By linking 1968-1969 family planning enrollment statistics to 1970 Census county-level data, we test for program effects on the 1969-1970 fertility of subgroups of women defined by age, race, marital status, two definitions of economic status, and, for whites, the racial composition of their area of residence. A multivariate model to control spurious program effects is developed for wives. The pattern of effects using multiple subgroup comparison provides a weight of evidence indicating significant reductions of marital fertility among low-SES wives served by the program, and no effects on groups not served.

ESTIMATING FAMILY PLANNING PROGRAM EFFECTS ON U.S. FERTILITY RATES

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This article discusses the materials and methods used to evaluate the effect on 1969-1970 subgroup fertility rates of U.S. family planning clinic programs in 1968-1969. The general methodological problem is how to use census and family planning program data for areal units to estimate the impact of program enrollment rates on fertility rates, given the structure and goals of the U.S. program.

The main goal of the program is "to enable Americans freely to determine the number and spacing of their children" (Senate Committee, 1971: 77), with priority to providing services for low income

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patients. In 1969 most patients were lower-income women in large population centers.

Although the number of patients enrolled in clinic programs operated by Planned Parenthood, hospitals, health departments, and other providers grew from barely .5 million in 1966 to about 1.1 million in 1969 (Cutright and Jaffe, 1977: Table 1.1), more than half the nation's counties had no organized program in 1969. The fact of large differences in patient enrollment rates among U.S. counties allows assessment of the impact of the program on fertility rates. With adequate controls for other factors affecting fertility among areal units, the use of multivariate techniques should allow estimation of the direct effects of the level of patient enrollment on the fertility of subgroups served by the program.

This paper focuses on several issues. First, can a credible research design and statistical procedure be applied to county level 1969 program data (Office of Economic Opportunity, 1972) and 1970 Census county files to evaluate objectively the impact of organized programs on U.S. fertility rates? Second, did the 1969 program have a measurable impact on the fertility of the subpopulations served? Are these effects apparent in communitywide rates, or must the fertility rate be specified to the subgroup served by the program? Third, does classification of subgroups by poverty or family income status alter conclusions regarding program effects on fertility?

METHODOLOGY

UNITS OF ANALYSIS

Beginning with 1970 Census counts of white women aged 15-44 years, we used the nation's counties to create statistical analysis units (SAUs) for analyses of areal differences in white fertility. Single counties are one SAU if they had at least 20,000 white women; smaller counties were aggregated with contiguous areas as necessary. The 3,067 counties with usable data for whites are reduced to 778 SAUs. In each SAU, fertility and other characteristics specific to subgroups (discussed below) of white women are broken out. Of these 778 SAUs, 436 have less than 10% nonwhite residents. Program effects on whites in these 436 "white" SAUs are examined separately.

Because many counties have few or no black women aged 15-44 years, only 1,490 counties are used to create the 237 SAUs with fertility

and other characteristics specific to black subgroups. Counties with at least 10,000 black women of childbearing age form separate SAUs, while smaller areas were combined to form multicounty SAUs.

CLASSIFICATION OF SUBGROUPS

Within each SAU, race-specific, 1970 Census counts of women aged 15-44 were divided into those aged 15-19, 20-29, and 30-44. Two measures of socioeconomic status (SES) were applied separately to each age/race subgroup. The first SES measure classified women as below or above 200% of the 1969 federal poverty level, a criterion selected because about 90% of all patients of family planning clinics had incomes below this cutoff in 1969. The second SES measure groups women by whether they were above 1969 U.S. median family income ($9,433), between 50%-99% of the median, or below half the median. This SES measure is free of the effects of family size, which is an integral part of the definition of poverty. Within each race, age, and SES subgroup, we also broke out women currently married and living with their husbands from those in all marital statuses. This article is limited to analyses of women living with a husband. Analyses of women in all marital statuses follow similar procedures and yield comparable results (Cutright and Jaffe, 1977: ch. VI).

