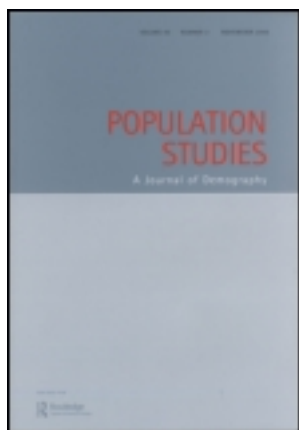


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The Decline of Fertility in Los Angeles, California, 1880-1900*

KAREN OPPENHEIM MASON†, MAXINE WEINSTEIN‡ AND
BARBARA LASLETT§

INTRODUCTION

In this paper we examine the decline of fertility in the city of Los Angeles, California, during the last 20 years of the nineteenth century. Los Angeles provides an interesting case for the study of the late nineteenth-century fertility decline for three reasons. First, it offers an opportunity to focus on the determinants of the urban fertility decline in the United States in a community located in the little-studied western part of the country. Because demographic transition theory initially focussed on urbanization and industrialization, the rural fertility decline in America was viewed as more problematic than the urban; American historical demographers consequently paid disproportionate attention to the rural fertility decline.¹ A more sophisticated understanding of the demographic transition resulting from the Princeton European Fertility Studies² has made the need to understand the urban fertility decline more pressing.

Secondly, although Los Angeles does not qualify as a microcosm of urban America, the forms of social and economic development that occurred there between 1880 and 1900 were similar to those occurring elsewhere throughout the nineteenth century. These included rapid population growth, the rise of the middle class, an increase in public-school enrolments, and the development of a full market economy increasingly dominated by the manufacturing and service sectors.³ In Los Angeles, moreover, these changes occurred late enough in the century to make data on them readily accessible.⁴

* Earlier versions of this paper were presented at the 1984 meetings of the Social Science History Association, Toronto, Ontario, and the 1985 meetings of the Population Association of America, Boston, Massachusetts. We thank Miriam Goldman, John Knodel, Shelby Stewman, Stewart Tolnay, Maris Vinovskis and several anonymous reviewers for comments on earlier versions, Mary Claire Toomey and Fran Heitz for word processing help, and Mike Coble and Amy Hsu for assistance with computer programming. Portions of the research were supported by National Science Foundation Grant SOC 78-24409, by the Andrew W. Mellon Foundation, and by a grant from the Horace Rackham Fund, University of Michigan.

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¹ T. K. Hareven and M. A. Vinovskis, 'Introduction', in T. K. Hareven and M. A. Vinovskis (eds.), *Family and Population in Nineteenth-Century America* (Princeton: Princeton University Press, 1978), pp. 3-21. To be sure, there are studies focusing on urban as well as rural areas in the United States, e.g. A. M. Guest and S. Tolnay, 'Urban industrial structure and fertility: the case of large American cities', *Journal of Interdisciplinary History*, 13 3 (1983), pp. 387-409; M. A. Vinovskis, *Fertility in Massachusetts from the Revolution to the Civil War* (New York: Academic Press, 1981). None, however, has focused on urban fertility in the far western part of the country, as we do in this paper.

² A. J. Coale, 'The demographic transition reconsidered', in International Union for the Scientific Study of Population, *International Population Conference*, v. 1, (Liège, 1973), pp. 53-72; A. J. Coale and S. C. Watkins (eds.), *The Decline of Fertility in Europe* (Princeton: Princeton University Press, 1986).

³ R. M. Fogelson, *The Fragmented Metropolis: Los Angeles, 1850-1930* (Cambridge, Mass., Harvard University Press, 1967), pp. 5-108.

⁴ The U.S. census did not ascertain marital status until 1880 and questions about number of children ever born or duration of current marriage were not asked until 1900. This makes the study of marital fertility in communities that developed before or shortly after the Civil War difficult, especially given the paucity of vital registration data for most of the U.S.

Thus, for scholars interested in the impact of economic and social development on demographic trends, there is an analytic advantage to studying Los Angeles compared with many older American cities.

Finally, the study of a community like Los Angeles is also of interest because it offers an opportunity to clarify the impact of long-distance migration on fertility in a period of American history when such migration was widespread. Migration may produce, or be associated with, low fertility because long-distance moves select low-fertility families, because they disrupt family formation, or because they bring people from regions with low fertility norms to regions in which these norms have yet to develop. Los Angeles contained unusually large numbers of in-migrants, both in 1880 and even more so in 1900. The case of Los Angeles is especially interesting because, unlike East Coast cities in this period, a majority of Los Angeles's in-migrants were native white Americans who migrated after marriage. This means that any distinctive features of in-migrants' fertility are likely to reflect migration status or selectivity, rather than origins outside the U.S., or the impact on family formation of unbalanced sex ratios.

THEORETICAL ISSUES

The decline of fertility in Europe and North America has been attributed to almost every conceivable cause, from urbanization and industrialization to the wearing of overly tight corsets.⁵ Despite this diversity of supposed causes, however, most socio-economic theorists of fertility decline have implicitly argued that changes in the roles and status of women or children are the immediate determinants of fertility decline, the factors that mediate between broad institutional changes in the economy or polity and demographic trends. Speculation about the determinants of the U.S. fertility decline has followed along similar lines. A major task of American historical demography has thus been to understand the institutional conditions that altered women's and children's roles sufficiently to induce a reduction in the birth rate during the nineteenth century.

The institutional change most frequently identified as important for the decline of U.S. fertility during the late nineteenth century is the rise of universal secondary schooling, something that helped to convert children from profitable family workers to beloved drains on the family budget.⁶ Because the population of the U.S. was already heavily urbanized by the 1880s, and agricultural lands well settled, suggested causes of the fertility decline earlier during the century, such as urbanization or the increasing scarcity of agricultural land, do not appear to have been important for the decline occurring during the last quarter of the century, especially within urban areas. What was changing throughout the United States in this period, however, was public education, especially the spread of secondary schools. The result, it has been argued (and there is empirical evidence consistent with this⁷) was a shift in the roles of children from family

⁵ Re the latter, see M. Davies, 'Corsets and conception: fashion and demographic trends in the nineteenth century', *Comparative Studies in Society and History*, 24, 4 (1982), pp. 611-641.

