INTRA-GROUP DIFFERENCES IN BIRTH RATES OF MARRIED WOMEN[1]

CLYDE V. KISER[2]

DURING the past few years students of population have increasingly stressed the need for studies that go beyond the conventional descriptions of inter-class variations in fertility. For one thing, there is a distinct need for data concerning the proportionate importance of the socio-economic classes characterized by given rates of fertility. Even more important, perhaps, has been the increasing recognition that factors underlying human fertility are too complex ever to be adequately understood simply by comparisons of average birth rates between broad social classes. As a result, particular emphasis has been placed on the desirability of knowledge concerning the character of variations in fertility *within,* as well as *between,* broad socio-economic groups. A thorough approach to the problem would involve sociological and psychological studies of families, and some beginning along this line has been made. The very nature of such surveys, however, limits the number of cases that can be secured. In the meantime, a simpler but important approach is afforded by the large mass of material collected by the National Health Survey. The type of data collected and the large number of cases involved permitted the present intra-group analyses through the mechanism of cross-classifications of data.

Since the characteristics of the National Health Survey have been fully discussed in a previous publication,[3] only a brief description will be given here. The *Survey* was conducted during the fall and winter of 1935-1936 under the auspices of the United States Public

[1] A progress report based upon data collected by the National Health Survey, conducted by the United States Public Health Service with assistance from the Works Progress Administration. The author wishes to express his gratitude to the United States Public Health Service for its cooperation in making these data available.

[2] From the Milbank Memorial Fund.

[3] Perrott, G. St.J.; Tibbitts, C.; and Britten, R. H.: The National Health Survey: Scope and Method of the Nation-wide Canvass of Sickness in Relation to its Social and Economic Setting. *Public Health Reports,* September 15, 1939, liv, No. 37, pp. 1663-1687.

Health Service, with assistance from the Works Progress Administration. Its main purpose was to collect data concerning the incidence and severity of illness among various elements of our urban population, and toward that end detailed records were secured from about 700,000 families residing in eighty-three cities of eighteen states.

The sampling procedure was designed to yield broad regional representativeness of the urban populations, but for reasons of administrative expediency the *Survey* was not planned to be strictly representative by size of city. An unduly high proportion of the records was secured from cities of 100,000 population and over. Within each city selected, however, an attempt was made to secure a cross-section of the population. In fact, in all except one of the fifty-two surveyed cities under 100,000 population, attempts at complete enumeration were made, and in the larger cities the sampling procedures were designed to be random.

The fertility data related to the number of births during the year preceding enumeration. The major tabulations provided for analyses of birth rates among married women of childbearing age, subdivided along demographic and socio-economic lines. A preliminary report based upon these data has been published, showing inter-class variations in marital fertility: first, according to occupational class of the head; next, by educational attainment of the wife; and finally, by amount of family income during the year preceding enumeration.[4] With the collaboration of Dr. Karpinos of the United States Public Health Service, who secured some additional tabulations embracing all surveyed urban white women 15-44 years of age regardless of marital status, an analysis has also been published in which class differences in marital fertility are compared with those in general fertility and net reproduction.[5]

[4] Kiser, C. V.: Birth Rates and Socio-Economic Attributes in 1935. The Milbank Memorial Fund *Quarterly*, April, 1939, xvii, No. 2, pp. 128-151.

[5] Karpinos, B. D. and Kiser, C. V.: The Differential Fertility and Potential Rates of

(Continued on page 149)

Two central points of interest have been described in the published preliminary analyses. In the first place was the strongly suggestive indication that class differences in the fertility of urban native-white *married* women in this country are becoming less important.[6] The trend cannot be described in a definitive manner since the *Survey* data are not sufficiently comparable with those for earlier studies in this country. An interesting aspect of this trend, however, was the emergence of an exception to the traditional inverse order of the classes with respect to marital fertility. This was the failure of married women in the topmost classes to be characterized consistently by lowest birth rates. The average rate for native-white urban wives of professional men was a little higher than that for wives of business men. On the basis of family income the decline of birth rates with increasing income did not extend into the upper levels. On the basis of educational status the birth rate of wives reporting college attendance was almost as high as that for wives reporting that their formal schooling was limited to entrance into high school.

The second point of interest, however, was that there is still a strong inverse association between socio-economic status and net rates of reproduction. This was brought out by the analysis of births in relation to all surveyed urban white females of childbearing age.[7] The net rate of reproduction, of course, is based on the fertility and mortality experience of all females regardless of marital status. Thus, although married women of topmost socio-economic status may not be characterized by lowest birth rates, the general birth rates and reproduction rates for the topmost classes do stand in lowest positions. This latter situation arises from the fact that marriages are less frequent in the upper than in the lower classes, especially when younger ages of the childbearing span are considered.

Thus, care must be taken in the interpretation of the newer trends

Growth of Various Income and Educational Classes of Urban Populations in the United States. The Milbank Memorial Fund *Quarterly*, October, 1939, xvii, No. 4, pp. 367-391.

[6] *See* footnote 4 above.

[7] *See* footnote 5 above.

in the differential fertility of married women. They do not signify changes in the traditional inverse order of the classes with respect to net rates of reproduction. Changes in the class-pattern of *marital* fertility, however, are real. They have been substantiated by other data for this country, notably by Notestein's study of 1930 family Census data for the East North Central states.[8] Innes[9] has recently found that the same type of changes in class fertility has taken place in England and Wales and, through comparisons of birth rates for specific classes in 1921 and 1931, has provided some badly needed measurements of such trends.

The present paper is devoted to some further analyses of class variations in the fertility of married women of childbearing age enumerated in the Health Survey. We may take as a point of departure the birth rates standardized for age for certain socio-economic classes and proceed to consider three matters: (1) the birth rates in relation to the proportionate importance of the various classes considered; (2) the character of variations in fertility *within* classes, as afforded by the cross-classifications of the data; and (3) the implications regarding relative importance of specific factors on variations in human fertility.