Rather broad age, marital status, and SES classifications were used to preserve sample size of subgroups within SAUs, and SAUs with fewer than 300 women in a given classification are always omitted to maintain reliable measures. The extent to which analysis of a particular subgroup is representative of all SAUs in the nation can be made by comparing the number of SAUs in a given subgroup analysis with the appropriate total count of 778 or 436 "white" and 237 "black" SAUs.

SAUs are not weighted by population size; each unit is treated equally. Therefore, national SAU means may differ from weighted or individual count means because small and less urbanized SAUs are overrepresented. This should not bias regression estimates of program effects.

INDEPENDENT VARIABLES

To control nonprogram factors affecting marital fertility, a set of independent variables specific to each age/race/marital/SES subgroup of women for each SAU was constructed from 1970 Census data. Based on previous studies of factors related to variation in areal fertility rates

in the United States (Heer and Boyerton, 1970; Cain and Weininger, 1973; DeFronzo, 1975), the control variables used (and the labels for them) were the number of wives per 1,000 in a subgroup in each SAU who (1) had less than eight years of school (low education), (2) lived in a different county in 1965 (in-migration), (3) were currently enrolled in school (in school), (4) were currently in the labor force (labor force), and (5) the number of women never married per 1,000 in subgroups defined by age, race, and economic status, a proxy for age at marriage of wives (age at marriage). A sixth control variable measured an SAU characteristic—the natural logarithm of the reciprocal of total 1970 population per square mile (space). To control for factors (e.g., religion and historic factors related to provision of birth control service) affecting 1969-1970 marital fertility not captured by these variables, we added the number of children ever born prior to 1969 per 1,000 wives in a subgroup in each SAU (parity 1969). In analyses of wives aged 15-44, we also included a measure of age composition (the number aged 20-29 per 1,000 wives 15-44 in the subgroup), while analyses of wives aged 30-44 omitted the in-school variable because few older wives are in school.

To these equations for the relevant age groups we added a measure of program enrollment—the estimated number of patients of all ages, races, and marital statuses in organized family planning programs on January 15, 1969 in a given SAU per 1,000 women of all races and marital statuses aged 15-44 below 200% of the poverty level in the SAU estimated to be in need of family planning services (program enrollment). This variable is an SAU characteristic since 1969 county-level program statistics cannot be specified by age, race, and marital status. The denominator (need) for this variable is derived by a procedure adjusting county-level 1970 Census counts of women of childbearing age in each SAU (based on national data) to remove those not at risk of unwanted pregnancy because they are sterile, sexually inactive, pregnant, or seeking pregnancy (Dryfoos, 1973). Because the number of children under one year reported to 1970 Census is our principal dependent variable, the count of patients on January 15, 1969 is selected. This date is the midpoint of the 12-month period when most children under one year of age in April 1970 were conceived.

This is an imperfect measure of program enrollment. As a consequence, estimates of program effects will be understated or overstated for subgroups that are over- or underrepresented as patients relative to their proportion of the estimated population in need. For example, fragmentary data on patient characteristics for 1969 suggest that older (30-44 years) women were probably underrepresented relative

to their proportion of the need estimate. As a result, the estimated effects of program enrollment on 1969-1970 fertility for this group are understated, while the opposite will be true of younger (15-19 years) women who were probably overrepresented in the 1969 caseload. Ideally, a program enrollment measure would be specific to each subpopulation. We lack detailed 1969 patient characteristic data, and, as a result, some program enrollment coefficients will be inflated while others will be deflated. This fact provides good reason to rely on multiple comparisons—a "weight of evidence" approach in this program evaluation.