⁶ See A. M. Guest, 'Social structure and U.S. inter-state fertility differentials in 1900', *Demography*, 18, 4 (1981), pp. 465-486; A. M. Guest and S. E. Tolnay, 'Children's roles and fertility: late nineteenth-century United States', *Social Science History*, 7, 4 (1983), pp. 355-380; Guest and Tolnay, *loc. cit.* in fn. 1; P. H. Lindert, 'American fertility patterns since the Civil War', in R. D. Lee (ed.), *Population Patterns in the Past* (New York: Academic Press, 1977), pp. 229-276; P. H. Lindert, *Fertility and Scarcity in America*, (Princeton: Princeton University Press, 1978); S. E. Tolnay, S. N. Graham and A. M. Guest, 'Own-child estimates of U.S. white fertility, 1886-99', *Historical Methods*, 15, 3 (1982), pp. 127-138; also see J. C. Caldwell, 'Mass education as a determinant of the timing of fertility decline', *Population and Development Review*, 6, 2 (1980), pp. 225-255; J. C. Caldwell, 'The mechanisms of demographic change in historical perspective', *Population Studies*, 35, 1 (1981), pp. 5-27; J.-P. Tan and M. Haines, 'Schooling and demand for children: historical perspectives' (Washington, D.C.: The World Bank, Staff Working Papers No. 697, 1984).

⁷ Guest, *loc. cit.* in fn. 6; Guest and Tolnay, *loc. cit.* in fn. 1; Guest and Tolnay, *loc. cit.* in fn. 6; Tan and Haines, *loc. cit.* in fn. 6.

producers to consumers, and a consequent incentive for parents to restrict their numbers.

There is little question that the proportion of children receiving secondary schooling in the U.S. grew rapidly during the last quarter of the nineteenth century; whether this was the most important cause of the changed role of children is unclear, however. Starting well before the beginning of the nineteenth century, affluent Americans were able to relieve their children of economic responsibilities,⁸ and only in families in which the husband-father was unable to provide adequately were children called on to contribute to the family economy by working for pay. Thus, during the late nineteenth century, rising affluence may have been at least a partial cause of both new roles for children and the demand for more schooling.

Changes in women's roles during the late nineteenth century may also have influenced fertility patterns. For example, during the last quarter of the century the labour force participation rate of young, unmarried women increased appreciably, and there was a partial shift of female workers from domestic service and agricultural labour into cleaner and more attractive white-collar occupations. Although the accumulated evidence suggests that these changes were probably more important for nuptiality than for the limitation of childbearing within marriage,⁹ they may, nonetheless, have contributed to the decline of fertility. Thus, factors associated with changes in women's roles may have been as important as changes in children's roles for the decline of urban fertility.

In the analysis that follows, we seek evidence of the institutional factors that influenced the decline of fertility in Los Angeles by examining social and economic differentials in fertility and by comparing fertility change in different social and economic groups. First, however, we ask to what extent the Los Angeles fertility decline was caused by changes in the age structure of the female population or in the age at which women first married, rather than through the limitation of childbearing within marriage. This is important for two reasons. The first is understanding the extent to which Los Angeles's demographic experience paralleled the rest of the country's in being dominated by changes in marital fertility rather than by changes in nuptiality.¹⁰ Secondly, understanding the demographic determinants of the Los Angeles fertility decline may also help us to understand the institutional determinants of that decline. Before turning to the analysis, we discuss changes which occurred in Los Angeles at the end of the nineteenth century and which were potentially relevant to fertility.

LOS ANGELES IN THE LATE NINETEENTH CENTURY

Between 1880 and 1900, several changes occurred in Los Angeles that altered children's and women's roles in ways likely to promote a fertility decline. Originally founded in 1781 as a service centre for the surrounding *ranchos*, Los Angeles was still a village of approximately 1,610 people when California became a state in 1850. During the 1850s, 1860s, and 1870s, the community grew steadily, reaching a population of approximately 11,000 by 1880.¹¹ Even in 1880, however, Los Angeles was still pre-modern in key respects. Although certain urban amenities were available in the city that were lacking in the surrounding countryside (e.g. sewers, running water, tramways), Los Angeles households were characterized by extensive home production. For example, one

⁸ Daniel Blake Smith, 'Autonomy and affection: parents and children in Chesapeake families', in M. Gordon (ed.), *The American Family in Social-Historical Perspective*, 3rd edn. (New York: St Martin's Press, 1983), pp. 209-228.

⁹ Guest and Tolnay, *loc. cit.* in fn. 1.

¹⁰ W. C. Sanderson, 'Quantitative aspects of marriage, fertility and family limitation in nineteenth century America: another application of the Coale specifications', *Demography*, 16, 3 (1979), pp. 339-358.

¹¹ Fogelson, *op. cit.* in fn. 3, pp. 5-23.

observer writes that 'bread could not be bought (at local stores), as every housewife made her own; neither was milk sold at these business centers, for almost everyone had a cow.'¹² In this environment, both wives and children found ready employment in the household. Their opportunities for earning outside the home were concomitantly few.¹³ Under these conditions, it would not be surprising to find women marrying at a relatively young age and having fairly large families.

Starting in the mid-1880s, Los Angeles was rapidly transformed from small city to major metropolis. As a result of the construction of two direct rail links with the eastern part of the country during the mid-1880s – and an ensuing price war between the railway companies – Los Angeles experienced unprecedented economic and population growth, the population rising from approximately 11,000 people in 1880 to over 100,000 in 1900.¹⁴ With this growth, the monetization of the local economy, only partially developed in 1880, was completed. Employment opportunities for young women also increased dramatically.¹⁵ Also noteworthy in this period was the rise of new white-collar occupations that in 1880 had provided only a small fraction of employment in the city, and the consequent growth of the middle class. Thus, by 1900, Los Angeles had become a sprawling, relatively affluent city with a large middle class and a new, relatively open set of elites.¹⁶ As the middle class expanded, so too did the number of middle- and upper-class wives who devoted themselves to charitable and cultural activities, or to shopping.¹⁷ By 1900, there were new incentives for women to postpone marriage, and perhaps new incentives for them to limit childbearing, once they were married. Certainly, for middle-class families, much more numerous in 1900 than in 1880, the economic value of children was probably limited.

Two developments in the history of education in Los Angeles are of particular relevance to our analysis. First was the opening in 1891 of the city's first separate, centralized high school, a school that could accommodate a larger number of students than the various makeshift arrangements used previously. The second development was the institution, from the early 1890s onwards, of instruction in the commercial and manual arts and in domestic science in high school classes.¹⁸ Whether the first change increased the number of spaces in high school classrooms relative to the growth of the population of high-school age is unclear, but the change signalled the community's increasing commitment to providing free secondary schooling for all children. The second change may have been especially important in encouraging high-school attendance among children from the working class, since it meant that secondary schooling for the first time had an explicitly vocational content. Thus, between 1880 and 1900, Los Angeles experienced an increase in the proportions in secondary schools, as well as the growth of an affluent middle class, and a change in the roles of women brought about by increased wage employment for the unmarried and a decline in home production for the married.

¹² A. J. Brode, 'History of the university section, Los Angeles', *Annual Publications of the Historical Society of Southern California*, 12 (1922), pp. 72–109.

¹³ K. O. Mason and B. Laslett, 'Women's work in the American West: Los Angeles, 1880–1900, and its contrast with Essex County, Massachusetts, in 1880' (Ann Arbor: University of Michigan Population Studies Center, Research Report No. 83–41, 1983).

