SOCIAL AND PSYCHOLOGICAL FACTORS AFFECTING FERTILITY

V. THE SAMPLING PLAN, SELECTION, AND THE REPRESENTATIVENESS OF COUPLES IN THE INFLATED SAMPLE[1]

P. K. WHELPTON AND CLYDE V. KISER

A. THE SAMPLING PLAN

AS pointed out in the preceding article of this series, a major purpose of the Study is to determine and evaluate the reasons why fecund married couples with zero, one, two, or other number of live births have this number rather than more or fewer, especially if the size of the family is planned. For such research it is important that a sufficiently large number of schedules be completed for fecund couples with each number of live births to meet the requirements of statistical analysis. Since budgetary considerations limited the total number of fecund couples for whom schedules could be filled out, the problem was to distribute this total most effectively by size of family. The information which was available when plans for the field work were being prepared showed that among the couples meeting the demographic and educational requirements for inclusion in the Study[2] there probably would be (a) a somewhat larger number with one or two live births than with none, and (b) a substantially smaller number with three live births than two, with four than three, etc. Other information indicated that the proportion of families planned as to size probably would vary in the same direction, but more abruptly. It appeared desirable, therefore, to sample the eligible couples with zero, one, or two live births, and to complete schedules for as many as possible of those with three or more.

[1] This is the fifth of a series of reports on a study conducted by the Committee on Social and Psychological Factors Affecting Fertility, sponsored by the Milbank Memorial Fund with grants from the Carnegie Corporation of New York. The Committee consists of Lowell J. Reed, Chairman; Daniel Katz; E. Lowell Kelly; Clyde V. Kiser; Frank Lorimer; Frank W. Notestein; Frederick Osborn; S. A. Switzer; Warren S. Thompson; and P. K. Whelpton.

[2] For a list of these requirements, see *infra*, pp. 86 and 87.

According to the schedules which were filled out for the white occupants of 102,499 dwelling units in the Household Survey of Indianapolis, there were 2,589 couples meeting the requirements for inclusion in the detailed Study.[3] Of these, 529 reported no live birth, 727 reported one, 801 two, 310 three, and 221 four or more live births.[4] If the Study had been equally interested in all couples in each size of family group these data would have sufficed for establishing the sampling ratios. In order to take into account the effects of sterility and the planning of family size, however, it was necessary to await the availability of data gathered during the first months of the Study.

On September 20, 1941, when approximately half of the field work was finished,[5] the couples for whom schedules had been completed were subdivided into three groups, namely, (1) relatively fecund,[6] size of family planned; (2) relatively fecund, size of family quasi-planned or too large;[7] and (3) relatively sterile. Relatively sterile couples included all with three or fewer live births who knew, or had good reasons for believing, that during a consecutive period of two or three years since marriage it was physiologically impossible for them to have a child.[8] Relatively fecund couples in-

[3] These figures do not include the 339 occupied dwelling units nor the seventeen eligible couples in Tract 103. This tract has a northern boundary almost one mile south of the remainder of Indianapolis (to which it is connected by only one street within the City limits) and is an important market-gardening area. For various reasons it was excluded from the detailed Study.

The foregoing and most of the subsequent data regarding the Study are from machine tabulations of punch cards, and in some instances differ slightly from the results of hand counts made during the field work.

[4] The number of live births to one couple was not reported in the Household Survey.

[5] The field work began on April 15, 1941, and ended on January 31, 1942.

[6] According to definitions adopted by the Population Association of America, fecundity means the *physiological ability* to participate in reproduction as distinguished from birth performance; sterility means the absence of such ability. These terms (modified by "relatively," as explained below) are used in this paper in accordance with these definitions.

[7] Size of family was considered "too large" if the wife and/or the husband did not want the last pregnancy ending in a live birth either when it occurred or later.

[8] Failure to conceive in the absence of regular contraceptive practice during two or three consecutive years (two for couples with no pregnancy and three for others) was the chief criterion in establishing "good reason for believing" that conception was physiologically impossible. Since this criterion relates to any given period of two or three consecutive years, it is not surprising that a large proportion of the couples classified as relatively sterile actually had children.

cluded all couples with four or more live births, and those with three or fewer who were not classified as relatively sterile.[9] Relatively fecund couples were considered to have planned family size (a) if no conception had occurred (presumably because of the regular practice of contraception); (b) if contraceptive practices had been discontinued a month or more prior to the interview in order that conception might occur; or (c) if the last conception occurred when contraception was stopped for that purpose, or when it was practiced "sometimes" after having been practiced "usually" or "always" and both the wife and husband said that they wanted a child at that time.[10] Other relatively fecund couples were classified as having size of family quasi-planned or too large. The results of the September 20th classification are shown in the upper half of Table 1. They indicated that all couples with three or more live births should be interviewed, and that a 75 per cent sample of childless couples and a 50 per cent sample of couples with one or two children should yield approximately equal numbers of relatively fecund couples planned as to family size. (*See* Table 1, line 15.) These sampling ratios were adopted at that time, and provided what will be referred to hereafter as Sample A.