Differential Fertility in Relation to Proportionate Importance of Classes

We may first consider briefly the class differences in marital fertility in relation to proportionate importance of the classes. In Figure 1 birth rates standardized for age are indicated on the horizontal axes for given classes of 284,246 native-white wives, for 51,901 foreign-white wives, and for 39,511 colored wives of childbearing age enumerated in the total *Survey*. The birth rates are shown for groupings according to the usual occupational status of the head, for

[8] Notestein, F. W.: Differential Fertility in the East North Central States. The Milbank Memorial Fund *Quarterly*, April, 1938, xvi, No. 2, pp. 173-191.

[9] Innes, J. W.: Class Birth Rates in England and Wales, 1921-1931. The Milbank Memorial Fund *Quarterly*, January, 1941, xix, No. 1, pp. 72-96.

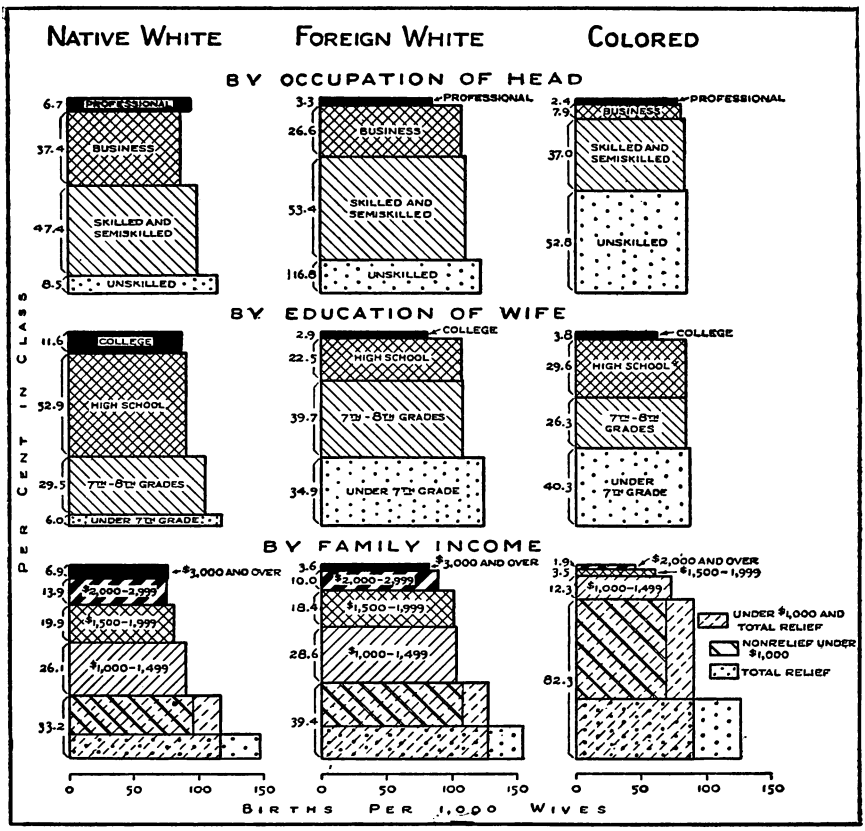


Fig. 1. Birth rates in 1935 by specified socio-economic classes in relation to proportionate importance of the classes within each color-nativity group. Urban wives of childbearing age in the National Health Survey. Birth rates standardized for age.

groupings according to educational attainment of the wife, and for groupings according to family income during the *Survey* year. For each color-nativity group and for each type of classification, the percentage distribution of wives in the sample is indicated on the vertical axis. (In other words, the percentage distribution for each of the nine sections totals to 100.)

In considering the distribution of the sample along the three socio-economic lines, certain factors need to be kept in mind. As previously stated, the *Survey* was carried out during the fall and winter of 1935-1936. The family income status had reference exclusively to the twelve months preceding enumeration, approxi-

mately the year 1935, and therefore tends to reflect the effect of the depression. The occupational classifications, on the other hand, referred to the *"usual"* occupation of the household head, regardless of his employment status at the time of the *Survey*. The distributions according to educational attainment were even less affected by the depression than were those by occupation, since these were based on the accomplished fact of school attendance of married women.

It should also be remembered that the samples were restricted to families represented by married women of childbearing age. Hence, the distributions were different from those which would be expected for total populations or for married women of all ages. As previously stated, too, the sample was unduly weighted by families from large cities. However, tests have indicated that the distributions in Figure 1 would not be substantially changed by adjustment for the existing under-representation of small cities.[10] On the whole, the distributions along socio-economic lines presented in Figure 1 are believed to be fairly representative of the situations during 1935-1936 for all urban wives of childbearing age of given nativity and color.

Several points of interest stand out in Figure 1. As expected, regardless of whether the distributions are made by occupational status of the head, by education of the wife, or by family income, the group of native-white wives stood in most favorable position and the colored wives in least favorable position. On the occupational basis, the proportion classed as wives of unskilled laborers was about 9 per cent for native whites, 17 per cent for foreign whites, and 53 per cent for the colored wives. On the educational basis, the proportion reporting less than 7th grade in formal schooling was 6 per cent for native whites, 35 per cent for foreign whites, and 40 per cent for colored wives. On the income basis, the proportion report-

[10] Experimental adjustments for under-representation of small cities have in most instances slightly increased the proportions in the least privileged classes and correspondingly decreased the proportions in the most privileged classes, but had little effect upon intermediate classes. The composition of the samples along socio-economic lines, by region and size of city, will be discussed in a later report.

ing incomes of less than $1,000 or relief status during 1935, was 33 per cent for the native whites, 39 per cent for the foreign whites, and 82 per cent for the colored wives.

