Family Limitation and Age at Marriage: Fertility Decline in Sturbridge, Massachusetts 1730–1850*

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The question of the timing of the American fertility decline has recently been re-opened. Until the 1960s historians and demographers had assumed that the long-term decline in American fertility began in the late nineteenth century, with urban areas leading rural ones in both the onset and the magnitude of the decline. This notion was challenged by Coale and Zelnik's 1963 book, *New Estimates of Fertility and Population in the United States*. Using data from the decennial federal census Coale and Zelnik demonstrated that the birth rate began its long-term fall in the first half of the nineteenth century. More recently, both Maris Vinovskis and Richard Easterlin have used census data to challenge the assumption of urban–rural fertility differentials as well. While the aggregate analysis of census data has thus established the fact of an early fertility decline in the United States, and has posed the question of its nature and pace, census data are too limited to yield precise information on the magnitude of that decline or to illuminate the process through which it took place.[1] It is possible, however, to ask these questions of data drawn from the vital registration systems of particular communities. While such a study is necessarily microcosmic, record linkage of nominative data allows the historical demographer to investigate fertility at the family level and to examine the dynamics of change in fertility over time. Absolute levels of fertility undoubtedly varied from community to community, but the demographic mechanisms through which the early fertility decline occurred may be more widely generalizable.

This study examines the fertility behaviour of the population of Sturbridge, Massachusetts, from the founding of the town in the early eighteenth century to the middle of the nineteenth century. The social history of the town during this period is fairly representative of that of rural central New England as a whole. Located in southern Worcester County, the town of Sturbridge was founded in the 1730s by settlers from Medfield, Massachusetts, a town nearer Boston that had been settled in the seventeenth century. Although the soil was of mixed quality, agriculture provided the economic base of the community. Throughout the eighteenth century, in-migrants from more densely populated areas joined the community's residents in establishing farms and practising agriculture-related trades such as blacksmithing, lumbering, and tanning. There were no recognized villages; the population was dispersed across the landscape on 50–150 acre family farms.

After the revolutionary war the town began to send out-migrants to newly settled communities in northern New England and the West; those who migrated into the community later were more often tradesmen and merchants than farmers. But the landscape remained much the same until the turn of the nineteenth century, when the commercialization of the region's

* We wish to thank Richard and Polly Rabinowitz, who began the family reconstitution; former and present staff of Old Sturbridge Village, who have studied the community; Stephens College students participating in a workshop on social history, who first scrutinized the FRFs for evidence of family limitation; John Knodel, who gave useful criticism of the work; William Mosher and Ian Rockett, who studied the age-at-marriage data.

[1] See Ansley J. Coale and Melvin Zelnik, *New Estimates of Fertility and Population in the United States* (Princeton: Princeton University Press, 1963). Maris Vinovskis presented data for Massachusetts in a paper he delivered at the 1974 Berkshire Conference; Richard Easterlin's paper, also delivered in 1974 and unpublished, is based on data for the state of Michigan. Preliminary discussions of their findings are contained in Maris A. Vinovskis, 'Socioeconomic Determinants of Interstate Fertility Differentials in the United States in 1850 and 1860', *Journal of Interdisciplinary History*, **6**, 3 (Winter, 1976), pp. 375–396, and Richard A. Easterlin, 'Does Human Fertility Adjust to the Environment?', *American Economic Association Papers and Proceedings* (1971), pp. 399–407.

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economy began to affect the economic and social life of the community. Symbolic of this transformation was the building of the Worcester–Stafford Turnpike Road through the town in 1812. Crossing the town common, around which a tentative commercial development had begun in the early years of the century, the turnpike linked the community more closely to other towns and cities, increased the flow of goods and people through the community, and catalysed the development of a true central village. Stores and shops serving both the town itself and the larger region multiplied around the common.

This 'commercial revolution' was quickly followed by an industrial revolution in the economic life of the community. In 1829, a small cotton textile factory was established on the Quinebaug River. Although the mill suffered from unstable profits and ownership (and the mill workers suffered from intermittent unemployment), the factory expanded through the first half of the century. In 1850, just over 200 men, women and children were engaged in tending the machinery and doing general labour in the mill. A separate village, Fiskdale, grew up around the factory; after mid-century, this became the dominant commercial centre of the town. More important to the economic life of the whole population, however, was the spread of wage work in non-mechanized and partially centralized forms. Some work, such as the braiding of palm-leaf hats, was done at home for piece-rate wages. Other industries, especially shoemaking, were carried on both in households and in consolidated workshops. Still others, such as the making of shoe-tools or carriages, were located in manufactories which used hand tools and limited sources of power. While the majority of the population were still engaged in farming, agriculture was changing as well, as farmers assumed a new orientation towards local and regional markets and experimented with new methods of stockbreeding and cultivation.[2]

The social history of the town of Sturbridge in this period, then, consists of the interaction of two processes of change: the settlement process, which occupied the eighteenth century but defined the nineteenth as well, and the development of commercial and industrial capitalism in the early nineteenth century.

The data upon which this study of fertility is based have been drawn from family reconstitution of the vital records of the town for the period from 1730 to 1850.[3] While there are family reconstitution forms (FRFs) for approximately 2,400 marital unions over the 120-year period, the rate of geographical mobility, the underregistration of deaths, and changes in the boundaries of the town greatly reduce the number of FRFs available for analysis. This study relies upon two sub-sets of the data: a set of almost 1,000 cases for which age at first marriage is known, and a set of just under 200 FRFs which represent completed families. The criteria for selecting the cases in which age at first marriage can be determined included: (1) date of birth known; (2) date of marriage or publication of intention to marry known; (3) no evidence that this might be a second marriage.[4] The criteria for determining that a given FRF represented a completed family were: (1) date of marriage or publication of intention to marry known; (2) survival of the marital union intact and under observation until the wife reached age 45, or 30 years had passed since the marriage; (3) no evidence of births occurring outside the town. Because of the underregistration of deaths, it was not possible to determine the date of the end

[2] This sketch of the history of Sturbridge is based upon the work of a number of researchers who are or have been associated with Old Sturbridge Village, an outdoor historical museum located in the town. There is also a town history: George Davis, *A Historical Sketch of Sturbridge and Southbridge* (West Brookfield, Massachusetts: O. S. Cooke and Co., 1856).