Because of the important relation between socio-economic status and fertility, it was desirable to keep the sample within each size of family group similar to the entire group of eligible couples of the same parity with regard to socio-economic status. Of the three criteria available from the Survey schedules — highest grade of

[9] Couples with four or more live births "who knew or had good reason for believing that during a consecutive period of three years since marriage it was physiologically impossible for them to have a child" were included in the "relatively fecund" group because (a) the number of couples with four or more live births in the total eligible group was small, and (b) the fertility (i.e., birth performance) of these "relatively sterile" couples was higher than that of the large majority of "relatively fecund" couples.

[10] In this connection a plain water douche immediately after intercourse was not considered a contraceptive practice for a wife who insisted that it was "for cleanliness only," or (referring to a cold water douche) that it was "to help me get pregnant."

The basis of classifying couples as to planning size of family which is being used in the analysis differs slightly from that used in hand counts while the interviewing was progressing, and will be explained in a later article.

school completed by wife and husband, tenure, and rent paid for a rented home or estimated rental value of an owned home — the latter seemed most suitable. The process was that of applying the percentage rental distribution of all eligible families of each size to the number of families of corresponding size desired for the sample. Subtracting the number of couples already interviewed from the number desired in each fertility-rental category gave the number to be interviewed after September 20. (*See* Table 2.) Specific couples were chosen for interview by arranging the Survey schedules for

Table 1. Couples seen or "lost" before September 20, 1941, by number of live births, completion of schedules, fecundity and planning of size of family; sampling ratios for Sample A and couples in Sample A[1] (classified as above).

Study Status	No Live Birth		One Live Birth		Two Live Births		Three or More Live Births	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
1 Seen or "Lost" Before September 20[2]	*120*	*100.0*	*248*	*100.0*	*264*	*100.0*	*207*	*100.0*
2 Schedules Not Completed[3]	37	30.8	80	32.3	74	28.1	57	27.6
3 Schedules Completed	83	69.2	168	67.7	190	71.9	150	72.4
4 Relatively Sterile	53	44.2	51	20.6	37	14.0	16	7.7
5 Relatively Fecund	30	25.0	117	47.1	153	57.9	134	64.7
6 Size of Family Planned	30	25.0	77	31.0	74	28.0	29	14.0
7 Size Quasi-Planned, or Too Large	0	—	40	16.1	79	29.9	105	50.7
8 Eligible According to Survey[4]	*529*	—	*727*	—	*801*	—	*531*	—
9 Sampling Ratios For Sample A	—	75.0	—	50.0	—	50.0	—	100.0
10 Couples in Sample A[5]	397	100.0	364	100.0	400	100.0	531	100.0
11 Schedules Not To Be Completed[3]	122	30.8	118	32.3	112	28.1	147	27.6
12 Schedules To Be Completed[1]	275	69.2	246	67.7	288	71.9	384	72.4
13 Relatively Sterile[1]	176	44.2	75	20.6	56	14.0	41	7.7
14 Relatively Fecund	99	25.0	171	47.1	232	57.9	343	64.7
15 Size of Family Planned	99	25.0	113	31.0	112	28.0	74	14.0
16 Size Quasi-Planned, or Too Large	0	—	58	16.1	120	29.9	269	50.7

[1] Sample A is based on the sampling ratios on line 9 of this table. In Sample A the schedules of the "deferred" couples (i.e., 3 out of 4 couples with no live birth, classified as relatively sterile, interviewed after September 20, 1941, and apparently willing to cooperate, but for whom the interviewing was terminated with Form A for reasons explained in the text) are considered "completed."

[2] A couple is considered "seen" if the interviewer spoke to some member of the household, and "lost" if she learned from neighbors or others that the family had moved out of Indianapolis, or to an unknown address.

[3] Consists primarily of couples who were found to be ineligible, who refused to cooperate, or who had moved out of Indianapolis or to an unknown address since the Survey. See Section B of this article.

[4] Excludes one couple for whom the number of live births was not reported in the Household Survey.

[5] In each parity the percentage distribution of the couples "seen or 'lost' before September 20" is used in subdividing the "Couples in Sample."

T[illegible] by number of live births and monthly rental value of dwelling unit.

Rental Value of Dwelling Unit	All Couples		Couples in Sample A		
	Number	Per Cent	Number[2]	Interviewed Before Sept. 20	To Be Interviewed After Sept. 20[3]
	NO LIVE BIRTH				
Total	529	100.0	397	120	277
Under $20	47	9.1	36	15	21
$20–24	34	6.6	26	10	16
25–29	60	11.6	46	15	31
30–34	73	14.1	56	18	38
35–39	87	16.8	67	24	43
40–49	86	16.6	66	17	49
50–69	94	18.1	72	14	58
70–89	9	1.7	7	0	7
90 or More	10	1.9	7	1	6
Relatives[4]	18	3.5	14	6	8
Lodgers[5]	2	—	—	—	—
No Data[5]	9	—	—	—	—
	ONE LIVE BIRTH				
Total	727	100.0	364	248	116
Under $20	81	11.2	41	32	9
$20–24	60	8.3	30	21	9
25–29	111	15.4	56	42	14
30–34	102	14.1	51	35	16
35–39	103	14.3	52	46	6
40–49	98	13.6	50	38	12
50–69	108	15.0	55	26	29
70–89	35	4.8	17	1	16
90 or More	12	1.7	6	1	5
Relatives[4]	12	1.7	6	6	0
No Data[5]	5	—	—	—	—
	TWO LIVE BIRTHS				
Total	801	100.0	400	264	136
Under $20	119	14.9	60	36	24
$20–24	86	10.8	43	32	11
25–29	112	14.0	56	48	8
30–34	106	13.3	53	34	19
35–39	117	14.6	59	34	25
40–49	92	11.5	46	25	21
50–69	98	12.3	49	29	20
70–89	46	5.8	23	13	10
90 or More	14	1.7	7	6	1
Relatives[4]	9	1.1	4	7	−3
No Data[5]	2	—	—	—	—