The chart also emphasizes the relative unimportance of the topmost classes as defined in these classifications. Among the native whites, wives of professional men constituted about 7 per cent of the sample, wives reporting college attendance about 12 per cent, and wives reporting family incomes of $3,000 and over, about 7 per cent. From the population point of view, the magnitude of the rate for native-white wives of professional men is not of primary importance. The importance of the reversal in the order of the professional and business classes with respect to marital fertility stems rather from the low level of the rate for wives of business men, constituting over one-third of the native-white sample. In fact, the reversal probably arose from sharp declines in the fertility within the business class rather than from increases in the fertility of wives of professional men.[11]

Attention may be directed to the similarity in birth rates but to differences in proportionate importance of native-white classes ranking lowest with respect to occupational status, educational attainment, and family income. In the three respective types of classifications almost precisely the same birth rates were derived for wives of unskilled laborers, wives reporting less than 7th grade schooling, and wives reporting family incomes of less than $1,000 or relief. Yet, whereas the unskilled and the "under 7th grade" groups, respectively, comprised only 9 and 6 per cent of the total native-white sample, the "under $1,000 and total relief" group comprised one-third of the sample.

Among the foreign-white wives, the average birth rates were consistently in inverse relation to occupational, educational, and in-

[11] Innes has provided definite evidence that in England and Wales the reversals in the order of the topmost classes with respect to fertility arose from differential rates of decline in birth rates during 1921-1931. There was no increase in birth rates for any class during this period. *See* Innes, *op. cit.*, pp. 78-80.

come status. The upper extreme classes, however, were relatively unimportant, even less so than among native whites. Among foreign whites the lower extreme classes by occupational and educational status, as well as by income status, assumed noteworthy importance. As among native whites, the birth rates for the unskilled, the under 7th grade, and the "under $1,000 and total relief" classes were about the same in magnitude. For a true perspective of the importance of class differences in fertility among foreign-born white married women in this country it is, of course, necessary to keep in mind that this total segment of our population is rapidly passing out of the childbearing span. The figure shows the internal distributions and differential birth rates in a decreasing sector of our population.

For the urban colored married women, it is seen at a glance that existing class differences in marital fertility were of small importance. The faintly discernible inverse relation between occupational status and birth rates has little practical importance because about 90 per cent of the wives fell into the two laboring classes, and there was no appreciable difference between birth rates of the skilled and unskilled workers. On the educational basis, the birth rate among wives reporting college attendance was conspicuously low in relation to rates for the remaining women, but college wives constituted less than 4 per cent of the total sample of urban colored married women and there was lack of substantial differences in the birth rates of the bulk of colored wives at lower educational levels.[12] In the classification by income, there was found rather sharp lowering of the birth rates with improved status, but less than one-fifth of the

[12] An analysis by specific grade of schooling below high school level, indicated that the birth rate for none of these detailed groups except the illiterate—no schooling whatsoever—surpassed that for the high school wives by more than 5 per cent. The birth rate for the illiterate wives was 16 per cent higher than that for the high school class.

As for the native whites, subdivision of the "under 7th grade" group into the 6th, 5th, 4th, and "under 4th," disclosed no internal variation in birth rates below the 7th grade level. The "under 4th" group, however, was too small to afford reliable rates for subdivisions of this group. A similar procedure for the foreign whites revealed marked instances of internal variation below the 7th grade level, but these were not systematic. *See* footnote 4, pp. 141-142.

colored wives reported incomes above $1,000, and only about 2 per cent reported as much as $2,000.

Differential Birth Rates within Socio-Economic Classes

Attention may now be turned to the character of variations in birth rates within given socio-economic classes. For a long time students of population have emphasized that there are rather wide differences in economic and cultural conditions of families within a given class. The "business" class, for instance, contains agents, clerks, and owners of one-man enterprises, as well as the more affluent proprietors. Of possibly more value than finer subdivision of the data by a single attribute, however, are cross-classifications on the basis of two or more attributes. The latter type of procedure not only affords indications of intra-group differences in birth rates, but may suggest the relative importance of different factors associated with fertility. Such cross-classifications have been made for studies of differential fertility in Sweden,[13] but domestic studies of this nature have thus far been few and limited.[14] It is hoped that studies of this type will be forthcoming from the 1940 Census.

The tabulations of fertility data for married women in the *Survey* permitted one cross-classification by occupation of the head and by education of the wife, and one by occupation of the head and family income.[15] The present analyses of these data will be restricted to the

[13] Edin, K. A. and Hutchinson, E. P.: Studies of Differential Fertility in Sweden. London, P. S. King and Son, Ltd., 1935, 116 pp.

See also data compiled by C. Tietze for *Population Index,* January, 1940, vi, No. 1, pp. 72-73.

[14] For suggestive results based upon small samples for selected cities, *see* Notestein, F. W. and Kiser, C. V.: Factors Affecting Variations in Human Fertility. *Social Forces,* October, 1935, xiv, No. 1, pp. 32-41.

See also Griffin, H. C. and Perrott, G. St.J.: Urban Differential Fertility during the Depression. The Milbank Memorial Fund *Quarterly,* January, 1937, xv, No. 1, pp. 75-89.

An intensive study based upon special tabulations from the 1930 Census for one county has recently appeared. *See:* Thompson, W. S., *et al.:* Average Number of Children Per Woman in Butler County, Ohio, 1930. Bureau of the Census, in cooperation with the Scripps Foundation for Research in Population Problems. Washington, 1941, 81 pp.

[15] Mechanically, this was done by tabulating each of the four broad occupational classes by educational status and retabulating them by income. This did not provide a cross-classification by education and income.

surveyed native-white wives of childbearing age, of which there were 284,246. The cross-classifications thus afforded four types of analyses, as follows:

A. Variations in birth rates by educational status, within occupational groups;

B. Variations in birth rates by occupational status, within educational groups;

C. Variations in birth rates by occupational status, within income groups; and

D. Variations in birth rates by income status, within occupational groups.

It should be emphasized at the outset that complete constancy of one factor is not attained in the intra-group analyses. For instance, in the subdivision of the business class according to educational status of the wife, the college class is undoubtedly selective with regard to "upper" business pursuits, whereas the lower educational groups are disproportionately weighed by "petty" business families. Thus, we can speak only in approximate terms regarding "constancy" or "similarity" with respect to given characteristics.