DEPENDENT VARIABLES

Two measures of cumulative fertility from 1970 Census are used and can be made specific to any designated race/age/SES/marital status subgroup. These measures are (1) children ever born per 1,000 women by April 1970 (CEB), and (2) children ever born before April 1969, derived by subtracting children under one year of age from CEB per 1,000 women (parity 1969). The subgroup rate of 1969-1970 children under one year of age from 1970 Census (children under one year) is the period measure used in analysis of 1968-1969 program effects on 1969-1970 marital fertility because only this rate can be made specific to SES and marital status subgroups, in addition to age and racial groups. Vital statistics natality data cannot be specified to SES groups, and in some states legitimacy is not reported.

USE OF A RECURSIVE LEAST-SQUARES MODEL

The equations used to test for program effects do not account for reciprocal effects between endogenous independent variables and fertility; all independent variables are treated as if they were exogenous and had no reciprocal relationship to the dependent variable. In test runs we compared the metric partial regression coefficients of exogenous variables (e.g., program enrollment) in recursive and nonrecursive analyses. Exogenous variables significant in recursive equations keep the same sign and remain significant in nonrecursive models, although endogenous variables (e.g., labor force) take larger coefficients in nonrecursive models. Because these analyses found that program enrollment coefficients showed no tendency to change and this variable is theoretically not endogenous to fertility in 1969, we used the simpler recursive models to estimate program effects (see Cutright

and Jaffe, 1977: ch. II for data and discussion). The assumptions inherent in ordinary least-squares multiple regression analyses were reviewed, and, after logarithmic transformation of the population density (space) variable, we concluded that a linear additive model was appropriate because the signs of the errors of prediction were as likely to be positive or negative, and the magnitude of the errors was about equal at low, middle, and high levels of the dependent variable. This indicates linear fit and no heteroscedasticity.

We present limited statistical data here because (1) many subgroups need to be examined, and we analyze several dependent variables in each subgroup; (2) for program evaluation purposes we are interested only in effects of the program enrollment measure; (3) the recursive model gives reasonable estimates of exogenous variables but does not properly estimate endogenous variables; (4) additional statistics for a given equation (subgroup) are available at cost from the first author. After discussing briefly the means and standard deviations of data used in analysis of wives by age and poverty status, we present only the partial unstandardized (metric) regression coefficient for the program enrollment variable under simultaneous statistical controls for the other variables appropriate to a given age group, as discussed above.

AGGREGATION PROBLEMS

Because we use aggregate rather than individual data, a net negative relationship between fertility and program enrollment is not absolute evidence that the lower fertility rate in areas with high rather than low enrollment rates is a function of lower fertility among the program's patients. If the program enrollment rate also measures other SAU characteristics that affect fertility, estimates of program effects may be biased. For example, we have no SAU data on legal abortion rates in 1968-1969. If this omitted variable is positively related to program enrollment and negatively to 1969-1970 fertility (children under one year in April 1970), then an inflated program effect might emerge because the model is not properly specified. In this example, the omitted variable probably does not inflate program effects because ready access for a significant proportion of women to legal abortion was not available before New York provided this service in July 1970. In a later section we show the impact on program estimates of excluding and then including a measure of subgroup fertility rates before 1969, an independent variable that should reduce specification error.

FINDINGS

We now analyze cumulative and current fertility among wives living with their husbands in 1970, by age, race, and poverty status. Teenage wives are not examined separately because most SAUs have too few cases. These wives are included in the 15-44 age group.

By comparing the metric regression coefficients of the program variable on cumulative and on 1969-1970 fertility for all wives and then for those below and above the poverty status cutoff, we (1) test whether significant program coefficients on cumulative fertility (e.g., children ever born) emerge because of historic community differences depressing the fertility of upper- and lower-income women; (2) measure the impact of program-related areal differences on cumulative fertility among different subgroups of white and black wives; (3) arrive at a model that estimates 1968-1969 program effects on 1969-1970 marital fertility before and after the 1968-1969 program estimate is purged of historic differences among areas; (4) test the issue of whether communitywide rates can be used in evaluation of U.S. program impact; and (5) compare estimates of program effects using both methods of classifying wives by SES levels.