[1] *See* Table 1, footnote 1.
[2] The "Total" lines are from Table 1, line 10. The other lines are computed by multiplying the totals by the percentages in the column to the left.
[3] The difference between the two columns to the left.
[4] Living with relatives, monthly rental of dwelling unit not stated.
[5] Omitted from computation of per cents and from Sample A.

couples not yet interviewed by tract and block number within each fertility-rental category, and selecting in rotation.

Among couples with no live birth, those classified as relatively sterile were found to outnumber by nearly two to one those classified as relatively fecund, size of family planned. (*See* Table 1.) In consequence, the sampling ratio needed for the fecund childless couples was much larger than that needed for the sterile. Since the Study was directed primarily at relatively fecund couples, it was decided to "defer" three-fourths of the sterile couples with no live birth. Accordingly, each interviewer was instructed (a) to keep a list of couples with no live birth who appeared to have been sterile for two or more years judging from the replies to two questions on Form A (the brief introductory form), and (b) to fill out Form S (for sterile couples) for only the last of each four of these couples. Modifying Sample A in this manner yielded Sample A-1.[11]

The extent to which the couples who were interviewed up to September 20 are typical of those in Sample A depends in large part on how the interviewers had been assigned to various areas of the City. From April 15 (when field work began) to July 1 an attempt was made to work in census tracts of all types. During July and August, however, attention was concentrated on the middle and lower economic areas because of the direct relation which was believed to exist between economic status and summer vacations. As a result, in each parity the ratio of couples to be interviewed after September 20 to those already interviewed varied directly with monthly rental. (*See* Table 2.) For example, among couples with one live birth only about 25 to 30 per cent of the number desired in the rental groups under $30 remained to be interviewed, as compared with over 50 per cent of the number desired in each of the rental groups above $50. Because it was believed that a direct rela-

[11] In referring to samples the capital letter A or B denotes which sampling ratios were used in assigning couples to interviewers. The figure 1 after the letter denotes exclusion from the sample of the "deferred" sterile couples for whom only a short schedule (Form A) was filled out; absence of the figure 1 denotes the inclusion of such couples.

tion exists between economic status and the planning of size of family, it was expected that the larger proportion of couples in the upper economic groups among those to be interviewed after September 20 would tend to raise somewhat the percentage of relatively fecund couples planned as to size of family, shown in Table 1, line 15.

When about 90 per cent of the field work was finished (on January 4, 1942) a second classification was made of the couples for whom schedules had been completed to date. It showed that the proportion of such couples among all couples in Sample A was substantially lower for those with no live birth than for those with one or more.[12] Although the interviewers had tried more diligently to see couples with no live birth than those with one or more, they had been less successful because of the greater difficulty of finding the wife or husband at home. As a result, the number of schedules completed for "relatively fecund, size of family planned" couples with no live birth was well below the corresponding number for similar couples with two live births. (*See* Table 3, line 11.) The number of schedules completed for "relatively fecund, size of family planned" couples with three or more live births was even smaller, primarily because the proportion of such couples who planned family size was low as compared with proportions for couples having fewer than three live births. To improve the situation the interviewers were instructed to give priority thenceforth to couples with no live birth and those with three or more. To make possible their completing the additional schedules desired for the former, the sampling ratio for childless couples was expanded from 75 per cent to 100 per cent. The sample resulting from the January 4th modifications will be referred to as Sample B or B-1.[13] It was realized

[12] Schedules had been completed for 52 per cent of the couples with no live birth in Sample A (206 of 397) and for 66 per cent of the couples with one or more live births in Sample A (856 of 1,295). (*See* Table 3, lines 1 and 7.) In this connection, the schedules of the "deferred" sterile couples are considered as having been "completed" although only Form A was filled out.

[13] *See* footnote 11.

that this change in sampling procedure would result in schedules being filled out for a larger proportion of the childless couples easy to find at home than of other childless couples, and that differences in this characteristic probably are related to differences in certain others, such as employment of wife. It was believed, however, that the biases which might be introduced by raising the sampling ratio for childless couples to 100 per cent would be a lesser evil than obtaining schedules from too few fecund childless couples.

The January 4th classification showed also that for each size of family group the distribution by rent or rental value for couples for whom schedules were completed differed in certain respects from that for all couples in Sample A. (*See* Table 4.) Among couples with no live birth the proportions in the $20-24 and $50-69 rental classes were somewhat lower for those for whom schedules had been completed than for others, but the proportions in the $30-39 classes were somewhat higher for the former. Such differences resulted

Table 3. Couples seen or "lost" before January 4, 1942, by number of live births, completion of schedules, fecundity, and planning of size of family.

