & Warren
(b) Total population.

SOURCE: U.S. Censuses of Population, 1830-1870. New York State Censuses of Population, 1855, 1865, 1875.

TABLE 2. CHARACTERISTICS OF SELECTED COUNTIES, NEW YORK, 1865.(a)

COUNTY	TOTAL POPU. (1865)	% URBAN	DENSITY	% FARMERS	% AGRI. LAND IMPROVED	CO-4/ W15-49	CO-9/ W15-49
Allegany	40,285	7.62	5.94	62.08	54.25	451.1	939.7
Dutchess	65,192	50.17	11.94	27.72	78.31	420.4	845.9
Montgomery	31,447	69.51	12.41	32.08	83.02	438.3	908.3
Rensselaer	88,210	72.25	21.44	19.95	76.20	454.3	910.0
Steuben	66,192	27.66	6.94	50.94	55.44	483.4	1012.7
Tompkins	30,696	35.09	9.71	42.84	74.36	355.4	729.0
Warren	21,128	36.08	3.51	50.08	41.62	543.8	1106.8
NY STATE	3,831,777	62.99	12.56	27.92	58.75	454.3	921.3

(a) Percent urban uses the 1875 New York Census definition. Density is persons per 100 acres. Percent farmers is farmers as a percent of males aged 15-64. Percent agricultural land improved is (Total Improved Ag Land/Total Ag Land)*100. CO-4/W15-49 is children aged 0-4 per 1000 women aged 15-49. CO-9/W15-49 is children aged 0-9 per 1000 women aged 15-49.

SOURCE: New York State Censuses, 1865 and 1875.

TABLE 3. AVERAGE PARITY BY AGE, RESIDENCE, NATIVITY, & MARITAL STATUS. ADULT WOMEN. SEVEN NEW YORK COUNTIES, 1865.(a)

AGE	TOTAL	(N)	RURAL	(N)	URBAN	(N)	NATIVE	(N)	FOREIGN	(N)
ALL WOMEN										
15-19	0.0519	752	0.0491	407	0.0551	345	0.0494	668	0.0714	84
20-24	0.5707	778	0.6474	397	0.4908	381	0.5719	647	0.5649	131
25-29	1.5342	687	1.5858	338	1.4842	349	1.4302	537	1.9067	150
30-34	2.6129	589	2.6118	322	2.6142	267	2.3229	415	3.3046	174
35-39	3.3601	486	3.5175	257	3.1834	229	3.0197	356	4.2923	130
40-44	4.3960	444	4.3772	228	4.4167	216	4.0606	330	5.3684	114
45-49	4.5495	384	4.7706	218	4.2590	166	4.2351	302	5.7073	82
50-54	4.8986	276	5.3922	153	4.2846	123	4.9078	217	4.8644	59
55-59	5.3100	229	5.4965	141	5.0114	88	5.2088	182	5.7021	47
60-64	5.6837	215	6.0379	132	5.1205	83	5.6608	171	5.7727	44
65-69	6.1481	108	5.9683	63	6.4000	45	6.2340	94	5.5714	14
70-74	6.1765	85	6.6585	41	5.7273	44	6.4412	68	5.1176	17
75-79	6.1094	64	6.1860	43	5.9524	21	6.6957	46	4.6111	18
80+	6.8605	43	6.5238	21	7.1818	22	6.8333	36	7.0000	7
EVER-MARRIED WOMEN										
15-19	0.5286	70	0.4762	42	0.6071	28	0.5345	58	0.5000	12
20-24	1.1729	376	1.1972	213	1.1411	163	1.1469	320	1.3214	56
25-29	2.0830	506	2.0380	263	2.1369	243	1.9443	395	2.5766	111
30-34	3.1138	492	3.1119	268	3.1161	224	2.8023	344	3.8378	148
35-39	3.8244	427	3.8632	234	3.7772	193	3.4926	308	4.6891	119
40-44	4.8079	406	4.7299	211	4.8923	195	4.4518	301	5.8286	105
45-49	4.9183	355	5.0732	205	4.7067	150	4.6137	277	6.0000	78
50-54	5.2403	258	5.6897	145	4.6637	113	5.3250	200	4.9483	58
55-59	5.6558	215	5.7836	134	5.4444	81	5.6429	168	5.7021	47
60-64	6.0495	202	6.4797	123	5.3797	79	6.0881	159	5.9070	43
65-69	6.5743	101	6.3729	59	6.8571	42	6.5843	89	6.5000	12
70-74	6.2875	80	6.8947	38	5.7381	42	6.5692	65	5.0667	15
75-79	6.5167	60	6.6500	40	6.2500	20	7.0000	44	5.1875	16
80+	6.8605	43	6.5238	21	7.1818	22	6.8333	36	7.0000	7

(a) The counties are: Allegany, Dutchess, Montgomery, Rensselaer, Steuben, Tompkins, and Warren. N's are numbers of women.