A. *Variations in Birth Rates by Educational Status, within Occupational Groups.* In the top panel of Figure 2, birth rates standardized for age are shown according to educational status within each of the four broad occupational classes. Within three of the occupational classes there was virtually no difference between the birth rate for wives reporting college attendance and that for wives reporting high school status. Aside from this, however, there is the appearance of increasing strength of the inverse relation between educational attainment and fertility of married women as one proceeds from upper to lower occupational levels. This appears to be true on a relative as well as an absolute basis, as indicated in the lower panel where the rate for each educational class within an occupational group is expressed as a per cent of the base rate[16] for the total occu-

[16] For this purpose the base rates for the several occupational classes were adjusted for

(Continued on page 157)

pational group. Whether or not there is any principle of increasing strength of the inverse relation between educational status and fertility, it is clearly apparent that the range of variations was much less within the two white-collar classes than within the two laboring classes.

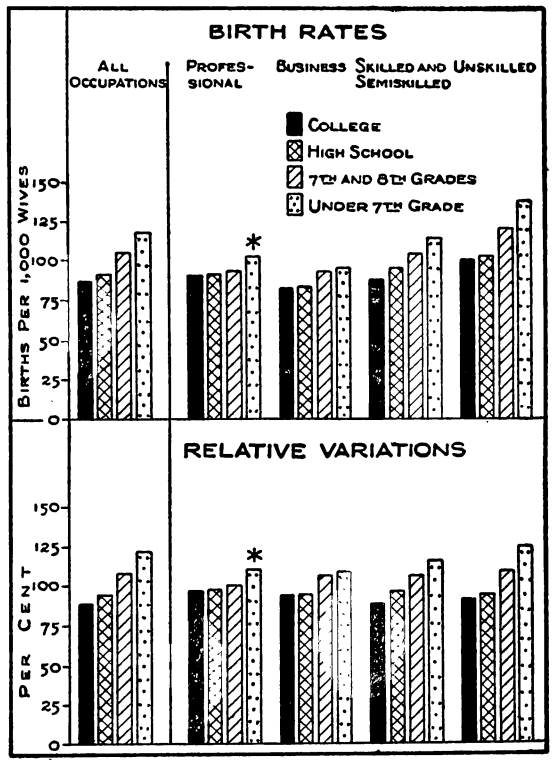


Fig. 2. Birth rates in 1935 and their relative variations by educational attainment of the wife within groupings by occupation of the head: Native-white urban wives of childbearing age in the National Health Survey. Birth rates standardized for age.

*This birth rate is based on 171 cases. Bases for remaining birth rates for cross-classified groups shown above range from 679 to 64,009 cases.

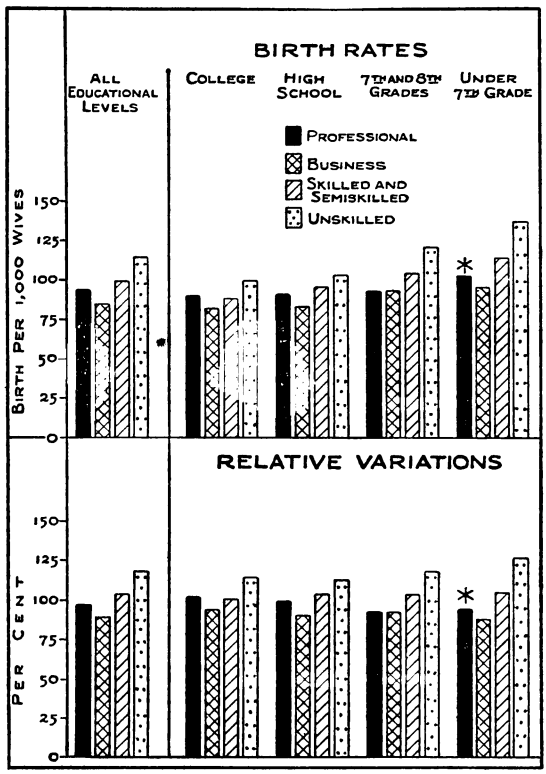
It is perhaps logical to expect smaller ranges of variations in birth rates by educational status within groups homogeneous with respect to occupational class than in the total sample regardless of occupational status. This was found definitely to be the case in so far as the two white-collar classes are concerned. The range of the variations by educational status was a little smaller in magnitude within the skilled and semi-skilled sample than within the total, but possibly a little greater within the unskilled class than within the total sample.

B. *Variations in Birth Rates by Occupational Status, within Edu-*

internal differences in educational composition. This was done by weighting the rates for component educational classes within each occupational group according to the proportionate importance of the given educational classes in the total sample of native whites. Corresponding procedures were followed in the remaining analyses of relative variations in fertility within classes.

cational Groups. Reciprocal comparisons of the foregoing data are presented in Figure 3 showing variations in birth rates by occupational status of the head, at successively lower levels of educational attainment of the wives. The pattern of differences in birth rates by occupational status, previously described for all native-white wives, appears to persist in virtually the same form at each level of educational status. Within three of the educational groups the rate for wives of professional men surpassed that for wives of business men, and in the remaining division (wives reporting 7th-8th grade) the birth rates for the professional and business classes were equal.

Fig. 3. Birth rates in 1935 and their relative variations by occupational class of the head within groupings by educational attainment of the wife: Native-white urban wives of childbearing age in the National Health Survey. Birth rates standardized for age.