	Study Status	No Live Birth		One Live Birth		Two Live Births		Three or More Live Births	
		Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
1	In Sample A[1,2]	*397*	*100.0*	*364*	*100.0*	*400*	*100.0*	*531*	*100.0*
2	Not Seen or "Lost" Before Jan. 4, 1942[3]	103	25.9	24	6.6	43	10.8	80	15.1
3	Seen or "Lost" Before Jan. 4, 1942[3]	294	74.1	340	93.4	357	89.2	451	84.9
4	*Seen or "Lost"*	*294*	*100.0*	*340*	*100.0*	*357*	*100.0*	*451*	*100.0*
5	Schedules Not To Be Completed[4]	88	29.9	95	27.9	84	23.5	113	25.1
6	Schedules Completed	206	70.1	245	72.1	273	76.5	338	74.9
7	*Schedules Completed*	*206*	*100.0*	*245*	*100.0*	*273*	*100.0*	*338*	*100.0*
8	Relatively Sterile[1]	132	64.1	71	29.0	44	16.1	20	5.9
9	Relatively Fecund	74	35.9	174	71.0	229	83.9	318	94.1
10	*Relatively Fecund*	*74*	*100.0*	*174*	*100.0*	*229*	*100.0*	*318*	*100.0*
11	Size of Family Planned	74	100.0	82	47.1	97	42.4	59	18.6
12	Size of Family Quasi-Planned or Too Large	0	0.0	92	52.9	132	57.6	259	81.4

[1] *See* Table 1, footnote 1.
[2] From Table 1, line 10.
[3] *See* Table 1, footnote 2.
[4] *See* Table 1, footnote 3.

Rental Value of Dwelling Unit	No Live Birth		One Live Birth		Two Live Births	
	Couples in Sample A[2]	Schedules Completed	Couples in Sample A[2]	Schedules Completed	Couples in Sample A[2]	Schedules Completed
Number of Couples	397	206	364	245	400	273
Per Cent Distribution:						
Total	100.0	100.0	100.1	100.0	100.0	100.0
Under $20	9.1	10.0	11.2	9.8	14.9	15.8
$20–24	6.6	4.5	8.3	8.6	10.8	9.6
25–29	11.6	11.9	15.4	15.5	14.0	15.1
30–34	14.1	15.9	14.1	17.1	13.3	14.7
35–39	16.8	18.9	14.3	15.1	14.6	16.9
40–49	16.6	16.9	13.6	13.1	11.5	12.1
50–69	18.1	15.4	15.0	12.7	12.3	9.9
70–89	1.7	2.0	4.8	5.7	5.8	4.8
90 or More	1.9	2.0	1.7	.8	1.7	.4
Living With Relatives	3.5	2.5	1.7	1.6	1.1	.7

[1] See Table 1, footnote 1.
[2] From Table 2.

Table 4. Couples in Sample A[1] and couples for whom schedules were completed before January 4, 1942, by number of live births, and monthly rental value of dwelling unit.

from variations between rental groups in the ease of finding couples at home, in the willingness of couples to cooperate, and in other factors.[14] In order to keep the rental distribution of cooperating childless couples as similar as possible to that of all childless couples, the interviewers were asked to try to see couples in the relatively under-represented rental groups and only as a last resort to call on those in the relatively over-represented groups. Among couples with one live birth a similar situation was met by giving Sample B thirty-two more couples than Sample A, and selecting them from the rental groups whose percentages needed raising. Since the number of schedules completed for "relatively fecund, size of family planned" couples was largest for those with two live births, Sample B was given only five more two-child couples than Sample A, and improvement of the rental distribution was sought primarily through withdrawing a small number of two-child couples in the rental groups whose percentages needed lowering and replacing

[14] These variations will be discussed in Section B.

them by an equal number of couples in the rental groups needing additional representation.[15]

Although the interviewers were unable by the date set for terminating field work to complete schedules for all of the couples added to Sample A on the basis of the January 4 inventory, progress toward the goal just outlined was achieved. The number of "relatively fecund, size of family planned" couples for whom schedules were completed was raised to eighty-eight for those with no live birth and to sixty-four for those with three or more, as compared with eighty-three and 102, respectively, for those with one and two.[16] Furthermore (as will be brought out in Section D), in each size of family group the differences between (a) the rental distribution of the couples for whom schedules were completed, and (b) that of all eligible couples in the Survey, were reduced between January 4 and the termination of the field work.

B. The Causes, Extent, and Effects of Selection

The preceding section refers to sampling, which was voluntary selection performed in accordance with a plan prepared by the Committee and field staff. This section refers primarily to involuntary selection, which was not desired but which could not be prevented. The most important causes of this selection are (a) some couples were "lost" to the Study because they moved out of Indianapolis or to an unknown address; (b) there was no way of locating couples who moved to Indianapolis after the Survey but before the Study interviewing ended; (c) the interviewers did not try to see

[15] Four other substitutions in Sample A (or A-1) had been made previously because (a) one of the interviewers resigned and failed to complete schedules which she had begun for four couples, and (b) it was not believed wise to change interviewers when the schedules were partially completed. These substitutions were made within the rental group and (if possible) within the tract.