SOURCE: Sample of census enumerators' manuscripts.

TABLE 4. SELECTED NUPTIALITY MEASURES BY SEX, RESIDENCE, NUPTIALITY, & LOCATION. SEVEN NEW YORK COUNTIES, 1865.(a)

	SMAM			% MARRIED, 20-24			% SINGLE, AGE 45-54			Im
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	
TOTAL	26.5	23.7	25.0	20.0	46.4	34.3	6.3	7.7	7.0	0.579
RURAL	26.5	23.2	24.8	20.4	50.4	36.2	6.5	7.0	6.7	0.603
URBAN	26.5	24.2	25.3	19.6	42.1	32.1	6.1	8.6	7.3	0.552
NATIVE	26.7	23.6	25.1	20.6	47.4	35.0	6.0	8.8	7.4	0.559
FOREIGN	26.1	24.3	24.9	17.0	41.5	30.4	7.1	3.8	5.8	0.655
COUNTY										
ALLEGANY	26.1	22.6	24.3	24.2	39.1	32.9	5.5	8.1	6.5	0.607
DUTCHESS	25.8	23.2	24.5	17.2	46.2	32.8	10.6	16.7	13.6	0.541
MONTGOMERY	27.2	24.8	25.8	15.0	42.0	30.5	6.1	3.0	4.5	0.555
RENSSELAER	26.3	24.5	25.4	18.7	44.8	31.9	8.5	6.5	7.5	0.558
STEUBEN	27.0	23.6	25.2	21.6	49.7	37.4	1.3	2.3	1.8	0.624
TOMPKINS	27.4	24.1	25.8	20.9	48.7	35.9	5.4	8.6	6.7	0.576
WARREN	25.4	22.2	23.7	30.0	60.9	46.5	4.3	5.3	4.8	0.624

(a) The nuptiality measures are the singulate mean age at first marriage (SMAM), the percentage married at ages 20-24, the percentage single (never married) at ages 45-54, and Coale's index of proportions married (Im).

SOURCE: Sample of census enumerators' manuscripts.

TABLE 5. AVERAGE PROPORTIONS CHILDLESS BY AGE, RESIDENCE, NATIVITY, & MARITAL STATUS. ADULT WOMEN. SEVEN NEW YORK COUNTIES, 1865.(a)

AGE	TOTAL	(N)	RURAL	(N)	URBAN	(N)	NATIVE	(N)	FOREIGN	(N)
ALL WOMEN(b)										
15-19	0.9428	752	0.9533	407	0.9304	345	0.9461	668	0.9167	84
20-24	0.6452	778	0.6196	397	0.6719	381	0.6491	647	0.6260	131
25-29	0.3714	687	0.3550	338	0.4069	349	0.3929	537	0.3400	150
30-34	0.2377	589	0.2267	322	0.2509	267	0.2482	415	0.2126	174
35-39	0.1934	486	0.1556	257	0.2358	229	0.2107	356	0.1462	130
40-44	0.1396	444	0.1228	228	0.1574	216	0.1424	302	0.1316	114
45-49	0.1406	384	0.1284	218	0.1566	166	0.1589	302	0.0732	82
50-54	0.1196	276	0.1046	153	0.1382	123	0.1152	217	0.1356	59
55-59	0.1004	229	0.0922	141	0.1136	88	0.1044	182	0.0851	47
60-64	0.1302	215	0.1288	132	0.1325	83	0.1345	171	0.1136	44
65-69	0.1019	108	0.0952	63	0.1111	45	0.0851	94	0.2143	14
70-74	0.0824	85	0.0976	41	0.0682	44	0.0735	68	0.1176	18
75-79	0.0938	64	0.1163	43	0.0476	21	0.0652	46	0.1667	18
80+	0.0465	43	0.0476	21	0.0455	22	0.0556	35	0.0000	7
EVER-MARRIED WOMEN										
15-19	0.5286	70	0.5714	42	0.4643	28	0.5172	58	0.5833	12
20-24	0.2872	376	0.3005	213	0.2699	163	0.3094	320	0.1604	56
25-29	0.1640	506	0.1711	263	0.1564	243	0.1772	395	0.1171	111
30-34	0.0894	492	0.0746	268	0.1071	224	0.0930	344	0.0811	148
35-39	0.0820	427	0.0726	234	0.0933	193	0.0877	308	0.0672	119
40-44	0.0591	406	0.0521	211	0.0667	195	0.0550	301	0.0571	105
45-49	0.0732	355	0.0732	205	0.0733	150	0.0866	277	0.0256	78
50-54	0.0581	258	0.0552	145	0.0619	113	0.0400	200	0.1207	58
55-59	0.0419	215	0.0448	134	0.0370	81	0.0298	168	0.0851	47
60-64	0.0743	202	0.0650	123	0.0886	79	0.0692	159	0.0930	43
65-69	0.0396	101	0.0339	59	0.0476	42	0.0337	89	0.0833	12
70-74	0.0500	80	0.0526	38	0.0476	42	0.0462	65	0.0667	15
75-79	0.0333	60	0.0500	40	0.0000	20	0.0227	21	0.0625	16
80+	0.0465	43	0.0476	21	0.0455	22	0.0556	36	0.0000	7