¹⁴ Fogelson, *op. cit.* in fn. 3, pp. 24–62.

¹⁵ Mason and Laslett, *loc. cit.* in fn. 13.

¹⁶ Fogelson, *op. cit.* in fn. 3, pp. 63–84; F. C. Jaher, *The Urban Establishment: Upper Strata in Boston, New York, Charleston, Chicago, and Los Angeles* (Urbana: University of Illinois Press, 1982), pp. 577–709.

¹⁷ Jaher, *op. cit.* in fn. 16, pp. 577–709.

¹⁸ H. W. Splitter, 'Education in Los Angeles, 1850–1900, Part II', *Southern California Quarterly*, 33, 3 (1951), pp. 226–244; H. W. Splitter, 'Education in Los Angeles, 1850–1900, Part III', *Southern California Quarterly*, 33, 4 (1951), pp. 313–330.

DATA AND METHODS

The data for our analysis come primarily from U.S. census returns, supplemented by city vital registration data in 1900. Because the number of children born to individual women was not recorded in the census until 1900, most of our analysis is based on the number of children enumerated in the household. Information about these children, their mothers, and characteristics of other household members is taken from two systematic random samples of Los Angeles dwelling houses that were drawn from the Census of Population schedules.¹⁹ In addition, in 1880, the census enumeration of deaths during the previous year was used to estimate mortality schedules, which were, in turn, used to adjust estimates of fertility. (Because of the known underenumeration of deaths in the census, the census-based mortality estimates were checked against alternative estimates of mortality.) In 1900, census questions on number of children ever born, number living and marriage duration (as well as age) were used to estimate childhood mortality; Los Angeles city vital registration data on mortality were also used to estimate mortality.²⁰

Our analysis begins by examining the simplest aggregate fertility measures, child-woman ratios (number of enumerated individuals less than five years old, divided by the number of women aged 17-46).²¹ These ratios, much used in historical analyses of American fertility²², are presented both in their crude form, where their value is affected by mortality as well as by fertility, and adjusted for mortality in the numerator and denominator.

Because the only population sub-groups for which child-woman ratios can be computed are the native and the foreign born, we next turn to estimates of age-specific and marital fertility derived from 'own children' techniques.²³ In this approach, census records for children are matched to those for their mothers, making it possible to categorize children not only by their own characteristics, but also by the characteristics of the mother and other household members. The matched children and mothers are then 'reverse-survived' using estimated mortality schedules in order to estimate the number of births and the number of women at risk of giving birth in each year preceding the census. Standard rates are then computed from these figures. We also use the marital status distribution of women at each census to estimate a synthetic cohort mean age at first marriage (the so-called singulate mean age at marriage or SMAM).²⁴ One important piece of information we are unable to estimate for 1880 is the distribution of ages at first marriage. This makes a neat partition of the total fertility rate into components depending on nuptiality and marital fertility respectively impossible.²⁵ Thus, we are

¹⁹ In 1880, the sample comprised every other dwelling house, while in 1900, every tenth house was selected. In 1900, a small portion of Los Angeles county lying outside the city boundaries was included in the sample universe. In 1880, only the city was included.

²⁰ A technical description of the methods and data used to estimate all mortality and fertility rates is available on request from the first author.

²¹ We focus on young children (those less than five years old) in order to avoid the problem of children who have moved away from home. We arrived at the ages 17-46 (and, in a later analysis, 18-47) by assuming that ages 15-44 are the prime reproductive years (a standard assumption) and that childbearing in the five years preceding the census was distributed evenly over the five-year period.

²² E.g. W. H. Grabill, C. V. Kiser and P. K. Whelpton, *The Fertility of American Women* (New York: John Wiley, 1958); Vinovskis, *op. cit.* in fn. 1; M. R. Haines, *Fertility and Occupation: Population Patterns in Industrialization* (New York: Academic Press, 1979).

²³ L.-J. Cho, 'The own-children approach to fertility estimations: an elaboration', in International Union for the Scientific Study of Population, *International Population Conference*, vol. 2 (Liège, 1973), pp. 263-280; United Nations, *Manual X: Indirect Techniques for Demographic Estimation* (New York: United Nations Department of International Economic and Social Affairs, Population Studies No. 81, 1983), pp. 182-195.

²⁴ J. Hajnal, 'Age at marriage and proportions marrying', *Population Studies*, 7 3 (1953), pp. 111-136.

²⁵ For the reasons this is so, see J. Trussell, J. Menken and A. J. Coale, 'A general model for analyzing the

unable to use simple index measures such as Coale's I_m , I_f and I_g to assess the extent to which the total fertility decline was due to changes in either of these variables.

The only population sub-groups for which we can estimate mortality in 1880 and 1900 are those defined by sex and age. Further analysis of differentials and change in marital fertility according to social and economic sub-groups cannot, therefore, be undertaken by using aggregate statistics (to do so would require assuming the existence of similar mortality schedules in all socio-economic sub-groups or the introduction of arbitrary assumptions about differentials in mortality, neither of which is desirable). Because of this, ordinary least squares regressions computed at the individual level are used to study socio-economic differentials and changes in numbers of surviving children. In most regressions, the dependent variable is the number of own children aged 0-4, the regressions being computed for all ever-married women of reproductive age (ages 18-47). For 1900 only, regressions predicting the number of children ever born are also estimated. These regressions do not directly indicate the factors responsible for the decline of marital fertility. Rather, they help to make clear differentials in fertility declines, thereby providing possible clues about the institutional causes of the decline.

RESULTS

Table 1 shows crude and mortality-adjusted child-woman ratios for Los Angeles in 1880 and 1900. These ratios indicate that during the last 20 years of the nineteenth century, fertility in Los Angeles fell by an unusually large amount. The mortality-adjusted child-woman ratio for all women declined from 682 children per 1000 women to just

Table 1. *Number of children aged 0-4 per 1,000 women aged 17-46, crude ratio and adjusted for mortality: Los Angeles, California, 1880 and 1900**

Measure and sample	1880	1900	Percentage change
Crude ratios			
All women	584	276	-53
Native-born women	522	238	-54
Foreign-born women	732	423	-42
Ratios adjusted for mortality†			
All women	682	307	-55
Native-born women	609	265	-56
Foreign-born women	855	471	-45
Percentage of women 17-46 who are foreign born	32	18	-44

* The ages referred to are ages at census date, not exact ages. Women aged 17-46 were chosen as the denominator on the assumption that, on average, they were approximately 15-44 years of age at the time they were exposed to the risk of childbearing.