[3] The vital records of the town, which state law required the elected town clerk to keep, were indexed and published in 1906: *Vital Records of Sturbridge Mass. to the year 1850* (Boston: New England Historic Genealogical Society, 1906). Family reconstitution was performed by Richard and Polly Rabinowitz and by Nancy Osterud, and followed the procedure outlined by E. A. Wrigley in his *Introduction to English Historical Demography* (New York: Basic Books, 1966).

[4] Initial analysis of the age-at-marriage data was performed by William Mosher and Ian Rockett; see their 'A Century of Age at Marriage in Sturbridge, Massachusetts: 1741–1839', read at the annual meeting of the Population Association of America, Montreal, Canada, 1976.

of the marital union for all couples. For FRFs in which this date was unknown to qualify as completed families, they had to meet the following conditions: (1) no evidence of a possible re-marriage for either spouse; (2) evidence of the presence of the family in the town beyond the wife's 45th year, or after 30 years of marriage, as indicated by the marriage of a daughter or the death of a minor child; (3) no evidence of a possible migration of the family.

The group of completed families is obviously not representative of all those who lived in the town at some time before 1850; simply by remaining in the community from the time of their marriage until the end of the childbearing period, these couples differed from the majority. (Most migration, however, was local; some was also artificial, resulting from the setting off of one section of the town into a new political unit in 1816.) It is clear that the group of completed families also excludes families primarily engaged in cotton-factory work, who were extraordinarily mobile, and underrepresents the poorest one-fifth of the population, who were landless labourers. Until a census is linked to the vital records, we will not know if the 'persisters' differed in other respects from the migrants; work is presently under way to link the 1850 federal census with the FRFs.[5] The question of the representativeness of this group of families is not, however, an abstract one. Since the analytical focus of this study is on the interaction between social change and patterns of fertility, it is appropriate that the families we study be those who lived out their reproductive lives under the social–historical conditions we have described.

The most immediately striking feature of the fertility of the completed families over time is the substantial decline in the mean number of children ever born over the 120-year period, a decline of 3·5 children from a high of 8·8 for the 1730–59 marriage cohort to a low of 5·3 for the 1820–39 cohort. Table 1 shows that this decline was a fairly steady one. Just under half the

TABLE 1. *Mean number of children ever born**

Cohort	Children ever born†	Standard deviation	Number of completed families
1730–59	8·83	2·72	23
1760–79	7·32	2·44	56
1780–99	7·32	3·08	43
1800–19	6·02	2·93	42
1820–39	5·30	3·01	33

* Completed families, only.

† Difference among cohorts is statistically significant at the 0·001 level using the F-test. The difference between the first and last cohorts is statistically significant at the 0·1 level, using the t-test.

total decline occurred between the first and second marriage cohorts; after a short period of apparent stability the decline resumed with the cohort married after 1800 and continued to the last cohort studied. The distribution of completed family size over time changed in a similar manner. While the cohorts married in the eighteenth century had a modal family size of eight, those married in the nineteenth century had a modal size of five; the frequency of large families with ten or more children, too, had begun to decline well before the turn of the century. This is illustrated in Figure 1.

How can this early fertility decline be explained? The demographic processes through which the decline took place must be elucidated before the question of causality can be raised.

[5] Under the direction of Nancy Osterud.

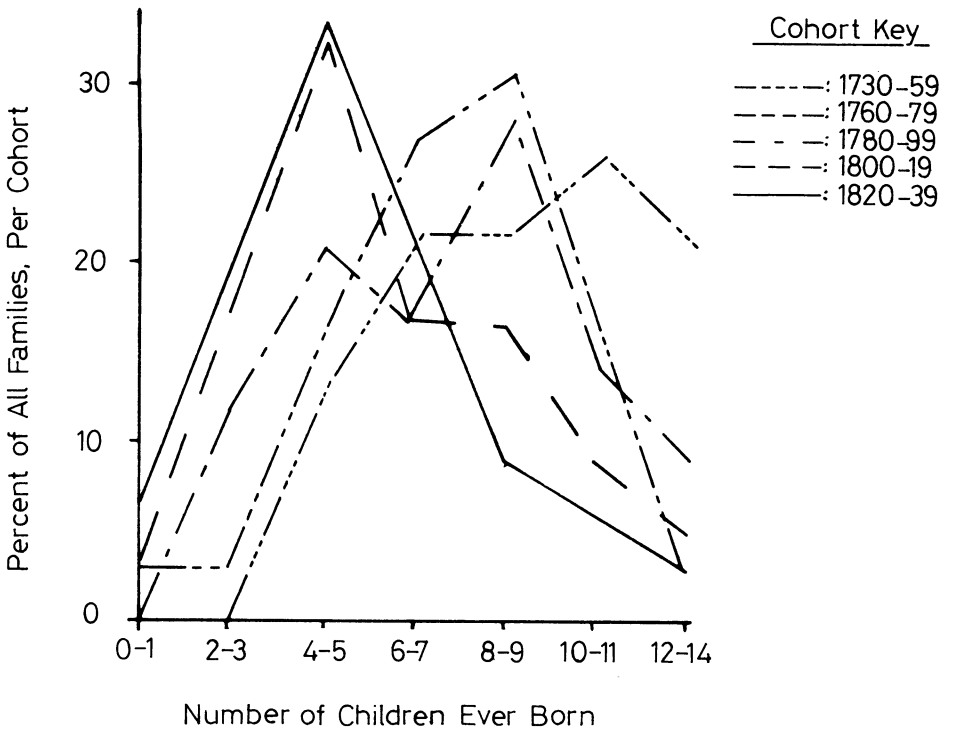

FIGURE 1. Distribution of children ever born, completed families.