(a) The counties are: Allegany, Dutchess, Montgomery, Rensselaer, Steuben, Tompkins, and Warren. N's are numbers of women.

(b) Total women includes all single women and those ever-married women for whom a response was given.

SOURCE: Sample of census enumerators' manuscripts.

TABLE 6. REGRESSIONS WITH CURRENT FERTILITY AS THE DEPENDENT VARIABLE. SEVEN NEW YORK COUNTIES, 1865.(a)

DEPENDENT VARIABLE	(1A) Children 0-4 Coeff.	Signi.	(1B) Children 0-4 Coeff.	Signi.	(2A) Children 5-9 Coeff.	Signi.	(2B) Children 5-9 Coeff.	Signi.
INDEPENDENT VARIABLES								
FAMILY LEVEL								
Constant	-1.2424	***	-0.9985	***	-4.2895	***	-4.3049	***
Wife's Age	0.1339	***	0.1312	***	0.2671	***	0.2649	***
Wife's Age Squared	-0.0025	***	-0.0024	***	-0.0037	***	-0.0037	***
Prior Fertility(b)	0.0304	***	0.0299	***	0.0245	***	0.0191	**
County								
Allegany	0.0511	---	0.0010	---	0.1485	**	0.1049	---
Dutchess	0.1359	**	0.1324	*	0.2537	***	0.2562	***
Montgomery	0.1050	---	0.0360	---	0.2701	***	0.1919	**
Rensselaer	-0.0046	---	-0.0008	---	0.1392	**	0.1247	*
Steuben	0.1202	*	0.0284	---	0.2021	***	0.1360	*
Tompkins	NI	NI	NI	NI	NI	NI	NI	NI
Warren	0.2027	**	0.1386	---	0.2298	***	0.1503	---
Wife Foreign Born	0.3789	***	0.3833	***	0.3003	***	0.2899	***
Wife Born New England	-0.1237	---	-0.1151	---	-0.0610	---	-0.0706	---
Husband's Literacy	-0.0007	---	-0.0175	---	-0.0345	---	-0.0274	---
Wife Working	-0.2915	---	-0.3262	*	-0.3391	*	-0.3504	**
Husband's Occup.								
Prof., Technical	0.2685	*	0.2420	---	0.0779	---	0.0861	---
Agricultural	0.2867	**	0.2337	*	0.2473	*	0.2436	*
Manager, Official, Proprietor	0.1646	---	0.1198	---	0.1581	---	0.1554	---
Clerical	NI	NI	NI	NI	NI	NI	NI	NI
Sales Worker	0.3341	---	0.2998	---	0.2278	---	0.2432	---
Craftsman, Foreman	0.1633	---	0.1309	---	0.2148	---	0.2208	---
Operative	0.3637	**	0.2993	**	0.4554	***	0.4246	***
Service Worker	0.1358	---	0.1262	---	-0.1340	---	-0.1131	---
Laborer	0.2334	*	0.1934	---	0.1520	---	0.1546	---
Miscellaneous	0.0635	---	0.0062	---	0.2896	---	0.2770	---
Non-Occup Response	0.1936	---	0.1566	---	0.1920	---	0.1967	---
Household Help	0.0364	---	0.0283	---	-0.0390	---	-0.0290	---
Urban	-0.0543	---	0.0097	---	-0.0179	---	0.0096	---
Value of Home ($00's)	0.0173	---	0.0277	---	-0.0241	---	-0.0211	---
Landownership	-0.0244	---	-0.0232	---	0.0769	**	0.0740	**
TOWN LEVEL								
Log of house value			-0.0136	---			-0.0205	---
Log of popu. density			-0.0362	**			-0.0078	---
Child-woman ratio			0.3035	---			0.4657	**
% Born New England			-1.0328	---			-0.3199	---
% Universalist			0.1517	---			0.1847	---
% Baptist			0.1687	---			-0.1596	---
% Methodist			-0.0797	---			0.1179	---
N	2306		2228		2406		2370	
Adjusted R-squared	0.154		0.157		0.172		0.169	
F-ratio	16.49	***	13.20	***	19.94	***	15.15	***

(a) The subsamples are as follows: (i) for children 0-4, currently married women with husband present, aged 15-49, for whom parity was known; (ii) for children 5-9, currently married women with husband present, aged 20-54, for whom parity was known.