† For 1880, a life table constructed from 1880 Los Angeles census mortality schedules was used to adjust both the numerators and denominators of the child-woman ratios. For 1900, Coale and Demeny's West model life table, level 13.43, was used (this level was chosen on the basis of estimates of child mortality, using Preston and Palloni's method of indirect estimation from census questions on numbers of children born and surviving; see A. J. Coale and P. Demeny, *Regional Model Life Tables and Stable Populations*, 2nd edn (New York: Academic Press, 1983), and S. H. Preston and A. Palloni, 'Fine-tuning Brass-type mortality estimates with data on ages of surviving children', in United Nations, *Population Bulletin*, no. 10-1977 (New York: United Nations, 1978), pp. 72-91).

effects of nuptiality on fertility', in L. T. Ruzicka (ed.), *Nuptiality and Fertility* (Liège: Ordina Editions, 1979), pp. 7-27.

over 300, a drop of 55 per cent. This decline was also found among native-born women, and was almost as great among the foreign-born. Thus, although fertility among foreign-born women was higher at both dates, and although the proportion of foreign-born women in the Los Angeles population dropped considerably between 1880 and 1900, this drop did not produce the overall decline in fertility. Instead, the decline was produced by forces affecting both native- and foreign-born women almost equally.²⁶

The fertility declines shown in Table 1 may strike some readers as unbelievably large, and the levels of childbearing in 1900 as unbelievably low. Both the size of the decline and the absolute level of fertility in 1900, however, are consistent with information from alternative sources. For example, published census statistics for the Pacific region of the country show a decline in the child-woman ratio of approximately 34 per cent between 1880 and 1900.²⁷ Although this figure is smaller than those in Table 1, it is not surprising to find a larger decline in an urban area undergoing rapid economic development. Likewise, data from the public use sample of the Census of 1900 show levels of fertility in urban areas of the Northeast almost as low as those found in Los Angeles.²⁸ The fertility levels and changes seen in Table 1 thus appear to be real.

Even if judged to be accurate, the statistics in Table 1 can be criticized on the grounds that Los Angeles's population in 1900 was so dissimilar from that in 1880 as to be incomparable. To describe the difference between fertility ratios in the first and second columns of Table 1 as a 'decline' might thus be viewed as unjustified. We disagree. It is quite true that rates of in-migration to Los Angeles were very high between 1880 and 1900, and that the social and economic institutions of the community changed dramatically as well. Nevertheless, it seems no less appropriate to view Los Angeles as spatially and socially the same community in 1880 and 1900 as to view most of the populations in which the decline of fertility has been studied in this way. Very few historical populations have been closed to migration, and studies of fertility over time almost always compare different cohorts of reproducing women, not the same cohorts. Moreover, as we show later in the analysis, although in-migration contributed to fertility decline in Los Angeles, the decline was almost as great among non-migrant women as among those born elsewhere in the United States. Thus, to speak of the difference in fertility rates between 1880 and 1900 in Los Angeles as a decline seems reasonable.

In order to assess the impact of changes in age structure on the overall decline of fertility, we turn next to age-specific fertility rates estimated by the 'own children' method (see the top panel of Table 2). Because infants are typically underenumerated in censuses and because age heaping and the small size of the 1880 sample make single-year estimates of births particularly liable to error, we have chosen to present mean age-specific fertility rates computed for the five years preceding each census. If changes in age structure were an important cause of fertility decline in Los Angeles, we should see relatively modest declines within age groups compared with those for the total population of women of reproductive age. The age-specific fertility rates in Table 2,

²⁶ In most analyses of the fertility decline in the U.S. it has similarly been found that the decline occurred among both native- and foreign-born women; see M. R. Haines, 'Fertility decline in industrial America: an analysis of the Pennsylvania anthracite region, 1850-1900, using 'own children' methods', *Population Studies*, 32, 2 (1978), pp. 327-354; B. Okun, *Trends in Birth Rates in the United States Since 1870* (Baltimore: Johns Hopkins Press, 1958); J. J. Spengler, 'Fertility in Providence, Rhode Island, 1856-1929', *American Journal of Sociology*, 38, 3 (1931), pp. 77-97; Vinovskis, *op. cit.* in fn. 1. Some studies, however, suggest the decline was far greater among the native-born than among the foreign-born (e.g. Tolnay *et al.*, *loc. cit.* in fn. 6).

²⁷ U.S. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970, Bicentennial edition*, part 1 (Washington, D.C.: U.S. Government Printing Office, 1975), p. 54.

²⁸ Tolnay *et al.*, *loc. cit.* in fn. 6. In this study, no statistics were computed for the urban areas of the West or Pacific region, but Okun in his analysis of child-woman ratios found fertility in the Pacific Coast region to have been lower than average in this period (Okun, *op. cit.* in fn. 26). In the study by Tolnay *et al.*, total fertility in the urban Northeast was estimated at 2.06 compared to 1.7 for Los Angeles estimated below.

Table 2. *Age-specific fertility rates, proportions of women ever married, and age-specific marital fertility rates, 1880, and 1900: Los Angeles, California**

Age	1880	1900	Percentage change
Age-specific fertility rates			
15-19	72	17	-76
20-24	170	80	-53
25-29	209	99	-53
30-34	174	66	-62
35-39	115	49	-57
40-44	44	24	-45
Total fertility	3.9	1.7	-56
Total fertility, ages 20-44	3.6	1.6	-56
Proportion ever married			
15-19	0.14	0.07	-50
20-24	0.56	0.38	-32
25-29	0.83	0.65	-22
30-34	0.91	0.79	-13
35-39	0.91	0.85	-7
40-44	0.93	0.91	-2
45-49	0.96	0.92	-4
Singulate mean age at marriage	22.2-23.1	25.3-25.8	- 10 to -16
Age-specific marital fertility rates			
15-19	427	151	-65
20-24	297	213	-28
25-29	271	158	-42
30-34	212	113	-47
35-39	137	67	-51
40-44	62	31	-50
Total marital fertility	7.0	3.7	-47
Total marital fertility, ages 20-44	4.9	2.9	-41

* For the age-specific fertility rates and age-specific marital fertility rates, the figures shown in the table are the means of the rates for 1876-80 and for 1896-1900.

however, changed as much or more between 1880 and 1900 as did the child-woman ratios shown in Table 1. Total fertility dropped from approximately four children per woman in 1880 to less than two in 1900. Thus, although the age structure of the female population of Los Angeles changed between 1880 and 1900 in a manner consistent with a decline in fertility (data not shown), this change was not a major determinant of the fertility decline.

The second panel of Table 2 shows changes in women's nuptiality patterns between 1880 and 1900.²⁹ As these data indicate, the average age at which Los Angeles women first married increased by approximately three years, a very substantial rise relative to historical variation in U.S. women's marriage ages. In 1880, over 80 per cent of all women had been married at least once by the age of 25; in 1900, this figure had fallen to 65 per cent.³⁰ This relatively steep rise in age at first marriage is consistent with a decline in fertility.

²⁹ More than one estimate of the singulate mean age at marriage is given because alternative assumptions about marriage in the oldest cohorts were used when computing the SMAM; see H. S. Shryock and J. S. Siegel, *The Methods and Materials of Demography*, (Washington, D.C.: U.S. Government Printing Office, 1971), pp. 292-296.