TABLE 2. *Mean age at first marriage for females**

Cohort	Mean age at first marriage †	Standard deviation	Number of completed families
1730–59	20·65	3·72	17
1760–79	22·85	4·26	47
1780–99	22·46	3·88	35
1800–19	23·53	4·24	34
1820–39	24·42	4·23	26

* Completed families, for whom woman's date of birth is known, only.

† Difference among cohorts is statistically significant at the 0·05 level using the F-test.

One possibility is that there was an increase in the mean age of women at first marriage. Table 2 reveals that an increase in female age at marriage did occur over the period, from a mean of 20·7 years for the 1730–59 cohort to a mean of 24·4 for the 1820–39 cohort. The timing of this increase parallels that of the decrease in the mean number of children ever born. Half of the increase again took place between the first and second marriage cohorts; after a short period of stability the increase resumed with the cohorts married after 1800.

The larger set of cases for which age at first marriage is known confirms this trend. Mean ages at marriage for men and women in the larger marriage cohorts may be found in Table 3; these means are graphically compared with those for women from the completed families in

TABLE 3. *Mean age at first marriage for females and males**

	Females			Males		
Cohort	Mean age at first marriage†	Standard deviation	Number in cohort	Mean age at first marriage‡	Standard deviation	Number in cohort
1730–59	19·54	2·48	21	24·84	4·62	8
1760–79	21·61	3·61	75	25·51	4·86	65
1780–99	23·62	6·17	153	25·61	4·91	127
1800–19	23·33	4·56	155	26·06	4·54	133
1820–39	25·54	7·62	143	27·63	5·15	121
1840–49	25·50	6·89	34	28·93	7·96	19

* Cf. Mosher and Rockett, *loc. cit.* in footnote 4.

† Difference among cohorts is statistically significant at the 0·001 level using the F-test.

‡ Difference among cohorts is statistically significant at the 0·01 level using the F-test.

FIGURE 2. Mean age at first marriage, Sturbridge, males and females (cf. Mosher and Rockett, *loc. cit.* in footnote 4).

Figure 2.[6] While the difference in mean age at marriage for women between the first and last cohorts is larger among this group than among women belonging to completed families, amounting to almost six years, and while the timing of the change varies somewhat, the pace of the increase in female age at marriage is quite similar.[7] Half the increase occurred before and

[6] Cf. Mosher and Rockett, *loc. cit.* in footnote 4. We would like to thank the authors for re-grouping the data into the periods used in this study.

[7] Much of the difference between mean ages for the two groups of cohorts can be explained by the fact that the numbers in these cohorts are small.

half after the turn of the century; the two periods of increase were separated by a short period of relative stability.

The mean age at marriage for men was rising as well during this period. A significant increase began with the 1800–19 marriage cohort, and continued until the last cohort studied. The overall increase in the mean age at first marriage for males was also somewhat smaller than that for females. Male and female ages at marriage tended toward convergence in the late eighteenth century, but began to diverge again in the nineteenth.

The fact that rates of pre-nuptial conception were changing during this period complicates the situation to some extent. Referring to Table 4 we see that for the larger sample of marriages the proportion of fertile couples who gave birth to a child within seven months of their wedding decreased in the years after 1800 from approximately one-third to less than three per cent. As bridal pregnancy became less common, significant differences emerged between the mean ages of women who were pregnant at first marriage and those who were not. Women who were pregnant at marriage did not participate in the trend toward older marriage ages after the turn of the century; at the same time, they represented a sharply declining proportion of all brides.

Change in the mean age of women at first marriage was a powerful factor in determining change in the mean number of children ever born. The increase in female age at marriage accounts for about half of the decrease in completed family size over the period. Assuming two-year birth intervals, a 3·8-year increase in female age at marriage would account for 1·9 births, just over half of the observed decline in mean completed family size. A more precise measure, based on changes in exposure per woman to the age-specific rates between 15 and 25, suggests that changes in female age at marriage accounted for about half the change in completed family size before the turn of the nineteenth century and for about one-fourth of it after that time.[8] Other powerful factors must have been at work along with the increasing female age at marriage. Age-specific marital fertility rates (which were calculated from the completed families' fertility histories), listed in Table 5 and indexed by level (taking the 20–24 rate for the 1730–59 cohort as 100 and expressing each rate as a percentage of that) in Figure 3, reveal that the cohorts which married in the nineteenth century had lower levels of fertility in all age groups than those married in the eighteenth century. It is this decrease in marital fertility that explains that part of the decline in completed family size not accounted for by the rise in age at marriage.

What was responsible for this decline in marital fertility? While there are a number of involuntary intervening factors that could have affected fertility, it is clear that none of these were changing significantly in ways that might have led to lower fertility. Any change in the level of nutrition in the community in the nineteenth century, for example, would have been in the direction of improvement. Mothers customarily nursed their children for a year, and any

[8] This measure was computed as follows:
(Subscripts differentiate cohorts, superscripts differentiate age groups.)