PROGRAM ACTIVITY AND WHITE CUMULATIVE MARITAL FERTILITY

Table 1 displays means and standard deviations of the variables used in the analysis of fertility among white married women with spouse present at all economic levels, and by poverty and age. Comparisons across the rows of Table 1 find expected differences between wives below and above the poverty cutoff, although little difference is found for several variables. We observe large differences, by poverty, in children ever born as well as children under age one year for wives 15-44 and for the two age subgroups. Another large and consistent difference shows that in each age group the rate of labor force participation among wives above 200% of poverty is almost twice the rate among those below it; no doubt this partially explains how they come to be above the poverty cutoff.

Because both smaller family size and higher labor force participation are causal factors determining whether a family is above the poverty cutoff, these differences are expected. Poverty status makes little difference, however, in terms of in-migration, age at marriage, school enrollment, or age composition. Although poorer wives are more

TABLE 1

Means and Standard Deviations of SAU Variables in Analyses of White Wives by Age and Poverty: United States, 1970

				Poverty Status			
		All Wives		*Below 200% Pov.*		*Above 200% Pov.*	
Age	*Variables*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
15-44	Children ever born	2,386	269	3,082	384	2,077	222
	Children < 1 year	116	13	172	21	92	14
	Age 20-29	395	32	403	46	391	32
	Program enrollment[a]	82	111	82	111	82	111
	Low education	43	43	81	69	23	18
	Migration	296	92	303	112	293	87
	Age at marriage[b]	272	43	282	41	266	45
	In school	28	15	30	25	28	13
	Labor force	419	63	269	57	487	70
	Space (log)[a]	−4.73	1.56	−4.73	1.56	−4.73	1.56
20-29	Children ever born	1,581	193	2,231	276	1,288	151
	Children < 1 year	202	23	272	37	171	26
	Low education	27	31	55	52	12	11
	Migration	412	110	399	125	418	106
	Age at marriage[b]	182	65	186	85	179	64
	In school	37	25	37	39	37	21
	Labor force	402	73	250	65	73	81
30-44	Children ever born	3,070	325	4,018	376	2,683	283
	Children < 1 year	45	10	74	19	34	9
	Low education	54	53	105	88	30	25
	Age at marriage[b]	209	79	219	96	207	76
	Never married	45	23	47	21	44	25
	Labor force	435	62	281	57	499	71

a. Because program enrollment and space (the logarithm of the reciprocal of 1970 population per square mile) are constant SAU characteristics, the means and standard deviations are the same in all three age groups because the number of SAUs (778) does not change among subgroups in this table.
b. Measure is the rate per 1,000 women in the age by poverty subgroup never married, a proxy for age of wives at first marriage.

likely to have less education, the absolute difference between poverty groups is only 4 to 8 percentage points.

Table 2 summarizes the results of several analyses of program effects on white marital fertility. To conserve space we present only the metric (partial unstandardized) regression coefficients for the program enrollment measure taken from equations with dependent variables as indicated in each column heading, and using the other independent

TABLE 2

Partial Unstandardized (metric) Regression Coefficients of 1969 Program Enrollment Regressed on Various Fertility Measures for White Wives Aged 15-44, 20-29, and 30-44, by Poverty Status: United States, 1970

Economic Status	Measure of Fertility: Children Ever Born (1)	Parity 1969 (2)	Children Under 1 yr (3)	Children Under 1 yr (4)[a]
		15-44		
All wives	−.480[b]	−.456[b]	−.024[b]	−.006
Below 200%	−.612[b]	−.572[b]	−.040[b]	−.014[b]
Above 200%	−.435[b]	−.421[b]	−.014[b]	.002
		20-29		
All wives	−.252[b]	−.205[b]	−.047[b]	−.033[b]
Below 200%	−.484[b]	−.407[b]	−.077[b]	−.054[b]
Above 200%	−.245[b]	−.207[b]	−.038[b]	−.019[b]
		30-44		
All wives	−.465[b]	−.449[b]	−.016[b]	−.005
Below 200%	−.422[b]	−.392[b]	−.030[b]	−.018[b]
Above 200%	−.494[b]	−.487[b]	−.007	.002

a. Includes 1969 parity as a control variable.
b. Significant at .05 or beyond.

variables discussed above. Because the independent variables in the first three equations for each age group are the same, the difference between columns 1 and 2 will equal the coefficient in column 3. The equation to estimate 1969 program effects in column 4, however, adds 1969 parity as a control variable.