(b) Prior fertility is children ever born minus own children aged 0-4 in equation (1). It is children ever born minus own children age 0-9 in equation (2).

Significance: *** = significant at least at a one percent level; ** = significant at least at a five percent level; * = significant at least at a ten percent level; --- = not significant at least at a ten percent level; NI = not included.

SOURCE: Sample of census enumerators' manuscripts.

TABLE 7. REGRESSIONS WITH CUMULATIVE FERTILITY & CHILDLESSNESS AS THE AS DEPENDENT VARIABLES. SEVEN NEW YORK COUNTIES, 1865.(a)

DEPENDENT VARIABLE	(3A) Parity Coeff.	Signi.	(3B) Parity Coeff.	Signi.	(4A) Childlessness Coeff.	Signi.	(4B) Childlessness Coeff.	Signi.
INDEPENDENT VARIABLES								
FAMILY LEVEL								
Constant	2.4107	**	-1.4964	---	-3.0443	**	8.0188	**
Wife's Age	0.0570	***	0.0474	***	0.0156	---	0.0300	*
County								
Allegany	0.8940	*	1.0460	*	-1.2351	**	-1.4067	*
Dutchess	0.2089	---	-0.0832	---	-1.2415	**	-0.7991	---
Montgomery	1.0610	**	0.8376	---	NI	NI	NI	NI
Rensselaer	0.2298	---	0.1607	---	-0.2842	---	-0.5012	---
Steuben	1.1021	***	0.8255	---	-0.6900	---	-0.5751	---
Tompkins	NI	NI	NI	NI	NI	NI	NI	NI
Warren	1.4291	***	1.4720	**	-0.9115	---	-0.3465	---
Wife Foreign Born	-0.0345	---	-0.2566	---	0.4385	---	0.6377	---
Wife Born New England	-0.4612	---	-0.6393	*	0.5986	---	0.8316	*
Husband's Literacy	-0.3487	---	-0.5488	---	0.1900	---	0.1069	---
Wife Working	-1.1030	---	-1.0423	---	0.4594	---	0.4695	---
Husband's Occup.								
Prof., Technical	-0.4059	---	-0.4852	---	0.1988	---	0.1611	---
Agricultural	NI	NI	NI	NI	NI	NI	NI	NI
Manager, Official, Proprietor	-0.2267	---	-0.2368	---	-0.0691	---	-0.2404	---
Clerical	0.5831	---	0.3819	---	NI	NI	NI	NI
Sales Worker	-0.7549	---	-0.7664	---	-0.1761	---	-0.2266	---
Craftsman, Foreman	0.5744	---	0.6460	*	-0.2667	---	-0.2599	---
Operative	-0.6388	---	-0.6732	---	1.3732	*	1.3627	*
Service Worker	-1.5529	---	-1.6460	---	0.6538	---	0.3695	---
Laborer	0.4399	---	0.4384	---	-0.2568	---	-0.4134	---
Miscellaneous	0.4410	---	0.3154	---	NI	NI	NI	NI
Non-Occup Response	0.2756	---	0.2739	---	0.1493	---	0.1848	---
Household Help	-0.0992	---	-0.1229	---	-0.0141	---	0.0060	---
Urban	-0.1852	---	-0.4475	---	-0.4576	---	-0.4885	---
Value of Home ($00's)	-0.2571	**	-0.2462	*	0.2684	*	0.0002	---
Landownership	-0.1289	---	-0.0074	---	-0.4968	---	-0.6602	*
TOWN LEVEL								
Log of house value			0.4772	---			-1.3436	***
Log of popu. density			0.0450	---			0.4242	**
Child-woman ratio			2.4209	---			-8.8881	***
% Born New England			-0.3194	---			1.3403	---
% Universalist			-3.4167	---			-1.7801	---
% Baptist			-0.2536	---			0.6410	---
% Methodist			1.0634	*			-0.3143	**
N	876		836		787		747	
Adjusted R-squared	0.046		0.036		0.065		0.133	
F-ratio	2.70	***	1.98	***				
Log-likelihood ratio					-181.61		-156.83	

(a) The subsample includes currently married women with husband present, aged 45 and over, for whom parity was known. The childlessnes equations were estimated using maximum-likelihood logit.

Significance: *** = significant at least at a one percent level; ** = significant at least at a five percent level; * = significant at least at a ten percent level; --- = not significant at least at a ten percent level;

NI = not included.

SOURCE: Sample of census enumerators' manuscripts.