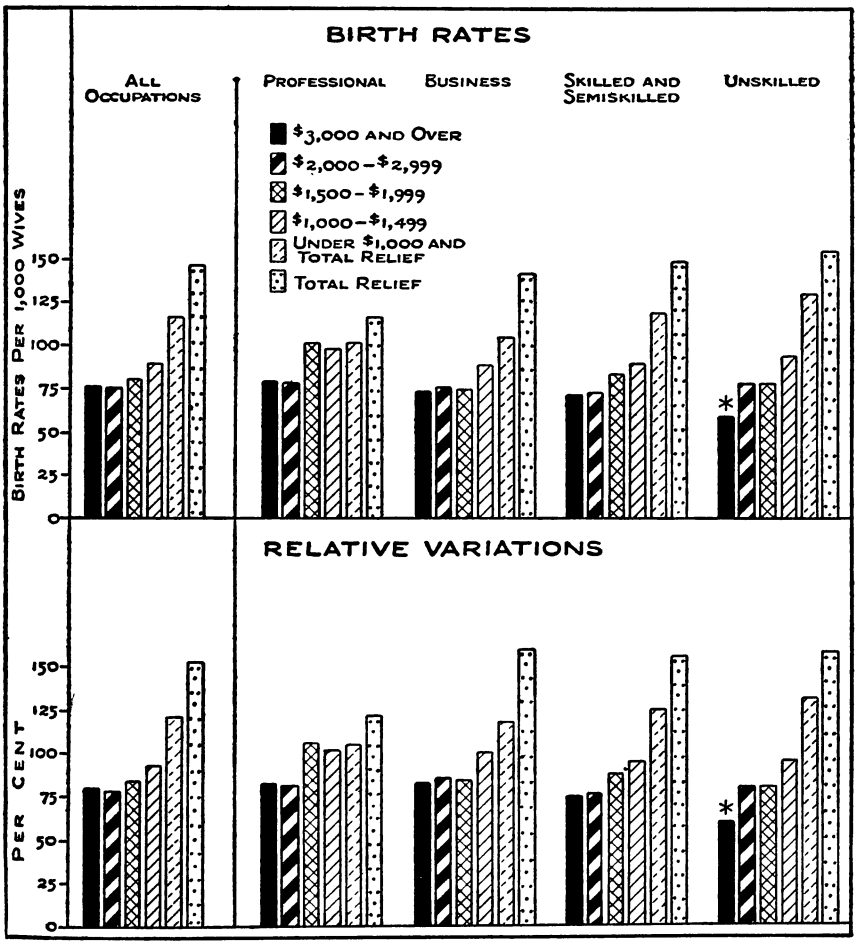


*See asterisk note, Figure 2.

On an absolute basis the ranges between lowest and highest birth rates (business and unskilled) were noticeably wider among wives below high school status than among those above this level of formal education. This type of difference in spread held true to a slight extent on a percentage basis, but the most striking indication from the lower section of Figure 3 is the similarity in the relative spread of the birth rates by occupational status at different levels of educational attainment.

C. *Variations in Birth Rates by Family Income Status, within Groups of Specified Occupational Class.* In the total sample of native-white wives the inverse relation between birth rates and family income status did not extend into the upper income brackets (Figure 4, upper left). The birth rate for wives reporting incomes of $3,000 and over was no lower than that for wives reporting incomes of $2,000-2,999. This similarity in the rates for the two upper income

Fig. 4. Birth rates in 1935 and their relative variations by family income status within groupings by occupation of the head: Native-white urban wives of childbearing age in the National Health Survey. Birth rates standardized for age.



*This birth rate is based on 152 cases. Bases for the remaining birth rates for cross-classified groups shown above range from 717 to 52,683 cases.

groups held true within the professional, business, and skilled classes, considered separately. The exception to this type of similarity within the unskilled class may be due to small sizes of the samples but, as will be explained later, somewhat artificial selections of the sample may be involved with regard to low fertility of unskilled laborers in the "$3,000 and over" income class.

More generally, the inverse relation between birth rates and income status was least prominent among wives of professional men. Not only was the actual and the relative range of rates of less consequence than in any other occupational class, but there were only two levels of birth rates by straight income status within the professional class: that for the two groups reporting incomes of $2,000 and over, and that for the three divisions reporting incomes of less than $2,000.[17]

Within the business class similar birth rates were found for the three subdivisions with incomes in excess of $1,500. Aside from this, the "staircase" picture of rising birth rates with declining income status was about as prominent on a relative basis as that observed within the skilled and unskilled classes.

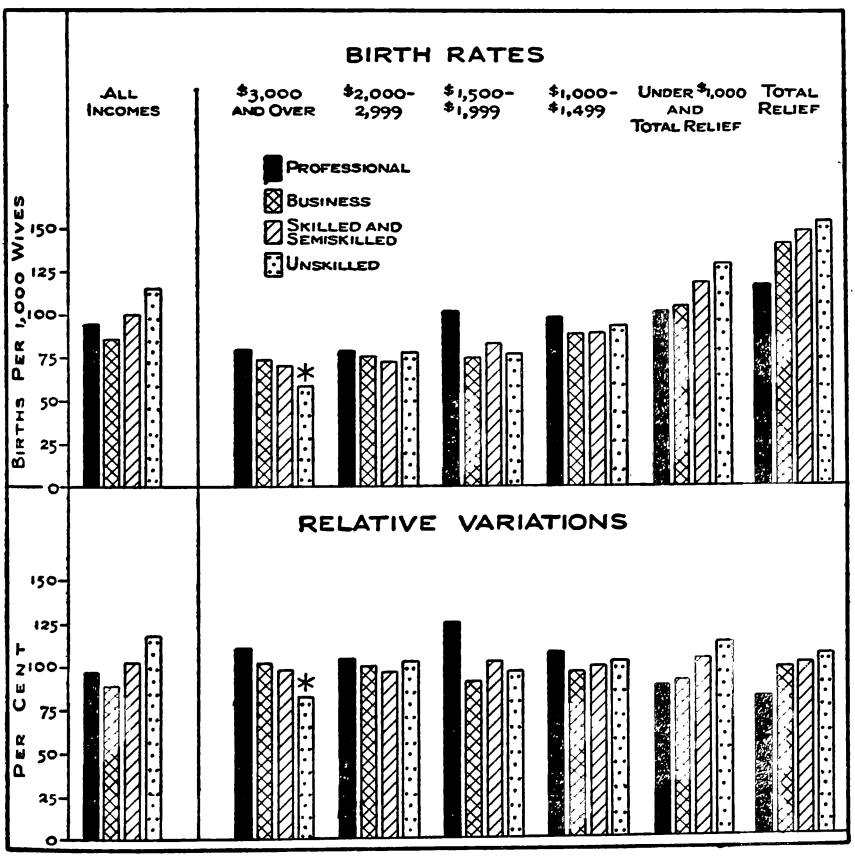
D. *Variations in Birth Rates by Occupational Status, within Income Groups.* Perhaps the most striking chart in this series is Figure 5, showing variations in birth rates by occupational status at different levels of family income. One notices first the appearance of a systematic change from a direct to an inverse association between occupational status and fertility as one proceeds from the highest to the lowest income brackets. For reasons to be discussed presently, however, the complete and rather marked positive association within the income group "$3,000 and over" may arise from selective factors. The point emphasized here is that the *inverse* association between birth rates and occupational status was completely and markedly manifested only within the two lowest economic groups