[16] The foregoing is a distribution of fecund planned families by number of live births reported in the Household Survey. The distribution based on the Study schedules is as follows: eighty-eight fecund planned couples with no live birth, sixty-six with three or more, seventy-seven with one, and 106 with two. The slight differences between the two distributions are due to (a) errors in reporting number of live births in the Survey, and (b) the classification of adopted children as "live births" to the couple in the Study but not in the Survey.

some couples because they were busy with others, or they tried but found no one at home; (d) there were errors in the information secured in the Survey and used as a basis for determining eligibility; and (e) there were refusals to cooperate in the Study.

Of the 1,865 couples who were supposed to be interviewed in accordance with Sample B discussed in the preceding section,[17] thirty-eight were "lost" because they moved away from Indianapolis and fifty because they moved to an unknown address. In most cases the move occurred before a call was made by an interviewer; in a few cases it was after the first interview (at which only Form A was filled out) but before the second could be arranged. Since these eighty-eight couples (as a group) have a higher rate of moving than the remaining 1,777 couples in Sample B, they presumably differ in other respects. As far as the data on the Household Survey schedules are concerned, however, the only significant differences between the two groups relate to tenure and State of birth. As would be expected, the proportion of couples owning their home is much lower for the "lost" couples (18.2 per cent) than for the other couples (41.8 per cent). (*See* Table 5.) Similarly, the proportion of wives and husbands who were born in Indiana is significantly lower for the "lost" couples (62.5 and 58.0 per cent) than for the others (71.7 and 70.2 per cent). That there are few if any significant differences between the two groups in attitudes toward family size and its control is indicated by the similarity in average number of live births (1.6 and 1.7). It seems reasonable to conclude, therefore, that the Study was not biased seriously by the failure to complete schedules for the thirty-eight couples who moved out of Indianapolis or for the fifty who moved to an unknown address. Because of the net migration to Indianapolis which is believed to have occurred during 1941, it is probable that between forty and seventy-five couples meeting the eligibility requirements of the Study moved to Indianapolis after their neighborhoods had been canvassed by

[17] The 1,865 couples include the "deferred" sterile couples.

the Survey but before the date of termination of the field work for the Study. It seems probable that as a group they tended to resemble the thirty-eight couples who are known to have moved out of Indianapolis during this period, and that excluding them from the group interviewed did not introduce any serious biases.

In addition to the eighty-eight couples who were not seen because they moved, 129 were not seen either because the interviewers could not find anyone at home, or because they were busy with other couples and did not call. Two-thirds (eighty-three of 129) of the couples not found at home or not called on were childless. An important proportion of them were added to Sample A (or A-1) on January 4 and lived in the areas of the City where the interviewers had worked previously. These couples were not seen because the

Table 5. Characteristics of (a) couples in Sample B but not seen because they moved out of Indianapolis or to an unknown address, and (b) other couples in Sample B.[1]

Characteristics	Couples Not Seen Because They Moved	Other Couples in Sample B
Number of Couples	88[2]	1,777[3]
Average:		
Number of Live Births	1.6	1.7
Age Wife	33.9	34.2
Age Husband	36.7	37.0
Date of Marriage[4]	8-9-28	7-23-28
Highest Grade of School Completed[5] Wife	11.2	11.2
Highest Grade of School Completed[5] Husband	11.4	11.1
Rental Value of Dwelling Unit	$36.97	$35.57
Per Cent Owning Home	18.2	41.8
Per Cent Born in Indiana Wife	62.5	71.7
Per Cent Born in Indiana Husband	58.0	70.2

[1] Sample B was obtained from Sample A by raising the sampling ratio for zero parity from 75 to 100 per cent and making certain additions and substitutions of couples with one or two live births (*see* text). It includes the "deferred" sterile couples.

[2] Monthly rent or rental value was not reported for one of these couples in the Survey.

[3] Monthly rent or rental value was not reported for 53 of these couples in the Survey. For other items the number of "unknowns" varies between one and seven.

[4] Because month and day of marriage were not asked in the Survey it is assumed in averaging year of marriage that all marriages occurred on July 2, the mid day of the year. In consequence the averages have a high margin of error.

[5] High school is considered as consisting of grades 9 through 12, and college of grades 13 through 16.

interviewers spent most of their time after January 4 in other areas, where they could fill out the additional schedules desired for couples with three or more children as well as those with none.

Since the childless couples originally chosen for Sample A constituted a 75 per cent sample (stratified by rent) of all childless couples, the selection just described would not be expected to bias the results significantly. In contrast, certain biases may have been introduced by not "camping on the door step" of couples whom it was difficult to find at home. In some cases, of course, many calls were made. In others, the first call occurred when the interviewer had nearly completed her work in that area; hence subsequent calls soon became too time-consuming and were discontinued. It is probable that couples hard to find at home differ from others with respect to several of the conditions believed to affect fertility and therefore under investigation, for example, employment of the wife and interest in social activities. Unfortunately, however, the only differences which can be measured are those relating to the few items on the Survey schedules. Even here the couples not called on and those called on but not found at home must be considered together[18] and the comparison within a parity must be confined to childless couples because of the small number of couples in the other groups.