³⁰ The dramatic decline in proportions married occurred at younger ages only. This suggests that, although age at first marriage was rising, marriage remained nearly as universal in 1900 as it had been in 1880.

In order to assess the impact of nuptiality on the fertility decline, we use the same strategy that was used when studying the impact of age structure. Specifically, we compute age-specific marital fertility rates for 1880 and 1900 and ask whether the decline in marital fertility is as great as the decline in total fertility. If it is, this would suggest that the total fertility decline was influenced relatively little by nuptiality. Estimated age-specific marital fertility rates for 1880 and 1900 (again averaged over the five years preceding each census) are shown in the bottom panel of Table 2.³¹

Nuptiality appears to have had a more complex role in the fertility decline than age structure. Even if the unreliably small 15-19 year old group is ignored, considerable variation in the extent of the marital fertility decline in different age groups remains. While the decline at the older ages was of the same size as that in total fertility, the decline at the younger ages – especially among women aged 20-24 – was smaller (though not trivial).³² The estimated decline in total marital fertility also depends on whether the unreliable 15-19 group is included in this estimate. Even when it is, however, the decline in marital fertility is only 84 per cent that of total fertility (the figure is 73 per cent when the 15-19 year olds are ignored).

This suggests that changes in nuptiality, indeed, played a role in Los Angeles's fertility decline, though they were less important than changes in marital fertility. As much as 30 per cent of the decline in total fertility may have been caused by the increase in the age at which Los Angeles women first married.³³ This contribution to the overall fertility decline is not trivial; it may well reflect the improvement in employment opportunities for young women in Los Angeles between 1880 and 1900.³⁴ The change in marital fertility is substantial, however. We thus turn next to the question of what produced this change.³⁵

The individual-level regression equations used to answer this question contain six predictors available in the census. These include two basic demographic controls, (1) the woman's age and (2) her relationship to the household head (the latter taps both marital

³¹ Because information on current marital status only was collected in the Census of 1880, we were forced to assume a constant marital status distribution by age for the five years preceding the census when estimating marital fertility rates. Our estimates of marital fertility also assume that all fertility occurred within wedlock, an assumption that the historical record suggests is substantially accurate for this period in Los Angeles.

³² This pattern of greater fertility decline at older ages is commonly observed when fertility control in a population is increasing. The usual explanation is that as couples reach a parity which they do not wish to exceed, they increase their efforts to avoid further births (see A. J. Coale and T. J. Trussell, 'Model fertility schedules: variations in the age structure of childbearing in human populations', *Population Index*, 40, 2 (1974), pp. 185-258).

³³ A contribution of 30 per cent is close in magnitude to the figures estimated for the entire United States in the nineteenth century. For example, Sanderson (*loc. cit.* in fn. 10) estimates that changes in nuptiality accounted for 24 per cent of the fertility decline among native white women between 1800 and 1920.

³⁴ See Mason and Laslett, *loc. cit.* in fn. 13; also see Guest and Tolnay, *loc. cit.* in fn. 1.

³⁵ An application to the Los Angeles data of Coale and Trussell's method of estimating the level of fertility control from schedules of age-specific marital fertility rates produced anomalous results (for information on this method, see Coale and Trussell, *loc. cit.* in fn. 32; A. J. Coale and T. J. Trussell, 'Erratum', *Population Index*, 41, 4 (1975), p. 572; A. J. Coale and T. J. Trussell, 'Technical note: finding the two parameters that specify a model schedule of marital fertility', *Population Index*, 44, 2 (1978), pp. 203-213). While Coale and Trussell's measure of fertility control (m) rose from 0.75 to 1.06 between 1880 and 1900, indicating an increase in the practice of fertility limitation, the underlying level of natural fertility (M) declined from 0.75 to 0.53. There is no reason to think that natural fertility or fecundity declined in Los Angeles between 1880 and 1900; indeed, improvements in mortality rates from tuberculosis suggest the opposite. The statistical cause of this surprising decline in M is the decline in marital fertility at younger as well as older ages (Coale and Trussell's model assumes, in effect, that fertility control will result in a decline in marital fertility at the older ages only, an assumption called into question by a recent analysis of Utah birth spacing practices; see D. Anderton and L. L. Bean, 'Birth spacing and fertility limitation: a behavioral analysis of a nineteenth century frontier population', *Demography*, 22, 2 (1985), pp. 169-183). Because the estimated values of m and M are intertwined, the counter-intuitive results for M have led us to ignore Coale and Trussell's model in the body of the paper.

Table 3. *Predicted number of own children less than five years old per 1,000 ever-married women aged 18-47, by personal and household characteristics: Los Angeles, 1880 and 1900**

Characteristics	Predicted children			Base N	
	1880	1900	% Δ	1880	1900
Age					
18-22	792†	511†	-35	96	103
23-27	972	636	-35	166	301
28-32	956	545	-43	206	342
33-37	760	375	-51	158	343
38-42	499	222	-56	146	375
43-47	210	122	-42	90	292
Relationship to head					
Woman is the head of household	497†	261†	-47	104	170
Wife of the household head	849	449	-47	672	1,355
Other relative of the head	178	163	-8	40	123
Not related to the head	368	52	-86	46	108
Birthplace					
California	790†	436†	-45	210	256
U.S., northeastern states	692	305	-51	136	239
U.S., midwestern states	588 } 674	342 } 330		129	703
U.S., other	789 }	318 }		75	185
Latin America	689	869	-17	77	17
Ireland	996 } 804	480 } 670		57	30
Other	793 }	508 }		178	326
Literacy					
Illiterate	822	312	-62	99	37
Literate	740	388	-48	763	1,719
Ethnicity†					
Spanish surname/black	847	428	—	230	51
Other	714	385	—	632	1,705
Household head's occupation					
Professional, technical	765	294†	-62	64	177
Higher managers, proprietors	884	223	-75	48	149
Lower managers, proprietors	891	360	-60	86	167
Clerical and sales	573	320	-44	60	195
Skilled workers	809	373	-53	182	321
Semi-skilled and service workers	531	444	-16	79	308
Unskilled labourers	838	686	-18	118	132
Agricultural occupations	642	408	-36	88	44
No known occupation	723	401	-45	91	155
Not related to the head	368	52	-86	46	108
Equation R^2	0.18	0.15	—	862	1,756
Mean number of children aged 0-4	749	386	-48	862	1,756

† F ratio for classification is significant, 0.05 level or better.

* Estimated from ordinary least squares regression equations, one for each period.