[17] The rate computed separately for relief recipients alone, however, did provide an additional level within the professional class.

(under $1,000 and relief cases, and relief cases considered separately). Within each of the three groups in the $1,000-2,999 range there was lack of substantial difference in birth rates by occupational status. The most conspicuous exception was the higher birth rate for wives of professional men reporting the modest family income of $1,500-1,999.

There is the suggestion from the lower panel of Figure 5 that on a relative basis the strength of the *direct* association between birth rates and occupational status at the highest income level may be about as great as that of the *inverse* association at lowest levels of in-

Fig. 5. Birth rates in 1935 and their relative variations by occupational class of the head within groupings by family income: Native-white urban wives of childbearing age in the National Health Survey. Birth rates standardized for age.



*See asterisk note, Figure 4.

come. It is important to note, however, that the difference between the rates for no two occupational classes within the "$3,000 and over" group was statistically significant to the extent of being twice the standard error of the difference. This held true for alternate and extreme classes as well as for successive classes. On the other hand, among all wives reporting family incomes of less than $1,000 regardless of relief, the only inter-class difference failing to stand up as statistically significant by the above criterion was the slight one between the rates for the professional and business classes. When relief recipients were considered separately, the difference between the rates for the business and skilled and that between the skilled and unskilled classes were scarcely significant in a statistical sense, but the remaining inter-class variations were from two to three times greater than the standard errors of the differences.

It is doubtful, however, that the case for the direct association between occupational status and fertility at upper income levels can be dismissed simply on the basis of lack of statistical significance. The pattern of the variations appears too systematic to arise from chance alone. A restriction of the data to wives reporting $5,000 and over revealed even wider differences in the same direction by occupational class, in so far as the professional, business, and skilled classes were concerned, and in this case the rate for wives of professional men was significantly higher than that for the wives of business men.

There is, however, the possibility that the direct association between occupational status and fertility at highest levels of family income arises in part from selective and artificial situations. It is clarifying in this connection to consider the conditions under which the skilled and unskilled families might qualify for inclusion in the "$3,000 and over" category. Certainly, few would qualify if the income status were based upon earnings of the husband alone. The "family income" status, however, was determined by the combined incomes of the total family, i.e., the head of the household and resi-

dent persons related to the head by blood, marriage, or adoption. Thus, family income status could be augmented above that of the husband's earnings by earnings of resident children of working age, by gainful employment of the wife, and by earnings of resident relatives. In the case of married couples residing with their parents, the income status would, in reality, be set by the combined incomes of the two families.[18]

The cases where the family income of laboring families amounted to $3,000 and over, solely as a result of contributions of unmarried children, however, were probably very few in the present samples restricted to families represented by married women under 45 years of age. The more important conditions of augmented income status were probably (1) gainful employment of wives, and (2) residence of married couples with their parents and parents-in-law or other relatives. The point to be emphasized here is that selections with respect to gainful employment of women and selections with respect to secondary families carry with them selections with respect to low fertility. There is pretty good evidence that fertility levels are unusually low among women employed outside the home and also among couples residing with their parents.[19]

No tabulations were made for the total sample to test the actual bearing of the above factors on the direct association between occupational status and fertility within the highest income group. However, such tabulations were made for native-white wives of childbearing age enumerated in four cities[20] of the *Survey,* and these yielded fairly convincing evidence of the relevance of the above-described selective factors. For a top-income class it was necessary to use $2,000 and over, but even within this group the birth rates decreased sharply with lowering of occupational class of the head.

[18] Since the present sample is restricted to women under 45, families of the above type would be represented mainly by the younger couples.

[19] Kiser, C. V.: Pitfalls in Sampling for Population Study. *Journal of the American Statistical Association,* September, 1934, xxix, No. 187, pp. 250-256.

[20] The four cities were: Fall River, Massachusetts; Newark, New Jersey; St. Paul, Minne-

(Continued on page 164)

The interesting point, though, is that with lowering of occupational status within this top-income class, there were sharp increases in proportions of families having two workers or more; the wife gainfully employed; relatives in residence; or a married couple forming a secondary family living in the home of parents. In contrast, within the lowest income group there was little difference by occupational class in the proportion of families with multiple gainful workers, relatives, etc. Within this lower income group the rate for the small professional class provided the only exception to the inverse relation of birth rates to occupational status of the head.

In general, then, there is little doubt about the presence of selective factors in the direct association of birth rates and occupational status at upper income levels. These tests for part of the sample, of course, afford no assurance that selective factors were entirely responsible for the direct association, especially in so far as the total sample, Figure 5, is concerned.[21] In fact, it seems quite likely that the

sota; and Oakland, California. The total number of native-white wives of childbearing age included in the *Survey* for these cities was 17,728.