Inspection of columns 1 and show significant program enrollment coefficients on children ever born in all white age and poverty subgroups, net of all other factors in the same regression. This is not caused by the impact of 1968-1969 program enrollment on 1969-1970 births (children under one year), because all program enrollment coefficients on 1969 parity are also negative and significant.

THE MEANING OF 1969 PROGRAM ENROLLMENT EFFECTS ON CUMULATIVE BIRTHS

Program coefficients on cumulative white (and black—see Table 4) fertility are always negative and significant and, thus, require explana-

tion, particularly because of the degree of statistical control we have imposed on other factors affecting cumulative fertility. A plausible explanation lies in *antecedent* factors that led to the presence or absence of family planning clinics in an area in 1969 and its 1969 level of program enrollment. Although 1969 was an early point in the evolution of the national family planning program, in many communities clinics had been initiated decades before by affiliates of the Planned Parenthood Federation. These tended to be in the larger cities (which also have more hospitals, physicians, and other health resources). As a result, the historic availability of family planning services in different communities was differentiated in two ways. First, directly by the services provided by the Planned Parenthood clinics, and indirectly by the effects of the organization's efforts over the years on the attitudes and policies of other health institutions and professionals toward fertility control. Also, the greater availability of health resources in cities with Planned Parenthood affiliates could partially account for greater availability of family planning even if the Planned Parenthood organization had little indirect influence. Second, independent of the direct or indirect organizational impact of Planned Parenthood affiliates, community health care providers in different areas of the nation differed in their attitudes and practices toward birth control in the past (Whelpton et al., 1966; Leader, 1971; and Phillips, 1971 on sterilization; Guttmacher, 1947; Spivack, 1962; and Jaffe, 1972: 220-221 on contraception; Weinstock et al., 1975 on abortion).

When federal funds for family planning services first became available in 1965, those areas with established family planning agencies and with hospital and health department staffs more favorable to birth control were able to obtain the first federal grants to initiate or expand their programs. By 1969, the year in which we measure program enrollment, our program measure thus taps historic differences among communities in the availability of family planning services—and this factor lends credence to the negative coefficients of this variable on pre-1969 fertility. Put simply, in communities in which Planned Parenthood, hospitals, and physicians were more likely to provide birth control services in the past, initiation or expansion of organized family planning programs was easier in the mid-1960s than in communities in which the health community was less inclined to provide birth control services. Therefore, communities with higher patient enrollment rates in 1969 tended to be the same communities in which the health system had been more likely to provide birth control services in the past.

Our first conclusion is that the historic differences among communities in factors relating to delivery of birth control services had significant effects on measures of cumulative fertility in all age and poverty subgroups of white wives.

PROGRAM ENROLLMENT AND WHITE 1969-1970 MARITAL FERTILITY

The third column of Table 2 shows program enrollment coefficients for subgroups when children under one year is the dependent variable and the standard set of independent variables, omitting 1969 parity, is used in the equations for each subgroup. These coefficients are all negative, and they are statistically significant in eight of nine subgroups. However, they probably overestimate the effects of the 1968-1969 program we want to measure—the effect of higher or lower participation of women in need in an organized clinic program. The "program effect" in column 3 includes the effects of historic community differences as well as the direct effects of 1968-1969 family planning enrollment efforts on 1969-1970 marital fertility rates. Including 1969 parity in the equations should help control community differences that affect both program development and fertility. This is done in column 4. Comparisons of columns 3 and 4 indicate that this step greatly reduces estimates of program effects, although each of the three coefficients for wives below 200% of poverty continue to be negative and statistically significant. Indeed, because this lower-SES group comprises 90% of all patients, the pattern of program effects by poverty status in column 4 appears more reasonable than the previous pattern of effects in column 3.