† In 1880, this variable refers to whether the woman has a Spanish surname. In 1900, it refers to whether she is black.

status and position in the household relative to the head); (3) her place of birth, the closest available approximation of migration status, unfortunately recorded by state only, not by city; (4) whether she was literate, the only available measure of educational attainment; (5) her ethnicity, a variable that differs in 1880 and 1900 because of radical changes in the ethnic composition of Los Angeles's population; and (6) the head of household's occupation, the best available indicator of women's socio-economic position. Our main goal in examining the relationship of these variables to surviving

number of children aged 0-4 is to see whether fertility declines were uniform across the population or concentrated in certain groups.

Table 3 shows the results from separate regressions for 1880 and 1900. Change in the predicted number of children per thousand women in each social and demographic subgroup is also shown. The results for age and relationship to household head are as one would expect on the basis of common sense and our earlier estimates. In both 1880 and 1900, childbearing peaked for women in their mid-twenties; the decline of recent marital fertility was great at all ages, but especially for older women. Likewise, in both periods, recent fertility of wives of household heads was highest and that of women unrelated to the household head (boarders or servants) lowest; fertility declined by about the same amount among wives and female heads of household.

The results for birthplace allow us to consider the effect of migration to Los Angeles on both the level and decline of fertility there, as well as the broader question whether migrants' fertility differed from that of non-migrants. Both in 1880 and in 1900, women born in the United States but outside California (whom we shall refer to as migrants), indeed, had fewer surviving children aged 0-4 than did the California-born women. This suggests that migration may well have selected for low-fertility couples, or may have temporarily disrupted the family building process.³⁶ The decline of fertility between 1880 and 1900, however, was nearly as great among the California-born women as among the migrants. Thus, these results suggest that even though long-distance migration may indeed have selected for or produced relatively low fertility, the decline of marital fertility in Los Angeles between 1880 and 1900 was not primarily the product of immigration.

The results for literacy and ethnicity are similar. Neither variable differentiated women's recent fertility experience in 1880 or in 1900. Because literacy is seriously flawed as a measure of women's educational attainment and as a measure of the universality of secondary schooling, it is perhaps not surprising that it fails to predict their fertility. Ethnicity also fails to predict fertility, even in 1880 when a substantial number of those with Spanish surnames formed a Catholic underclass that might have been expected to have been relatively highly fertile.³⁷ Both this result and the result for literacy may be instances in which fertility differentials have been masked by differentials in infant and child mortality.

The results in Table 3 for the head of household's occupation are among the most interesting in the table. In 1880, variation in fertility between occupational groups was not statistically significant and the pattern of differentials difficult to interpret (fertility in all groups except clerical and sales workers and semi-skilled and service workers was high). By 1900, however, a strong and statistically significant inverse class differential in fertility had emerged: the higher the status of an occupation, the lower the number of young children. The decline in fertility between 1880 and 1900 also shows a strong class gradient. The decline was greater in the higher than in the lower status groups (with those in agricultural occupations or no known occupation taking intermediate values). This is similar to the class differentials in fertility decline found in other studies of the United States during the late nineteenth century, as well as in studies of nineteenth-

³⁶ The regional pattern of fertility seen in Table 3 is also consistent with the idea that migrants brought regionally differentiated fertility patterns with them when they arrived in Los Angeles. Tolnay *et al.* (*loc. cit.* in fn. 6) find that fertility in 1900 was lowest in the Northeast, highest in the South, and intermediate elsewhere. Table 3 likewise shows fertility to have been lowest in 1900 among women born in the Northeast.

³⁷ R. G. del Castillo, *The Los Angeles Barrio, 1850-1890: A Social History* (Berkeley: University of California Press, 1979), pp. 30-61; R. F. Heizer and A. F. Almquist, *The Other Californians: Prejudice and Discrimination Under Spain, Mexico, and the United States to 1920* (Berkeley: University of California Press, 1971), pp. 138-153; L. Pitt, *The Decline of the Californios: A Social History of the Spanish-Speaking Californians, 1846-1890* (Berkeley: University of California Press, 1966), pp. 246-265.

century England and Wales.³⁸ We return later to the question why marital fertility in higher status groups fell so much more than in the lower groups.

An analysis of the role that changes in population composition played in Los Angeles's fertility decline, based on the regressions shown in Table 3 (results not shown), suggests that changes in nuptiality patterns and population composition together accounted for approximately 43 per cent of the fertility decline. High rates of in-migration, a declining proportion of foreign-born women, and a sharp increase in women's age at first marriage all played a role in determining Los Angeles's unusually large fertility decline. More than half however, resulted from fertility changes within socio-demographic groups, that is, from changes in behaviour among similar individuals.

For 1900 only, we estimated regressions focusing on cumulative fertility. Results for the best-fitting model are shown in Table 4. In this model, number of children ever born is predicted from the variables used earlier, together with a measure indicating whether any of the head of household's children aged 15–19 were gainfully employed. This is intended to measure the potential economic value of children to the household. In Table 4, the statistics shown in the column labeled 'gross' are zero-order relationships, while those shown in the column labelled 'net' are from a single equation containing all the other predictors displayed in the table.

Generally, the results in Table 4 parallel those seen earlier, although the differentials tend to be smaller. An exception is literacy status, which is significantly related to the number of children ever born. This suggests the earlier, null results for literacy status may have reflected differentials in infant and child mortality, rather than in fertility. Judging from the continued non-significance of the results for ethnicity, however, this apparently was not the case for the lack of ethnic differentials in fertility in 1900.

The most interesting results in Table 4 relate to older children's employment. Although this measure is relevant for only a small portion of the sample (women who bore most of their children well before 1900), it is significantly related to cumulative fertility in the manner one would expect. The women whose older adolescent children were working had more children than those whose older children were not working. To be sure, this could reflect the impact of fertility on the likelihood of children working, rather than the impact of children's economic value on fertility. But the results are also consistent with the idea that families affluent enough to place little value on children's earnings tended to have fewer children than those for whom children's earnings remained valuable. In this regard, it should be noted that similar measures of older children's school attendance failed to predict cumulative fertility in any of the regressions we estimated (results not shown). Thus, the results for the children's employment variable suggest that children's participation in the role of worker may have influenced fertility in Los Angeles during this period. Do the non-significant results for children's school attendance suggest that their participation in the role of student was irrelevant for fertility?

It is difficult to answer this question directly, especially at the individual level. However, if growth in secondary schooling caused the fertility decline in Los Angeles, then we would expect to see school attendance rising most in the higher occupational

³⁸ For the U.S., see E. Sydenstricker and F. W. Notestein, 'Differential fertility according to social class', *Journal of the American Statistical Association*, 25, 1 (1930), pp. 9–32; X. Sallume and F. W. Notestein, 'Trends in the size of families completed prior to 1910 in various social classes', *American Journal of Sociology*, 38, 3 (1932), pp. 398–408. For Great Britain, see J. A. Banks, *Prosperity and Parenthood* (London: Routledge and Kegan Paul, 1954) and *Victorian Values: Secularism and the Size of Families* (London: Routledge and Kegan Paul, 1981), although for contrary results see R. Woods and C. W. Smith, 'The decline of marital fertility in the late nineteenth century: the case of England and Wales', *Population Studies*, 37, 2 (1983), pp. 207–225.