An analysis of the data on the Survey schedules shows only one difference of any importance between the characteristics of childless couples who were not seen for reasons other than moving, and those of other childless couples. The percentage of homes owned is 32.9 for the former group and 40.1 for the latter (*See* Table 6), but the difference of 7.2 is too small to be statistically significant for the number of couples involved. If couples of all parities are combined, the differences between the two groups are relatively large for average number of live births and are significant statistically for

[18] No distinction was made in coding, in part because of the small number of couples involved.

rent or rental value of home, but not for other items. To understand the meaning of these differences it must be remembered that (a) because of the expansion of the sampling ratio for childless couples from 75 to 100 per cent on January 4, the proportion of childless couples is much higher among couples not contacted for reasons other than moving (64.3 per cent) than among other couples in Sample B (25.7 per cent), and (b) there is an important indirect relation between the number of live births to a couple and the rent or rental value of their home; the rental value averages $39.76 for

Table 6. Characteristics of (a) couples in Sample B but not seen because of reasons other than moving, and (b) other couples in Sample B.[1]

Characteristics	Couples With No Live Birth		All Couples	
	Not Seen Because of Reasons Other Than Moving	Other Couples in Sample B	Not Seen Because of Reasons Other Than Moving	Other Couples in Sample B
Number of Couples	83[2]	446[3]	129[4]	1,736[5]
Average:				
Number of Live Births	—	—	0.6	1.8
Age Wife	35.6	35.6	36.0	34.1
Age Husband	38.1	38.6	37.5	37.0
Date of Marriage[6]	9–17–28	7–30–28	8–12–28	7–23–28
Highest Grade of School Completed[7] Wife	11.8	11.2	11.6	11.1
Highest Grade of School Completed[7] Husband	11.8	11.3	11.6	11.1
Rental Value of Dwelling Unit	$38.59	$39.73	$39.67	$35.34
Per Cent Owning Home	32.9	40.1	37.0	41.0
Per Cent Born in Indiana Wife	68.7	68.8	70.3	71.4
Per Cent Born in Indiana Husband	69.9	68.2	68.8	69.7

[1] *See* Table 5, footnote 1.
[2] Tenure was not reported for one of these couples in the Survey, and monthly rent or rental value for seven.
[3] The number of "unknowns" in the Survey is 22 for monthly rent or rental value, and zero, one, or two for the other items.
[4] The number of "unknowns" is seven for monthly rent or rental value, and zero or one for the other items.
[5] The number of "unknowns" is 47 for monthly rent or rental value, and zero to seven for the other items.
[6] *See* Table 5, footnote 4.
[7] *See* Table 5, footnote 5.

childless couples eligible for the Study and $35.95 for couples with children. In other words, when all parities are combined, the lower number of live births and the more expensive housing of the couples not seen for reasons other than moving certainly is due chiefly, and perhaps is due entirely, to the much higher proportion of childless couples in this group.

On the basis of the information collected in the Survey all of the couples in the sample met the demographic, religious, and educational requirements for inclusion in the detailed Study. Nevertheless, among the 1,545 couples from whom the information called for in the first interview of the Study was obtained,[19] 234, or 15.1 per cent, were found to be ineligible, in most cases because of incorrect entries on the Household Survey schedules.[20] If the Survey had functioned perfectly in locating couples for the Study the sample would not have contained these 224 couples but instead would have contained other couples (probably numbering between ninety-six and 114) who actually were eligible but who appeared to be ineligible because of errors in the Survey information. In most cases the misclassification of an eligible couple as ineligible, or *vice versa,* occurred because either (a) the Survey canvasser could not find a member of the household at home and obtained erroneous information from a neighbor, or (b) the wife, husband, or relative was unable or unwilling to answer the questions correctly.[21] Having an ineligible couple listed as eligible wasted the interviewers' time, but could not bias the group of eligible couples for whom schedules were completed. In contrast, the listing of an eligible couple as

[19] The 1,545 couples are those remaining after excluding from the 1,865 in Sample B the 217 "not called on" and the 103 "called on but unknown as to eligibility."

[20] Incorrect entries were found on 224 schedules, and were discussed by the authors in Social and Psychological Factors Affecting Fertility. III. The Completeness and Accuracy of the Household Survey of Indianapolis. The Milbank Memorial Fund *Quarterly,* July, 1945, xxiii, No. 3, pp. 254-296. (Reprint, pp. 95-137.) In addition, seven couples were ineligible because the marriage was broken by separation, divorce, or death between the Survey and the Study, and three because age of wife at marriage appeared to be under 30 when computed from the data on the Survey schedules (current age in years minus the difference between 1941 and year of marriage) but actually was 30 or older.

[21] In about half of these cases year of marriage was reported incorrectly.

ineligible for either of the reasons just mentioned could introduce a slight bias, for example, the under-representation of couples difficult to find at home (discussed above), and of those lacking in cooperation (discussed below). It is believed, however, that errors in the Survey data were too infrequent or too small to affect significantly the representativeness of the couples interviewed.