The following table is restricted to wives in two extreme income classes, each subdivided according to occupational status of the head.

	$2,000 and Over Income Status				Under $1,000 and Total Relief			
	Professional	Business	Skilled and Semi-Skilled	Unskilled	Professional	Business	Skilled and Semi-Skilled	Unskilled
Number Families Involved	613	2,370	865	55	108	1,029	3,843	748
Per Cent:								
Two Workers or More	19	33	56	84	20	19	26	23
Wife Gainfully Employed	12	15	20	29	8	9	12	9
Family Includes Relatives	15	25	46	62	11	11	13	13
Woman in Sample is Daughter or Daughter-in-Law of Head	2	6	17	33	1	1	3	4
Births per 1,000 Wives	103	74	67	—	136	115	138	145

[21] Dr. Christopher Tietze's compilation of Swedish data, for instance, indicated that in 1930 there was a clear-cut positive association of marital fertility with income within the higher educational groups of proprietors and salaried employees in nonagricultural pursuits. In this case the index of fertility was children ever born per married couple, and the income status and other attributes related to the husband. *See Population Index*, January, 1940, vi, No. 1, pp. 72-73.

higher rate for the professional than for the business group at highest income level is not altogether a statistical artifact, since this relation held true in the classifications by occupation alone, i.e., without regard to income status.

Relative Importance of Specific Factors Affecting Fertility

Mindful of the complexity and interrelation of factors affecting human fertility, we may nevertheless make a tentative analysis of the data from the standpoint of the relative importance of the three variables considered in this study. First of all, Figures 2-5 have collectively attested to the independent bearing on fertility of the three factors: occupational class of the head, educational attainment of the wife, and family income. In each type of cross-classification there was at least some instance of an inverse association between birth rates and socio-economic status. This inverse relation was generally most pronounced within the lower classes of the primary division, and in the case of income classifications it was confined to the lower groups (*see* Figure 5).

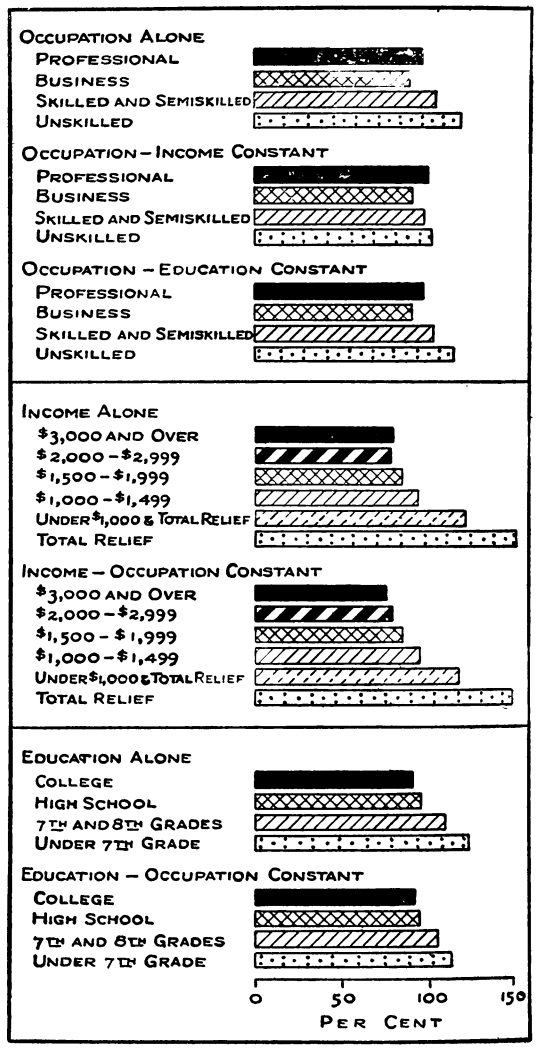
Comparison of Figure 5 with the other charts, however, suggests that variations in fertility were more closely correlated with amount of income than with occupational status of the head or with educational attainment of the wife. When analyses were restricted to wives of similar income status, as in Figure 5, the inverse relation of fertility to occupational status virtually disappeared except at the lowest income levels. In fact, within each of the intermediate income groups there was striking equality of birth rates for the component occupational classes. This type of equalization occurred in no other cross-classification and is strongly suggestive of the particularly close relation of income to fertility in the *Survey* data.

In view of the close association of the three variables themselves and in recognition of the multiplicity of factors underlying human fertility, it would be an over-simplification to say that income was a more *important* factor than occupational status of the head or edu-

cational attainment of the wife. A more precise statement would be that amount of income more sensitively reflected the network of conditions underlying fertility during the *Survey* year than did either usual occupational status or educational attainment. Viewed in this light, the results appear reasonable, for the index of fertility and that of income both referred exclusively to the *Survey* year, the depression year of 1935.[22] As previously described, the occupational classification was based upon the *usual* status of the head, and the educational attainment of the wife is, of course, an even more permanent attribute.

Another approach to the question of relative importance of the three variables is made in Figure 6 which is derived from the data in Figures 2-5. However, instead of showing variations in

Fig. 6. Relative variations of birth rates by specified socio-economic attribute considered alone, and average effect of standardizing for another variable: Native-white urban wives of childbearing age in the National Health Survey.



[22] The income data coincide in time with birth dates of all infants enumerated, and in approximately one-fourth of the cases coincide with dates of conception.

birth rates among subclassifications of a given group, it presents the *average* effect of standardization for one variable on the relative spread of birth rates according to another criterion of socio-economic status. Within each of the three panels the relative range of the birth rates according to a specified attribute is shown; first, regardless of other variables, and then, after the influence of another variable is ruled out by standardization.