1. $\dfrac{\text{MWY}^{15-19}}{\text{Women}^{15-19}{}_1} - \dfrac{\text{MWY}^{15-19}}{\text{Women}^{15-19}{}_2} = \Delta\text{MWY}_{1-2}^{15-19}$
2. $\dfrac{\text{MWY}^{20-24}}{\text{Women}^{20-24}{}_1} - \dfrac{\text{MWY}^{20-24}}{\text{Women}^{2-024}{}_2} = \Delta\text{MWY}_{1-2}^{20-24}$
3. $\Delta\text{MWY}_{1-2}^{15-19}\ \text{ASMFR}_{\text{cohort with greater exposure}}^{15-19}$ = expected births attributable to difference in $\text{exposure}_{1-2}^{15-19}$
4. $\Delta\text{MWY}_{1-2}^{20-24}\ \text{ASMFR}_{\text{cohort with greater exposure}}^{20-24}$ = expected births attributable to difference in $\text{exposure}_{1-2}^{20-24}$
5. (result 3) + (result 4) = total expected births attributable to difference in $\text{exposure}_{1-2}^{15-24}$
6. $\dfrac{\text{(result 5)}}{(\text{total difference in CEB})_{1-2}}$

TABLE 4. *Mean age at marriage by pregnancy status at marriage**

Cohort	Not pregnant at time of marriage	Pregnant at time of marriage†	Percentage pregnant‡ in cohort	Number in cohort
1730–59	18·94	18·26	25	12
1760–79	22·76	20·71	33	42
1780–99	22·75	22·71	30	67
1800–19	22·89	21·74	18	89
1820–39	23·76	20·23	3	72
1840–49	24·83	—	0	12

* Based on fertile marriages for which an exact marriage date is known, only.

† Difference among cohorts is statistically significant at the 0·05 level using the F-test.

‡ Pregnant at time of marriage.

TABLE 5. *Age-specific marital fertility rates**

	Age						
Cohort	15–19	20–24	25–29	30–34	35–39	40–44	45–49
1730–59	(0·571)‡	(0·455)	(0·468)	(0·376)	(0·294)	(0·242)	(0·012)
1760–79	(0·167)	0·470	0·386	0·389	0·315	0·128	0·021
1780–99	(0·417)	0·495	0·399	0·376	0·280	0·183	0·034
1800–19	(0·500)	(0·446)	0·383	0·322	0·189	0·100	0·006
1820–39	(0·333)	(0·366)	(0·352)	0·331	0·200	0·024	0·000
1730–99	(0·363)	0·469	0·410	0·391	0·296	0·144	0·026
1800–39	(0·412)	0·435	0·381	0·338	0·210	0·098	0·003
'Natural fertility'†	—	0·435	0·407	0·371	0·298	0·152	0·022

* Completed families, only.

† The natural fertility rates are taken from Louis Henry, and represent the average age-specific legitimate fertility rates for 13 populations in which family limitation was not practised. (See Henry's 'Some data on natural fertility', *Eugenics Quarterly* (June 1961).)

‡ All cohort rates based on less than 100 married woman-years have been enclosed in parentheses.

change would have been in the direction of earlier weaning or supplemental feeding. There was also no apparent change in the level of infant mortality.

Instead, we must investigate the hypothesis that couples married after 1800 were voluntarily engaging in practices that limited the size of their families. One possibility, of course, is that family size decreased because couples were seeking to maximize the health and activity of the woman by increasing the interval between pregnancies. While this cannot be entirely discounted, the shape of the age-specific marital fertility curves argues against this explanation. A careful perusal of Table 5 suggests that age-specific rates decreased more sharply among women over 35 than among younger age groups. In Figure 4, the rates have been indexed to the 20–24 level for each cohort so this can be seen more clearly; note the marked decline in the 30–35 age group with the 1800–19 cohort, and the equally sharp decline in the 40–44 age group in the cohort married after 1820. If couples were merely following a child-spacing strategy, the shape of the curves would not change noticeably over time.