Of the 1,648 couples in Sample B who were seen by the interviewers (i.e., an interviewer talked with some member of the household), 147 refused to cooperate in the Study. Four would not allow the interviewers to explain the nature and purpose of the Study, sixty-six listened to an explanation but would do nothing more, and seventy-seven answered the questions on Form A (the relatively short form used in the first interview) but would not answer those on the other forms. In addition, 417 couples were not classified as to cooperation.[22] Deducting these from the 1,648 couples who were seen by the interviewers and relating the remainder to the 147 who would not cooperate gives a refusal rate of 11.9 per cent. This percentage is too large, however, for it is almost certain that several of the seventy couples who would not answer any question would not have met the eligibility requirements. Allowing for them on a proportional basis reduces the refusal rate to 11.1 per cent.[23]

[22] The main reasons are as follows: (a) 234 couples were found to be ineligible, hence there was no reason to record an opinion as to their probable cooperation; (b) in accordance with sampling plan B-1 discussed earlier, 107 childless couples classified as relatively sterile were asked only the questions on Form A and might or might not have answered those on Form S; and (c) most of the remaining seventy-six couples were not seen until shortly before the date when the interviewer stopped working in their part of the City or the date when the field work ended, and the interviewer did not determine whether they would cooperate.

[23] In the opinion of the writers, the fact that nearly 90 per cent of the couples agreed to cooperate in the Study is due primarily to three causes. One is the high quality of the staff of interviewers, which included Mrs. Martha Sampson Herrick and Mrs. Emily Marks Skolnick, Supervisors, and Mary M. Aikin, Miriam Bintz, Frances N. Butts, Margaret Creviston, Getrude D. Davis, Vida Davison, Dorothy McMillin Gross, Helen Jennings, Margaret A. McConnell, Ruth G. Moss, and Virginia Kahn White. Mrs. Gross and Miss Jennings had the lowest refusal rates, the former completing schedules for ninety-eight couples with four refusals, and the latter for 108 couples with five refusals.

Another factor encouraging cooperation was the aid received from the Indianapolis Committee on American Family Life. This Committee consisted of prominent citizens who were willing to sponsor the Study, namely, Rev. Harry E. Campbell, Alex E. Gordon, Mrs.

(Continued on page 65)

With a few couples the refusal to cooperate was blunt and rude; with the majority it was definite but gracious; with some it was expressed by not finding a convenient time for the second interview, by making appointments but failing to keep them, and by other means of "stalling." In nearly half of the refusal cases (sixty-seven of 147) the wife was not cooperative, hence the interviewers did not try to interest the husband in the Study. Occasionally the husband was present and stimulated or seconded the wife's refusal. If the wife said she would answer the questions but was sure her husband would not, attempts were made to see the husband. The interviewers found that some wives were mistaken as to their husbands' attitudes, and that others were claiming a noncooperative husband merely because of their own unwillingness to participate in the Study, for several of the husbands who were seen in such cases proved willing to answer the questions. Unfortunately the interviewers were unable for various reasons to see thirty-one husbands reported as uncooperative; hence these couples were classified on the basis of the wife's statement.

If respondents would not cooperate the interviewer attempted to ascertain their reasons. Eleven wives and seven husbands said that the questions were too personal (the expressions varying from a polite statement to a brisk "none of your damn business"). Five of these wives judged the questions partly or wholly on the basis of talks with relatives or friends who had been seen previously by an interviewer. (Six other wives who refused were influenced by similar conversations but did not state the reasons involved.) Oppo-

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Finally, it is believed that paying the couples who cooperated (one dollar each to the wife and husband if the couple was classified as relatively fecund and supplied the data for five forms, and fifty cents to the wife if the couple was classified as relatively sterile and answered the questions on two forms), contributed appreciably to the low refusal rate. Although this provision appeared to be the decisive argument with relatively few couples, it undoubtedly influenced many. Perhaps its greatest contribution, however, was the stimulation of morale among the interviewers through making them feel that the Study was not a complete imposition on the respondents since they were receiving something for their time and trouble.

sition to giving opinions or answering questions (regardless of how personal) was expressed by eight wives and six husbands. "Too busy" was the excuse of thirteen wives and six husbands, but it appeared to be justified by long working hours or an unusually large amount of family duties for only four wives and three husbands. "I don't want to be bothered," "I'm not interested," "It's a useless study," and similar comments were recorded for sixteen wives and eleven husbands. Remarks of a few other types were made by two or three couples, but for most of the remainder none was recorded.

The important question here, of course, is whether the couples who refused to cooperate differ from the other couples with respect to the characteristics under investigation in the Study. A clean-cut comparison of the two groups cannot be made, however, because seventy couples who refused to answer any question cannot be classified as to eligibility. For this reason it is desirable to compare the uncooperative group not only with the group composed primarily of cooperative couples (all of whom were eligible) but also with this group plus the ineligible couples. As before, the comparisons must be limited to the items on the Survey schedules. The largest absolute difference occurs in the percentage of husbands born in Indiana, which is 66.9 for the uncooperative couples and 71.4 for the cooperative couples. (*See* Table 7.) The largest relative difference occurs in the average number of live births, which is 1.6 for the uncooperative couples and 1.8 for the other two groups. Neither difference is statistically significant. It is possible, but not probable, that more important differences would be found if the number of couples were sufficiently large to permit comparisons within each parity. It is quite probable, however, that some larger differences would be found between cooperative and noncooperative couples if similar comparisons could be made for all items on the Study schedules.