CHILDREN EVER BORN TO BLACK WIVES

The means and standard deviations for fertility rates and independent variables used in the analysis of children ever born to black wives are displayed in Table 3. Again, we find large differences in both fertility measures and labor force participation above and below the poverty cutoff. Differences in age at marriage (never married) above and below the cutoff are greater among blacks than among whites. Higher-SES black wives are somewhat more likely to have lived in a different county in 1965 than in 1970, to be enrolled in school, and much less likely to have few years of schooling than are black wives

TABLE 3

Means and Standard Deviations of SAU Variables in Analyses of Black Wives by Age and Poverty: United States, 1970

				Poverty Status			
		All Wives		*Below 200% Pov.*		*Above 200% Pov.*	
Age	*Variables*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
15-44	Children ever born	3,167	519	3,912	406	2,026	214
	Children < 1 year	131	21	167	27	84	19
	Age 20-29	383	33	371	35	408	45
	Program enrollment[a]	142	113	142	113	142	113
	Low education	121	77	151	85	62	34
	Migration	181	99	171	101	198	98
	Age at marriage[a]	371	47	400	45	298	41
	In school	34	13	30	14	40	18
	Labor force	571	74	447	91	738	75
	Space (log)[a]	−5.40	1.54	−5.40	1.54	−5.40	1.54
	Number of SAUs	237		237		237	
20-29	Children ever born	2,190	320	2,817	265	1,371	175
	Children < 1 year	207	31	361	44	140	35
	Low education	68	50	94	60	25	17
	Migration	258	121	228	120	293	121
	Age at marriage[a]	311	50	329	51	270	57
	In school	38	19	29	18	49	23
	Labor force	558	83	426	93	718	80
	Number of SAUs	236		223		211	
30-44	Children ever born	3,993	723	4,920	565	2,570	300
	Children < 1 year	59	17	77	21	34	15
	Low education	159	100	194	107	88	52
	Migration	121	84	119	86	128	89
	Age at marriage[a]	93	27	111	30	78	31
	Labor force	599	75	474	102	764	79
	Number of SAUs	237		234		225	

a. See Table 1. Slight deviations from total SAU count of 237 have only trivial impact on the means and standard deviations of program enrollment and space variables.

below the poverty cutoff. Age composition of the two poverty status groups is similar. Black SAUs have higher patient enrollment rates than do the SAUs used in analysis of whites, because blacks are more likely than whites to live in areas of higher population density and more advanced program development.

Inspection of columns 1 and 2 of Table 4 shows that historic areal differences in delivery of family planning services affected cumulative

TABLE 4

Partial Unstandardized (metric) Regression Coefficients of 1969 Program Enrollment Regressed on Various Fertility Measures for Black Wives Aged 15-44, 20-29, and 30-44, by Poverty Status: United States, 1970

Economic Status	Measure of Fertility: Children Ever Born (1)	Parity 1969 (2)	Children Under 1 yr (3)	Children Under 1 yr (4)[a]
		15-44		
All wives	−.519[b]	−.480[b]	−.039[b]	−.027[b]
Below 200%	−.740[b]	−.674[b]	−.066[b]	−.046[b]
Above 200%	−.573[b]	−.550[b]	−.023	−.014
		20-29		
All wives	−.524[b]	−.450[b]	−.074[b]	−.068[b]
Below 200%	−.751[b]	−.637[b]	−.114[b]	−.097[b]
Above 200%	−.525[b]	−.498[b]	−.027	−.025
		30-44		
All wives	−.568[b]	−.562[b]	−.006	.001
Below 200%	−.772[b]	−.735[b]	−.037[b]	−.029[c]
Above 200%	−.724[b]	−.723[b]	−.001	.006

a. Includes 1969 parity as a control variable.
b. Significant at .05 or beyond.
c. Significant at .09.