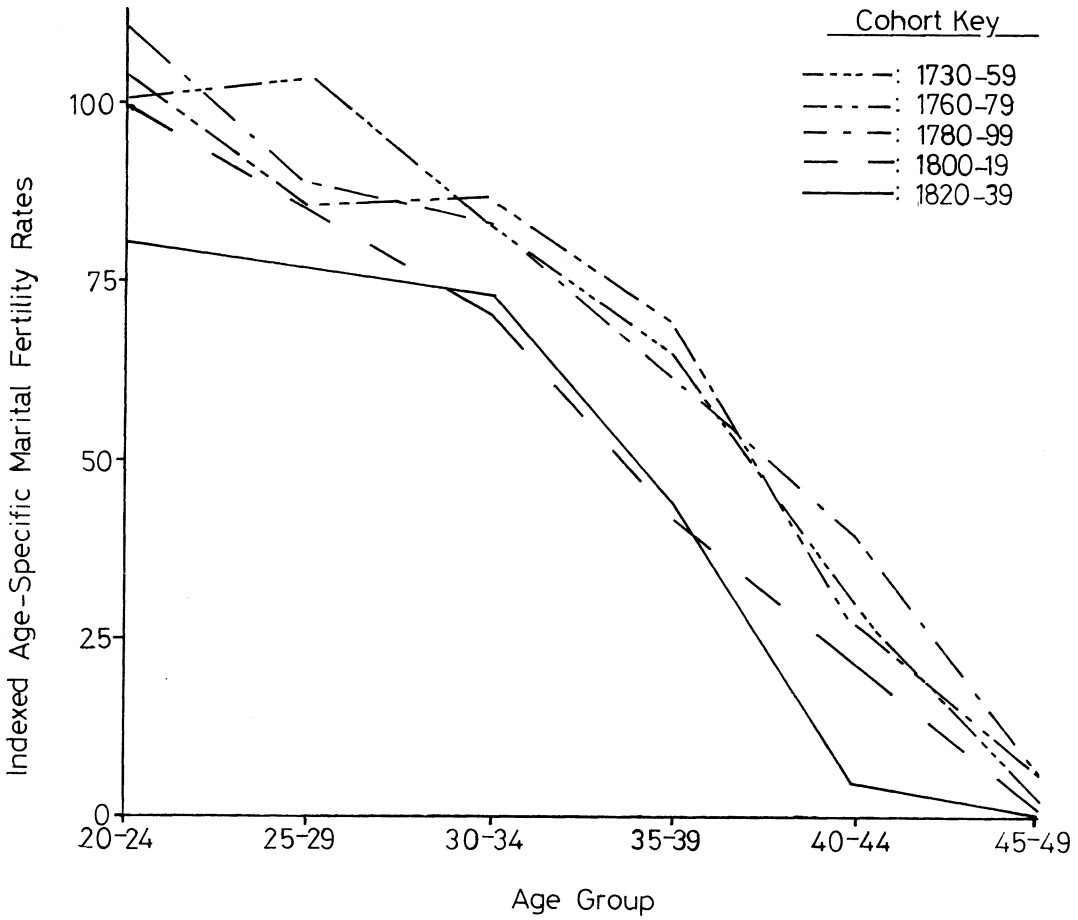

FIGURE 3. Age-specific marital fertility rates, indexed by level of 20–24 rate for the 1730–59 cohort (equivalent to 100), for completed families.

The alternative explanation is deliberate family limitation. While the suggestion that family limitation was beginning to be practised in a rural community among couples who married in the first decades of the nineteenth century is certainly unorthodox, it does fit the data very well. As defined by Louis Henry, family limitation is present if, once a couple have had the number of children they wish to have, they take steps to avoid having more.[9] Because the definition is linked to a desired family size, which is affected by various cultural and socio-economic factors, it is particularly suitable for the study of fertility in historical populations; rather than specifying a level of fertility required for family limitation to be presumed to exist, it describes the characteristics of family-limiting behaviour. The definition suggests a number of simple statistical tests for the presence of family limitation; most are based on the fact that family-limiting behaviour is defined as parity-related. If a population is beginning to practise family limitation, one would expect fertility to decrease in the older age groups after couples had already reached their desired family size. One would also expect the mean age of mothers at the birth of their last child to decrease over time.

Both these things happened in Sturbridge completed families after 1800. Looking first at the mean age of mothers at last birth, which is presented in Table 6, we can see that the mean

[9] Louis Henry, 'Some Data on Natural Fertility', *Eugenics Quarterly* **8**, June 1961.

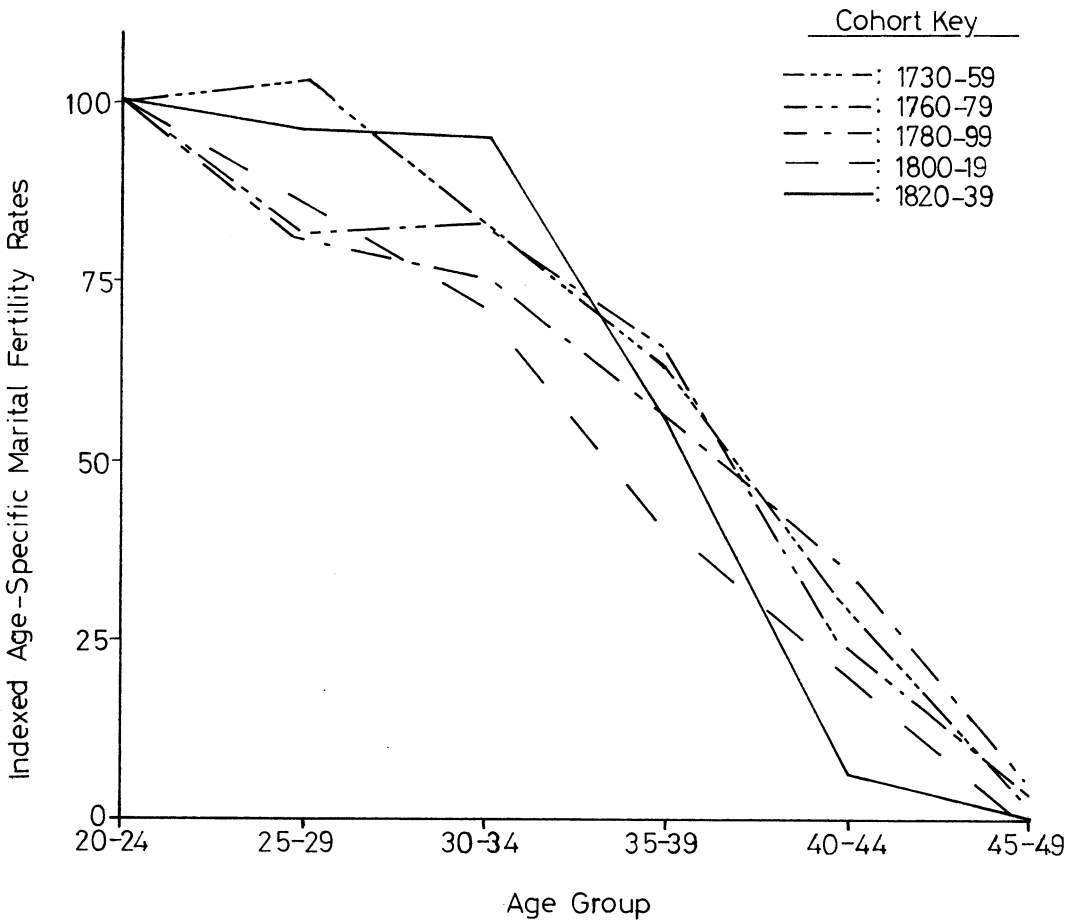

FIGURE 4. Age-specific marital fertility rates, indexed by shape, where the 20–24 rate for each cohort is equivalent to 100, for completed families.