In the top panel of Figure 6 the relative spread of the birth rates by occupational class of the head is shown, first, *regardless* of other variables; next, with income "held constant";[23] and next, with educational status "held constant." In this instance, the spread of the birth rates by occupational status can be used as a medium for comparing the effect of standardizing for income with that of standardizing for education. It is clearly apparent that the average relative spread of the rates by occupational status was reduced to a greater extent by standardizing for income than by standardizing for educational status of the wife. This might be taken as suggestive evidence that fertility differentials during the *Survey* year were more closely associated with income than with educational status. It should be recognized, of course, that the leveling effect of standardization for income results in part from an averaging of the opposite types of variations in birth rates by occupational status at the two extremes of income status, observed in Figure 5. Nevertheless, the average leveling-off does truly reflect the lack of substantial variations by occupational status within the central income groups.

Figure 6 also indicates that in these data the amount of income was more closely related to fertility differentials than was occupational class of the head. This is brought out in the comparison of the reciprocal effects of standardization. Thus, the top panel indicated that standardization for income resulted in a sharp reduction of the spread of birth rates according to occupational class. In contrast, the

[23] The mechanics of standardizing was that of weighting the component rates by income within each occupational class by the income distribution for the total sample. Corresponding procedures were used for the remaining standardizations.

middle panel revealed that standardization for occupation effected no appreciable change in the average spread of the rates by income.

The virtual equality in the importance of occupational class of the head and educational attainment of the wife in their relations to fertility differentials is suggested by comparing the results in the bottom panel of Figure 6 with the appropriate sections in the top panel. From the bottom panel it will be noted that the range between extreme rates by educational status of the wife was narrowed a little by standardizing for occupational status of the head, but the general impression is the lack of substantial change. Since the reverse procedure (top panel) of standardization for educational attainment of the wife likewise yielded little reduction in the average relative spread of birth rates by occupational class, there is the suggestion that educational attainment of the wife and occupational status of the head were of about equal importance in so far as variations in birth rates are concerned. As in the other comparisons, however, it is necessary to keep in mind that Figure 6 is based on averages and therefore conceals some of the cross-relationships disclosed in the preceding charts.

There are suggestions of the close correlation of income with fertility, apart from, and in some respects more convincing than, those afforded by the cross-classified data. As described in a previous report, the *Survey* data for native-white married women residing in cities of the Pacific Coast, where birth rates are generally low, failed to indicate much in the way of differences in fertility along occupational or educational lines. In the classification of the women by income, however, the inverse association was strongly evident, at least in so far as broad outlines are concerned.[24]

Some further indication of the closer relation of income than of occupational or educational status to fertility differentials in this study may be found in the analysis of variations in fertility in relation to proportionate importance of the classes considered. As pre-

[24] *See* footnote 4, p. 151.

viously pointed out (Figure 1), whereas one-third of the native-white wives fell into the lowest income group (under $1,000 or relief), only 6 per cent reported less than 7th grade in schooling, and only 9 per cent were wives of unskilled laborers. And yet, the birth rates for the three groups were essentially the same. In other words, the birth rate was just as high for the third of the sample ranking lowest with respect to income as for the 6 or 9 per cent ranking lowest with respect to educational or occupational status.

There are also suggestive indications from Figure 1 that among native-white wives the total range of the birth rates was greater by income status than by occupational or by educational status.[25] This held true apart from the high rate for relief recipients and did not arise wholly from finer subdivisions of the sample by income. On the occupational basis, the lowest rate among native whites was found for wives of business men, constituting 37 per cent of the sample. The total range of the rates by occupational status would probably be increased somewhat by subdivision of the business group. It may be pointed out, however, that the average birth rate for the three classes reporting incomes above $1,500, and comprising 40 per cent of the sample, was about 8 per cent lower than the birth rate for the total business class. Considering only the wives ranking in the topmost groups as given in this figure, we find that the 7 per cent of the native-white sample with incomes of $3,000 and over had a birth rate 18 per cent lower than that for the 7 per cent classified as wives of professional men. The birth rate for wives in the top group with respect to income was 11 per cent lower than that for wives reporting college attendance (constituting in this case 12 per cent of the total sample).

It should be emphasized that it is not the purpose of this paper to advance the thesis that family income is a factor universally more

[25] It is also pertinent to recall that whereas only very slight inter-class differences in fertility were observed among colored wives classified by occupational or educational status, the inverse relation between fertility and income status was consistent and well marked. As previously stated, however, relatively few of the colored wives fell into the "upper" classes by any criterion of socio-economic status.

important to fertility differentials than occupational status or educational status. As used here, birth rates related to the single year preceding enumeration. Since family income related specifically to the same period, income status provided a more sensitive barometer of socio-economic status during the year under study than did either "usual occupational class" or educational attainment. Indeed, it seems probable that different results would have been secured had the index of fertility been based upon total number of children ever born, or had the *Survey* been made during a period less characterized by depression conditions. It is, nevertheless, of interest that for the year 1935 the data indicated no substantial inverse relation between occupational status and birth rates among married women in similar income classes above the $1,000 level. The sharp inverse association of fertility and usual occupational status among families receiving less than $1,000 possibly reflects the greater tendency of white-collar workers deliberately to prevent births during times of severe economic stress.

In conclusion, emphasis should be placed upon the need for additional studies of the factors underlying variations in human fertility. Already there are rumblings of the need for a national population policy. In the formulation of such a policy cognizance should be taken of two types of problems: the extremely high birth rates in poor rural areas, and the low birth rates in urban centers. Without implying that the former problem is simple of solution, one can safely state that much of it arises from sheer inexperience with contraception. The indicated approach is in large part the mechanical one of making contraception available. The latter problem, that of low birth rates in cities, introduces a different set of complexities about which we know little. Thus, when it comes to measures designed to encourage larger families among groups *free to choose*, we run into a wall of ignorance concerning the interplay of social and psychological factors affecting size of family. Yet such knowledge is essential if future programs are to be sane and effective.