fertility of black wives in all age and both poverty subgroups, with greater impact among lower-SES wives. Compared to the effects of historic community differences on cumulative white fertility, a substantially larger impact exists among blacks, as might be expected because black wives are more dependent on clinics for health services than are whites. The data also seem more credible when poverty-specific coefficients are used in place of coefficients for all wives; within each poverty-specific subgroup, the program coefficients on cumulative fertility are consistently higher than are those for all wives.

Column 3 presents the first estimate of 1968-1969 program impact on current fertility, omitting the parity measure as a control variable. All coefficients are negative, although none of the estimates for black wives above 200% of the poverty cutoff are significant. To avoid contaminating these estimates with the effects of other community factors also affecting fertility, 1969 parity is included in the equations in column 4. As was the case among whites, the size of the coefficients is reduced, although they remain negative and significant for black wives

below 200% of poverty aged 15-44 and 20-29, while achieving borderline significance in the 30-44 age group.

EFFECTS OF SES CLASSIFICATION AND SAU RACIAL MIXTURE

In Table 5, coefficients of program enrollment on 1969-1970 marital fertility, in equations including 1969 parity, are summarized from column 4 of Tables 2 and 4; in addition, two new analyses are shown. First, wives are grouped by 1969 family income relative to U.S. median family income, rather than by poverty status. Because nearly all patients are below U.S. median family income, we would not expect program effects among wives above median income, but we would expect effects on the two groups below the median. This classification tests the idea that program effects in the poverty specific analysis exist because of some artifact related to that method of classifying lower-SES women. For example, fertility is more homogeneous across family income subgroups than between poverty levels, and this difference might result in a pattern of program effects for subgroups classified by income different from that found among poverty groups.

The second new feature is an analysis of white wives in white SAUs. An SAU is defined as "white" when 90% or more of women aged 15-44 below 200% of poverty in all marital statuses are white. Fulfilling this criterion are 436 of the 778 SAUs with data specific to whites. Physically separating these SAUs should improve measurement of the program enrollment variable for whites because the mean percentage white in the 436 white SAUs is about 98, and nearly all patients *and* women in need are white. Analysis of white SAUs also provides a check on the hypotheses that the program effects using whites in all SAUs emerge because of some hypothetical effect of racial composition on white fertility that might produce the pattern of program effects on white marital fertility observed in Table 2.

The lower panel of Table 5 allows comparisons of program coefficients for white and black wives in the two subgroups below median income with those above median income. We find no significant coefficients for any of the nine age/racial groups above median income, while 14 of 18 subgroups below median family income have negative and significant program effects. We conclude that classification of women by family income or by poverty status yields a similar conclusion—the higher the enrollment of lower-SES women estimated to be in need of family planning services in organized programs, the lower their fertility net of other factors affecting fertility.

TABLE 5

Partial Unstandardized (metric) Regression Coefficients of Program Enrollment per 1,000 in Need on Children Under One Year per 1,000 Wives, by Race, Age, Racial SAU Type, and Wives' Economic Classification: United States, 1970

Socioeconomic Classification	*Race, Age, and Type of White SAU*								
	White (778 SAUs)			*White (436 SAUs)*[a]			*Black (237 SAUs)*		
	15-44	*20-29*	*30-44*	*15-44*	*20-29*	*30-44*	*15-44*	*20-29*	*30-44*
	All Economic and 1969 Poverty								
All economic classes	−.006	−.033[b]	−.005	−.010	−.037[b]	−.004	−.027[b]	−.068[b]	.001
Under 200% of poverty	−.014[b]	−.054[b]	−.018[b]	−.027[b]	−.070[b]	−.020[b]	−.046[b]	−.097[b]	−.029[c]
Above 200% of poverty	.002	−.019[b]	.002	−.009	−.010	.009	−.014	−.025	.006
	1969 Family Income								
Under 50% of median income	−.047[b]	−.076[b]	−.005	−.095[b]	−.160[b]	.002	−.071[b]	−.078[b]	−.023
50-99% of median income	−.030[b]	−.066[b]	−.018[b]	−.056[b]	−.108[b]	−.010	−.057[b]	−.082[b]	−.043[b]
Above 100% of median income	.002	−.012	.001	.003	−.026	.003	−.016	−.030	−.011