TABLE 6. *Mean age of mother at last birth**

Cohort	Age at last birth†	Standard deviation	Number of completed families
1730–59	38·65	4·55	17
1760–79	39·47	4·40	45
1780–99	39·34	5·84	35
1800–19	37·82	4·20	33
1820–39	35·71	4·26	24

* Completed families, only.
† Difference among cohorts is statistically significant at the 0·05 level using the F-test.

fell by nearly three years between the first and last marriage cohorts; all of this decline, furthermore, took place after the turn of the century. Figure 5, a distribution of the age of mothers at last birth for the eighteenth- and nineteenth-century cohorts, shows that the modal age of women at the birth of their last child was between 40 and 44 in the eighteenth century, and

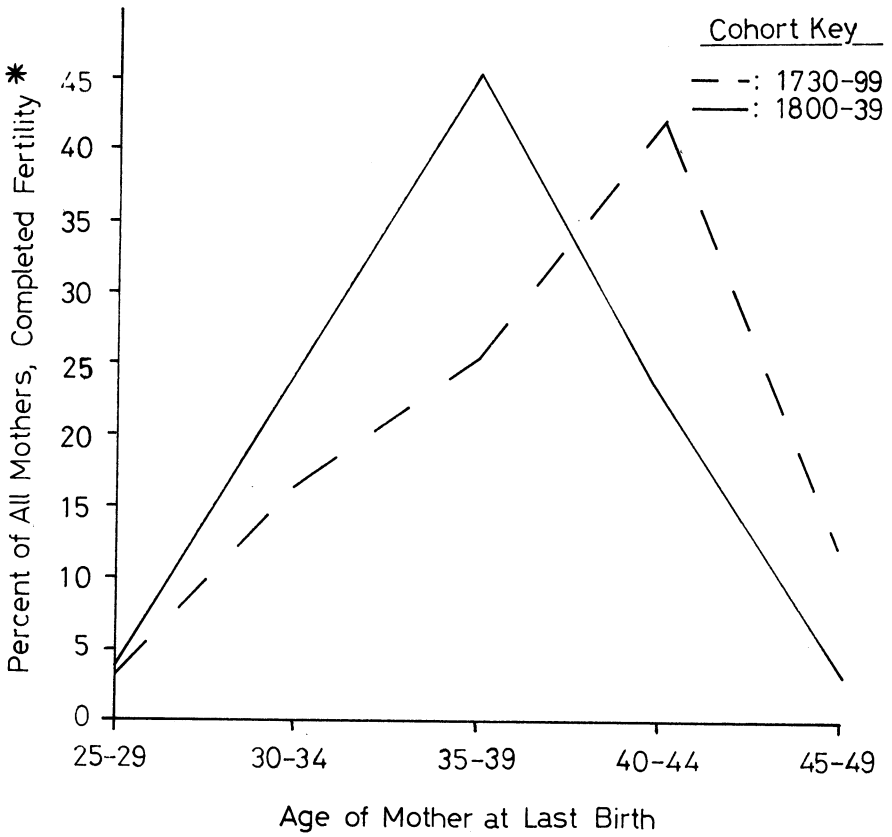

FIGURE 5. Distribution of age of mother at last birth, completed families.
* Per Cohort, i.e., the sum of percentages, each cohort, is equivalent to 1·0.

TABLE 7. *Comparison of Sturbridge fertility rates with natural fertility rates**

		Age					
	Cohort	20–24	25–29	30–34	35–39	40–44	45–49
Indexing by shape†	1730–99	100	87	83	63	31	6
	1800–39	100	88	78	48	23	1
	Natural fertility	100	94	85	69	34	5
By ratio and shape‡	1730–99	100	94	97	92	87	109
	1800–39	100	94	91	70	65	14
	Natural fertility	100	100	100	100	100	100

* Completed families, only.
† 20–24 rate for each cohort equivalent to 100.
‡ These curves have been first expressed as ratios of the indexed natural fertility curve, and these ratios have then been indexed again to the 20–24 ratio, per curve. Thus, if a curve had exactly the same shape as the natural fertility curve, its indexed ratio would be 100 in all age groups.

between 35 and 39 in the nineteenth. This indicator, then, suggests that deliberate family limitation began in Sturbridge with the couples who were married after 1800, and increased in scope and magnitude through the early nineteenth century.

Henry has provided another test for the presence of family limitation by computing average age-specific 'natural fertility' rates from populations which did not control fertility.[10] Table 7 compares these rates with those obtaining in Sturbridge; with few exceptions, they are surprisingly close to those for the earlier cohorts and quite distinct from those for the later cohorts. (The indexed curves have been expressed as ratios of the indexed natural fertility curve, and those ratios have then been indexed again to the 20–24 ratio; if a curve had exactly the same shape as the natural fertility curve, its indexed ratio would be 100 in all age groups.) Figure 6 demonstrates this graphically. When the rates are indexed so that the shape of the