Table 4. *Gross and net estimated number of children ever born per 1,000 ever-married women aged 18-47, by social and demographic characteristics: Los Angeles, 1900**

Characteristics	Gross	Net	Base <i>N</i>
Age			
18-22	0.8†	1.0†	86
23-27	1.2	1.6	268
28-32	1.8	2.2	318
33-37	2.5	2.5	322
38-42	2.8	2.5	361
43-47	3.4	2.9	283
Relationship to head			
Woman is the head of household	2.8†	2.3†	161
Wife of the household head	2.4	2.4	1,281
Other relative of the head	1.4	1.7	106
Unrelated to the head	1.2	1.7	90
Birthplace			
California	2.0†	2.4†	236
U.S., northeastern states	2.0	2.0	221
U.S., midwestern states	2.1	2.1	665
U.S., other	2.2	2.3	169
Latin America	5.9	5.4	14
Ireland	3.6	1.9	28
Other	2.9	2.5	305
Literacy			
Illiterate	4.2†	3.0†	31
Literate	2.2	2.3	1,607
Race			
Black	2.8	2.5	50
Other	2.3	2.3	1,588
Household head's occupation			
Professional, technical	1.7†	1.7†	167
Higher managers, proprietors	2.2	2.0	136
Lower managers, proprietors	2.5	2.4	155
Clerical and sales	1.7	1.9	180
Skilled workers	2.5	2.4	301
Semi-skilled and service workers	2.4	2.4	293
Unskilled labourers	3.3	3.2	127
Agricultural occupations	2.8	2.7	40
No known occupation	2.5	2.2	149
Not related to the head	1.2	1.7	90
Whether head's children ages			
15-19 are employed			
Some or all are employed	4.8†	4.3†	143
None is employed	3.6	3.3	191
Head has no children 15-19	1.9	1.9	1,214
Not related to the head	1.2	1.7	90
Equation <i>R</i> ²	-	0.30	1,638
Mean number of children ever born	-	2.3	1,638

* Gross estimates do not control for any other variables. Net estimates are made from an ordinary least squares regression equation containing all the variables shown in the table.

† Significant *F* ratio, 0.05 level or higher, for this classification.

classes, where marital fertility declined most steeply. Likewise, insofar as children's reduced labour value was a reason for limiting their numbers, we would expect to see the proportions of adolescents working for pay decline the most in the highest occupational groups. In Table 5 we show the percentage of individuals in school or employed according to age and head of household's occupation (individuals living in a household headed by someone with whom they had no tie of marriage or descent are treated as a

Table 5. *Percentage in school or employed, by age and head of household's occupation: Los Angeles, 1880 and 1900*

Head's occupation	Ages 13-16			Ages 17-19		
	1880	1900	% Δ	1880	1900	% Δ
Percentage in school						
White collar/skilled	72.5 (142)*	70.2 (346)	- 3	21.5 (107)	28.5 (260)	+ 33
Semi- or unskilled	47.1 (68)	62.7 (142)	+ 33	11.6 (43)	19.8 (106)	+ 71
Agricultural	58.3 (48)	80.0 (20)	+ 37	30.8 (26)	50.0 (18)	+ 62
No known occupation	50.0 (58)	62.5 (96)	+ 25	18.0 (50)	20.0 (90)	+ 11
Not related to head	30.0 (40)	25.7 (35)	- 14	6.9 (72)	11.6 (69)	+ 68
Percentage employed						
White collar/skilled	9.2 (142)	13.0 (346)	+ 41	34.6 (107)	43.1 (260)	+ 25
Semi- or unskilled	8.8 (68)	25.3 (142)	+ 188	41.9 (43)	52.8 (106)	+ 26
Agricultural	6.3 (48)	10.0 (20)	+ 59	19.2 (26)	27.8 (18)	+ 45
No known occupation	12.1 (58)	21.9 (96)	+ 81	30.0 (50)	48.9 (90)	+ 63
Not related to head	52.5 (40)	60.0 (35)	+ 14	76.4 (72)	63.8 (69)	- 16

* Numbers in parentheses are base *N*'s for the percentages above and to their left.

separate category). For both school attendance and employment, we consider two age groups: ages 13-16, the prime years for attending secondary school, and ages 17-19, years during which gainful employment was common, and school attendance rare but possible.

Contrary to expectations, the figures in Table 5 suggest that occupational differences in schooling shrank between 1880 and 1900, rather than widened. In 1880, children aged 13-16 of semi-skilled, service and unskilled workers were distinctly less likely to be in school than children of higher-status workers. By 1900, however, this was no longer the case: the percentage of children aged 13-16 whose heads of household were in an occupation of lower status in 1900 was only seven points below the percentage of those coming from higher-status households. Although schooling among 17 to 19-year-olds was relatively rare in all groups, it, too, increased as much or more so in the lower occupational groups as in the higher ones. Thus, although the increasing prevalence of school attendance in Los Angeles between 1880 and 1900 is consistent with the overall decline of marital fertility, the fact that increase in schooling was not greatest in the groups with the largest declines in fertility suggests that there were other factors motivating members of these groups to limit fertility within marriage.

The results in Table 5 for children's employment, together with the earlier results for children's employment in the cumulative fertility regression, suggest one possible difference between higher and lower status families that may have contributed to the emerging class differential in fertility. This was the greater decline in the economic value of children in middle-class families than in working-class homes, a change due not to patterns of school attendance, but to changes in the economy. Table 5 shows that gainful employment increased among the children of all occupational groups between 1880 and

1900, a change presumably reflecting the disappearance of home production during this period, and an increase in the number and types of employment opportunities outside the home. Among 13- to 16-year-olds, however, the increase in employment was far greater for children from lower-status families than for those from white-collar or skilled homes. Because the early adolescent years were prime years for attending school, not for working, the rise in employment among young adolescents from lower-status homes suggests that they were working because of need. Thus, new opportunities for children to contribute to household income may have partially offset the increased costs of children brought about by the new availability and importance of secondary schooling. Compared to affluent families, poorer families may have continued to value relatively high fertility because they anticipated economic returns from their children.

Although this interpretation of the situation of families of lower status in Los Angeles seems plausible, it leaves unanswered the question why middle and upper status couples were increasingly motivated to limit fertility between 1880 and 1900. To be sure, for some of these families, the rising costs of children associated with increased school attendance in the years beyond high school may have provided a reason to limit family size. Given the relatively small proportion of children attending school at ages 17–19, however, this explanation seems unlikely to be complete. We suspect the answer lies elsewhere.