a. See text for definition.
b. $p \leq .05$.
c. $p \leq .09$.

Comparison of program effects on white marital fertility in the 436 "white SAUs" in contrast to whites in all 778 SAUs indicates larger coefficients for wives aged 15-44 and those aged 20-29, with no clear pattern for the 30-44 age group. Larger coefficients would be expected because measurement of white program enrollment is superior in the "white SAU" data set. This analysis supports the conclusion that program enrollment rates have their expected effects on reducing white marital fertility when the analysis is confined to racially homogeneous areal units.

The first row of Table 5 estimates program effects using a children-under-one-year rate comparable to communitywide, race-specific general and age-specific fertility rates. When these non-SES-specific rates are the dependent variable, most program effects are insignificant or sharply reduced below the effects specific to low-SES wives. These comparisons show that estimates of effects of a program serving primarily low-SES persons will be obscured when non-SES-specific fertility rates are employed.

DISCUSSION

Taking the number of patients enrolled in organized family planning programs in 1969 per 1,000 low- and marginal-income women in need of family planning services as our measure of program enrollment, we found that the program had strong negative effects, independent of other factors, on cumulative fertility rates of both white and black wives in all subgroups defined by age and socioeconomic status. We interpreted this pattern as an outcome of historic factors differentiating the attitudes toward and provision of birth control by physicians, health agencies, hospitals, and Planned Parenthood affiliates in different communities in the post-World War II period. Cumulative fertility of both white and black wives, regardless of age or poverty status, was affected. Communities with more favorable approaches to provision of birth control services were more likely than were other areas to take advantage of the initiation of federal funding in the mid-1960s. Because they had an earlier start in program development, they had more patients in 1969. Because they had more patients in 1969, we have an apparent program effect on cumulative measures of fertility that is misleading, because the number of patients in the 1969 program could in no direct way have sharply reduced cumulative fertility.

Utilization of an annual fertility measure in testing for program effects removes many of the ambiguities found with cumulative rates.

At the same time, a genuine test of the effect of few or many patients per 1,000 women in need requires a fertility measure specified to the population subgroup from which the program draws its patients, i.e., lower-SES women. If program effects are genuine, analysis of an annual fertility rate should find significant coefficients for the program variable on fertility among low-SES women, but only small or insignificant effects among upper-SES women. If the coefficient of the program variable on the fertility of women with high income were negative and equal to the negative coefficient of women in the target population, the "program effect" would probably be spurious, and specification error would be obvious. In addition, a genuine test of program effects requires use of a control variable measuring the level of cumulative fertility (1969 parity) prior to the year's fertility which we want to test for program effects. Without the 1969 parity measure the program effect on annual fertility would include both the effects of the historic community differences in the availability of birth control as well as nonprogram factors affecting fertility uncontrolled by other independent variables.

Given these conditions, our research design yields a systematic pattern of program effects net of other factors on the fertility of lower-SES women—the higher the proportion of lower-SES wives in need enrolled in family planning clinic programs, the lower their fertility. Additional analysis demonstrates that systematic program effects lowering fertility are found whether white or black wives are classified by relationship to the poverty index or family income, and they emerge also from a separate study of white marital fertility in areas in which almost all women of childbearing age are white. These results, unless invalidated by specification error, indicate that the 1969 family planning clinic program had a measurable impact on the fertility of subgroups served by the program.

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