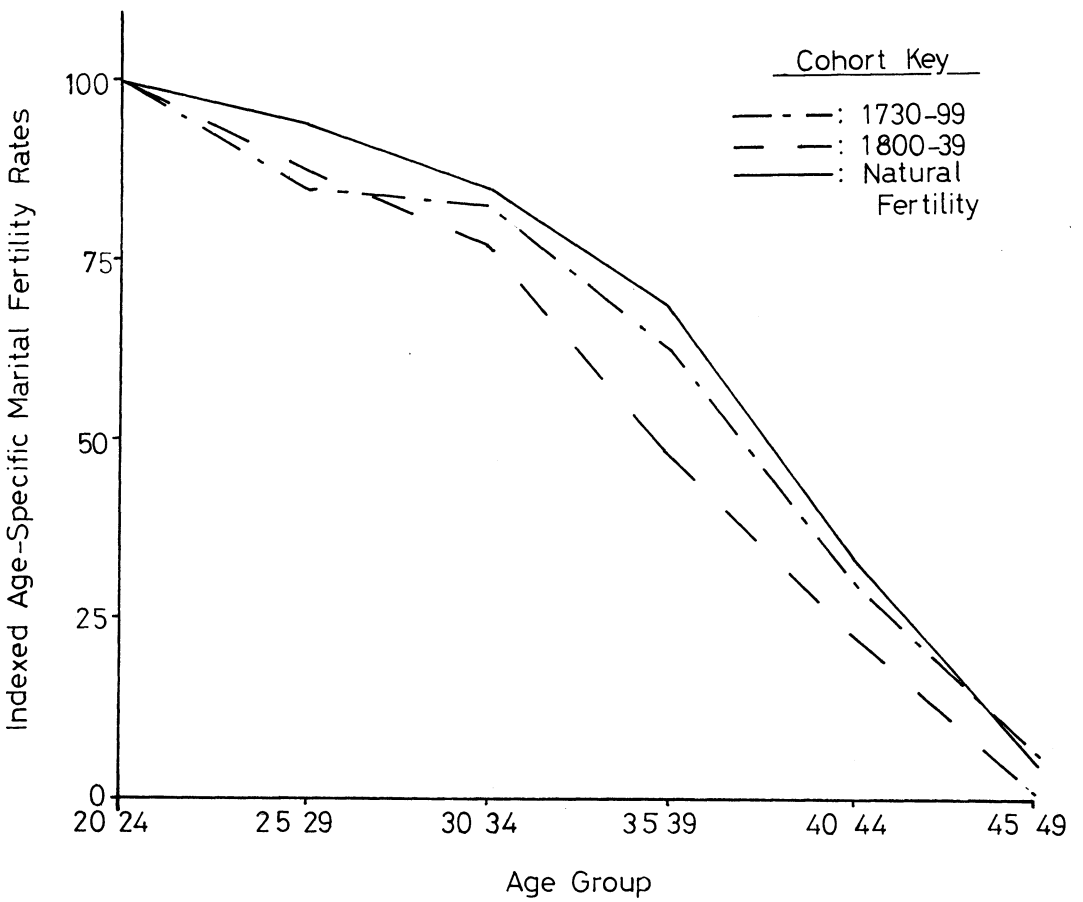

FIGURE 6. Age-specific marital fertility rates, indexed by shape, where the 20–24 rate for each cohort is equivalent to 100, for completed families.

curve, rather than its level, is the basis of comparison (taking the 20–24 rate for each cohort as 100), one finds that the eighteenth-century curve has the same general shape as that for natural fertility; the curve for the nineteenth-century cohort, on the other hand, is quite different, becoming concave rather than convex at the older ages. This is exactly what would be expected if family limitation were beginning to be practised.

[10] Louis Henry, *loc. cit.* in footnote 9.

Given the simultaneous change in rates of pre-marital pregnancy, the relationship between pre-nuptial conception and marital fertility was also investigated. While the average size of families of women who were pregnant at marriage did not fall below seven in the nineteenth-century cohorts, the mean age of these mothers at the birth of their last child was slightly lower than that of women who were not pregnant at marriage. The age-specific marital fertility rates of pre-maritally pregnant women were also higher in the 15–24 age group and lower in the 35–44 age group than those of non-pregnant women. There was, in other words, no discernible association between pre-nuptial pregnancy and uncontrolled fertility at the individual level.[11]

The decline in completed family size in Sturbridge between 1730 and 1840, then, was caused by the interaction of a rising age at first marriage of females and the beginning of deliberate family limitation. For couples married in the eighteenth century the increase in age at marriage was most important; for couples married in the nineteenth century the evidence suggests that family limitation was an equally strong influence in determining lower completed family size. While we cannot fully explain why these demographic shifts took place, it is possible to sketch alternative interpretations and explore some of their implications.

With regard to the rising age at marriage, it is likely that the initial increase in the mean age at first marriage for women in the eighteenth century can be explained by the changing sex ratio in the community. Throughout the first two-thirds of the century, Sturbridge was a newly settled community, and men probably constituted a significant majority of the inhabitants. After that time, however, the sex ratio balanced. (The first census of the town was taken by the federal government in 1790, and showed a fairly even sex ratio.) This would accord with the stabilization in the mean age at marriage observed both among the completed families and in the larger marriage cohorts. The rise in age at marriage that began in the nineteenth century, however, cannot be explained in that way. Men as well as women began marrying at older ages, and any explanation of this trend must account for increases in the mean age at marriage for both sexes.

In an agricultural community characterized by a nuclear family pattern, marriage means the establishment of an independent household and farm. In the earliest years of settlement land was abundant and cheap; many proprietors held enough uncultivated land to provide their children with farms when they married, and it was not difficult for young in-migrants to obtain the necessary capital to purchase land. As the town filled up in the late eighteenth century, however, land prices rose and most family farms had become too small to be profitably sub-divided. The beginning of out-migration to newer communities is one sign of this phenomenon; the rise in the age at marriage may be another. If parents were less able to contribute to the independent establishment of their children, and the capital costs of farming were increas-

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	Children ever born		Mean age at marriage		Mean age of mother at last birth		Percentage of brides
Cohort	Not pregnant	Pregnant	Not pregnant	Pregnant	Not pregnant	Pregnant	pregnant
1730–59	8·3	11·7	20·8	19·0	38·1	41·5	13·6
1760–79	7·2	6·7	22·5	21·7	40·2	40·8	28·6
1780–99	7·1	7·3	23·0	20·6	39·9	36·3	30·2
1800–19	5·8	7·3	24·3	20·9	37·9	37·4	23·3
1820–39	5·3	7·0	24·4	—	35·7	—	2·9

Age-Specific Marital Fertility Rates

	15–24		25–34		35–44	
Cohort	Not pregnant	Pregnant	Not pregnant	Pregnant	Not pregnant	Pregnant
1730–59	436	583	391	500	234	250
1760–79	449	460	406	373	268	185
1780–99	525	500	418	351	246	170
1800–19	488	519	349	529	146	100
1820–39	362	—	339	—	115	—

ing, then young people would have to spend more time working as labourers in order to amass the resources required for marriage.