There are at least two plausible possibilities. One is an increase in wives' activities outside the home in Los Angeles during the last quarter of the nineteenth century, a concomitant of the demise of home production and the rise of reform and charitable movements. In Los Angeles in 1880, unlike many more developed communities in the Middle West and on the East Coast, women's lives were largely devoted to domestic tasks. By 1900, many of these tasks had disappeared, to be replaced by market-produced goods and services purchased with cash. For relatively affluent families, this shift presumably freed wives from many of their former obligations, giving them increased opportunities to participate in activities outside the home (although gainful employment was not one of them). To the extent that women enjoyed these new roles – and men enjoyed the status associated with having a wife who was publicly 'at leisure' – the desire to restrict childbearing may have increased. That women increasingly enjoyed a period of semi-autonomy before marrying, during which they worked for pay, may have made their desire to retain some independence from an endless round of domestic obligations after they married all the stronger.

The other plausible motive for the increasing limitation of fertility by middle-class couples, suggested by the shift from a partial subsistence economy to a fully monetized market economy, is material consumption itself. Elaine Tyler May has argued that the divorce rate in Los Angeles rose between 1880 and 1920 primarily because of the rise of modern consumerism and the inability of many middle-class husbands, especially those in lower white-collar occupations, to meet the new consumption aspirations of their wives.³⁹ Evidence that a desire to consume modern goods provides an incentive to limit fertility exists for some contemporary developing countries.⁴⁰ That a desire for consumption might similarly have led to fertility limitation in the past seems plausible, especially in a community like Los Angeles that lacked a traditional set of elites and in which material consumption was consequently important for marking one's rise on the social and economic ladder.

³⁹ E. T. May, 'The pressure to provide: class, consumerism, and divorce in urban America, 1880–1920', *Journal of Social History*, 12, 2 (1978), pp. 180–193.

⁴⁰ E.g. D. Freedman, 'Mass media and modern consumer goods: their suitability for policy interventions to decrease fertility', in R. G. Ridker (ed.), *Population and Development: The Search for Selective Interventions* (Baltimore: Johns Hopkins University Press, 1976), pp. 356–386.

In summary, then, middle- and upper-status couples in Los Angeles at the end of the nineteenth century seem likely to have increased the practice of fertility limitation not so much because of new patterns of schooling or labour force participation among their children as because of changes in wives' roles or in desired patterns of consumption. To be sure, patterns of school attendance in these families no doubt made children expensive; but they appear to have been almost as expensive in 1880, when middle-class fertility was relatively high, as in 1900. What seems likely to have changed for these families between 1880 and 1900 was the disappearance of home production, a change that entailed changes in wives' activities and in the economic life of the family. It was these changes, we suggest, that encouraged the further limitation of childbearing within marriage.

DISCUSSION

Between 1880 and 1900, Los Angeles experienced a remarkable decline in fertility. In just 20 years, total fertility fell from almost four children per woman to less than two. Accompanying the fertility decline and partly causing it was an increase in the age at which women first married; also accompanying and partly causing the decline was the heavy in-migration of native-born women with relatively low fertility. The growth of the middle class in the city's population also played a role in the fertility decline, but a very small one, largely because in 1880 the fertility of the middle class was as high as that of the lower occupational strata. Only in 1900 was fertility among upper-status families markedly lower.

As in most American communities during the late nineteenth century, the single most important proximate cause of the fertility decline in Los Angeles was the increasing limitation of childbearing within marriage. Although it has not been possible to identify definitively the forces that underlay this increase in fertility control, migration has been ruled out as the most important cause. The finding that class differentials in fertility emerged at the time when educational differentials were disappearing also suggests that the rise of universal secondary schooling probably did not by itself account for the fertility decline, especially the enormous decline that occurred among the more affluent classes. Changes in wives' roles and an increased emphasis on the consumption of mass-produced goods seem more plausible as possible causes of the fertility decline in middle-class families.

What are the broader implications of this analysis? Although we are unable to generalize directly from the case of Los Angeles to other communities, our analysis suggests three points. First, the role of long-distance migration in the decline of fertility needs to be clarified, especially for countries like the United States that were characterized by considerable internal migration during the demographic transition. The high fertility of farm families on the U.S. frontier⁴¹ makes it unlikely that migration invariably depressed fertility. The results for Los Angeles, however, suggest that migration could have contributed to the urban fertility decline.

The second implication of this analysis is that, although changes in children's economic roles may be important for the fertility decline, role changes can occur for several reasons. Children's traditional contributions to household production or income can be undermined not only by the importation of Western models of the family or the rise of universal schooling, the two factors emphasized by Caldwell;⁴² but also by

⁴¹ R. A. Easterlin, G. Alter and G. Condran, 'Farms and farm families in old and new areas: the northern states in 1860', in T. K. Hareven and M. A. Vinovskis (eds.), *Family and Population in Nineteenth-Century America* (Princeton: Princeton University Press, 1978), pp. 22-84.

⁴² *loc. cit.* in fn. 6.

affluence, or a change from home production to a market economy. Indeed, the historical evidence for the United States and for Europe suggests that the image of children as naive creatures requiring nurturing, guidance and play – essentially an image that conflicts with the role of producer – first arose long before education was universal, in households that no longer required children's labour inputs. Thus, although the rise of universal formal schooling may be sufficient to change children's domestic roles and thereby initiate a fertility decline, schooling is not the only force that can change them.

The final point arising from this analysis is that changes in wives' roles may be as important for the decline of fertility as are changes in children's roles. This is not a new conclusion.⁴³ It requires re-emphasis, however, in the light of two recent trends in the social-demographic literature, the overwhelming (and narrow) focus in most empirical studies on wives' income-earning roles, and the emphasis in the American historical demographic literature on children's roles. Historians such as Daniel Scott Smith and Carl Degler have long suggested that changes in women's domestic roles brought about by the rise of the cult of domesticity during the first quarter of the nineteenth century helped to initiate the U.S. fertility decline.⁴⁴ Changes in the roles of wives towards the end of the century associated with the Progressive Era and with the rise of consumerism may have been equally important in motivating the control of fertility during that period. Although wives at the turn of the century rarely worked for pay, middle-class wives increasingly spent time outside the confines of the domestic sphere, a pattern that was in part a continuation of their increased participation in the workplace during their pre-marital years. That such widening of wives' sphere may have contributed to the desire to limit childbearing within marriage is a possibility deserving further study.

⁴³ See, e.g. Caldwell, *loc. cit.* in fn. 6; C. Opong, 'Women's roles, opportunity costs, and fertility', in R. Bulatao and R. D. Lee (eds.), *Determinants of Fertility in Developing Countries: A Summary of Knowledge* (Washington, D.C.: National Academy Press, 1983), pp. 439–473.

⁴⁴ D. S. Smith, 'Family limitation, sexual control, and domestic feminism in Victorian America', *Feminist Studies*, 1, 1 (1973), pp. 40–57; C. N. Degler, *At Odds: Women and the Family in America from the Revolution to the Present* (Oxford: Oxford University Press, 1980).