The limitation of this argument is that while it is rooted in the specific conditions of a rural agricultural community, it does not take into account the economic changes that began in Sturbridge and similar towns in the early nineteenth century and which had significantly transformed social life by 1850. In a study of a single community it is impossible to separate the effects of these changes from those resulting from the settlement process; comparative studies of communities in which settlement and economic change interacted differently would be required to clarify their interactions. (The commercialization of the economy may also have been substantially related to the culmination of the settlement process; the increase in land prices and in the capitalization of farming are signs of both phenomena.) But it is possible, minimally, to say that the spread of wage labour did not substantially counteract the difficulties that the land–population situation posed to young people seeking to marry. We know from other sources that youths working in factories did not marry at younger ages than those employed in agriculture, and that mean ages at marriage were not lower in industrial villages than in farming communities.[12] The ways in which the expansion of the market economy affected young people, moreover, were mediated by the family system; decisions about work as well as about marriage were made within the context of family relationships and the family economy. Most wage work was done by persons whose families were also engaged in agriculture; which family members worked for wages in or outside of the household, and what was done with the wages they received, was a matter decided by the family.

The practice of deliberate family limitation may be explained, at least in part, by reference to the settlement process. If couples were becoming conscious of the impact of developing land–population pressure on their ability to provide for their children (which would be especially clear to them if they had themselves experienced increasing difficulty in obtaining the resources needed for marriage), they might decide to limit their fertility when they had had as many children as they felt they could reasonably help to get established in life. But while the social control of family formation in response to changing economic conditions was a common feature of the demographic history of rural communities, deliberate control of family size by married couples was not; however rational the choice of this course of action, something else must have been happening to make this response part of the available repertoire of the population.

The question here is not primarily one of ways and means, but rather of an orientation toward the family and economic life that allowed childbearing to become a matter of conscious decision.[13] There was no basis for such an orientation in the life-experience of most families prior to the expansion of the market economy in the early nineteenth century. Although the ways in which participation in the market affected attitudes toward the family's economic future are difficult to trace, it is possible to outline one set of plausible connections. First, however, we must be clear that we are not talking about family planning in the modern sense, nor is any change in the optimal effective family size necessarily involved. Rather, the kind of choices about fertility we are concerned with here were made relatively late in the family life cycle, and had reference to the future of an existing family. The development of commercial and industrial capitalism in the early nineteenth century does not seem to have significantly shifted the relative contributions made by children and adults to the family labour supply or income pool. Contrary to earlier assumptions, early industrialization seems neither to have increased

[12] The first statement can be substantiated from the Sturbridge vital records; the second is based upon Nancy Osterud's unpublished study of the 1850 federal census of Providence County, Rhode Island.

[13] The early decline in marital fertility cannot have been accomplished through mechanical methods of contraception; abstinence and *coitus interruptus* were the only available and effective voluntary methods of fertility control.

nor diminished the amount children's labour could add to the family income. The same seems to hold true for women, although that case is complicated by the difficulty of ascertaining the value of work women did inside the home. The proportion of a family's income that could be earned by family members of a specific age and sex who worked outside the household seems generally to be surprisingly close to the proportion of the family's labour they could perform in a farm household. Furthermore, a decline from an average of eight to five children per family would not have significantly reduced the burden of dependency at any one point in the family life cycle. Assuming two-year intervals between births (and no change in the spacing of children when family limitation began), the oldest child in a five-child family would be doing work of some value by the time the last child was born; a family with eight children could also not have more than four children under the 'useful' age of seven at any one time. Under similar labour income conditions, only families smaller than five would have a reduced dependency burden at any one time.

What the increasing absorption of rural farm families into the capitalist economy did do was to make the family economy itself a matter of conscious awareness and planning. When it was equally possible to set a child to pegging boots and shoes as to weeding the kitchen garden, the money received for the former was a reminder of the economic nature of the child's activity and a measure of the value of his or her labour. When a woman could earn 12 cents per dozen for braiding palm-leaf hats, it was harder to regard her sewing of the family's clothes as merely an expression of her role as wife and mother. When a man could decide whether to plant grass or oats depending upon their anticipated market price rather than on his family's needs, the most customary of a farmer's tasks entered the realm of planning. Whether or not any particular family member engaged in wage labour, and whether or not any particular farm or household product was sold, that possibility affected the way in which life was conducted. Labour became separated from personal character and from interpersonal relations, and became subject to calculation of value and to conscious allocation. Rationalization replaced improvisation in many areas of daily life. Ample evidence of this shift can be found in the flood of manuals published in New England in the 1830s. Ministers, educated women, and popular journalists advised New Englanders on the best methods of conducting a farm, cooking a meal, building a mill, or raising a family. It is not the content, but the existence of this literature that is most important here; it meant that things that were once regarded as situations to be coped with as they arose were now becoming things to be planned for and controlled.

The explanation of family limitation proposed, then, is one that relates fertility behaviour to economic change primarily at the level of *mentalité*, while suggesting that consciousness is produced in the course of people's daily life activities. The specific forms of economic transformation occurring in towns like Sturbridge in the first half of the nineteenth century led parents to think about the future of their families in a new way, and to limit their childbearing at the point when they felt that they had borne as many children as they could acceptably provide for later. While land-population pressure in the rural community made such a response appropriate, the expansion of the market economy made it possible. We should not forget, however, that this response did not occur in isolation. At the same time when married couples began to limit their fertility, the more traditional social controls over family formation were also being employed. The demographic history of Sturbridge in the early nineteenth century thus consists of the interaction of old and new means of fertility control.