There remain to be considered eighty couples whose schedules

were not completed for reasons not yet discussed. A few of them could not be interviewed because of defective sight or hearing. A few others were excluded because all of their children had died—a situation for which no provision was made in the Study schedules. Several of the eighty couples had good reasons for not cooperating in the Study when first seen by an interviewer (e.g., sickness, husband out of City or working unusually long hours) but were believed willing to do so later. They were not seen after the reason ceased to apply, either because the interviewer's work took her to other parts of the City, or because the field work ended before the delaying conditions changed. The remaining couples were seen

Table 7. Characteristics of couples in Sample B[1] who were seen by an interviewer, and who were (a) uncooperative, (b) cooperative, and (c) cooperative or ineligible.

Characteristics	Uncooperative Couples[2]	Cooperative Couples[3]	Cooperative or Ineligible Couples[4]
Number of Couples	147	1,234	1,468
Average:			
Number of Live Births	1.6	1.8	1.8
Age Wife	34.7	33.9	34.0
Age Husband	37.8	36.7	36.9
Date of Marriage[5]	7-2-28	7-31-28	7-27-28
Highest Grade of School Completed[6] Wife	11.2	11.2	11.1
Highest Grade of School Completed[6] Husband	11.2	11.2	11.1
Rental Value of Dwelling Unit	$37.21	$35.37	$35.02
Per Cent Owning Homes	40.1	43.6	42.3
Per Cent Born in Indiana Wife	71.4	72.6	71.8
Per Cent Born in Indiana Husband	66.9	71.4	70.7

[1] *See* Table 5, footnote 1.

[2] Includes some couples (probably between 8 and 12) who would have been classified as ineligible if answers could have been obtained to the questions on Form A. The number of "unknowns" in the Survey is four for monthly rent or rental value, and zero, one or two for the other items.

[3] Includes 150 couples classified "unknown" as to cooperation. of whom 107 are "sterile deferred", i.e., three of every four of the couples with no live birth called on after September 20 and classified as sterile, who were asked only the questions on Form A. It is probable that three to five of them would not have cooperated, i.e., would not have answered the questions on Form S. Most of the other 43 couples "unknown" as to cooperation were not called on until shortly before the end of the field work in their district or in the entire City. It is probable that three to five of them would not have cooperated even though the field work had been continued a few weeks longer. The number of "unknowns" in the Survey is 30 for monthly rent or rental value, and zero to three for the other items.

[4] Includes the 150 couples described in 3. The number of "unknowns" in the Survey is 40 for monthly rent or rental value, and zero to four for the other items.

[5] *See* Table 5, footnote 4.

[6] *See* Table 5, footnote 5.

for the first time when the field work was nearly over. If the couples composing the last two groups had been revisited later, it is probable that a few would have been found ineligible, a few would have refused to cooperate, but that schedules would have been completed for a large majority.

As would be expected, the expansion of the sampling ratio for childless couples from 75 to 100 per cent less than a month before the field work ended resulted in a large proportion of childless couples in the group seen by an interviewer but whose schedules were not completed for the reasons listed in the preceding paragraph. In consequence, the average number of live births to the group (1.2) is well below that for all other couples (1.7). In contrast, the differences between the two groups with respect to other

Table 8. Characteristics of (a) couples who were seen but whose schedules were not completed for miscellaneous reasons, and (b) other couples in Sample B.[1]

Characteristic	Couples Who Were Seen But Whose Schedules Were Not Completed For Miscellaneous Reasons[2]	Other Couples in Sample B
Number of Couples	80[3]	1,785[4]
Average:		
Number of Live Births	1.2	1.7
Age Wife	34.4	34.1
Age Husband	37.6	37.0
Date of Marriage[5]	8–17–28	7–26–28
Highest Grade of School Completed[6] Wife	11.2	11.1
Highest Grade of School Completed[6] Husband	11.3	11.1
Rental Value of Dwelling Unit	$37.30	$35.56
Per Cent Owning Homes	42.5	40.6
Per Cent Born in Indiana Wife	75.0	71.2
Per Cent Born in Indiana Husband	70.9	69.7

[1] *See* Table 5, footnote 1.
[2] These reasons are listed in the text.
[3] The number of "unknowns" in the Survey is two for age of husband, and zero or one for the other items.
[4] The number of "unknowns" in the Survey is 53 for monthly rent or rental value, and one to six for the other items.
[5] *See* Table 5, footnote 4.
[6] *See* Table 5, footnote 5.

characteristics recorded on the Survey schedules are small and not important statistically. (*See* Table 8.) It is probable, therefore, that the Study is not biased appreciably because of the selection just described.

C. Adjusting for Sampling

When the interviewing ended on January 31, 1942, the "study status" of the 2,589 couples, by number of live births reported in the Household Survey, was that shown in Table 9. The first point to be considered with respect to this table is the status of the "deferred" sterile couples. Tables 1 through 8 refer to Sample A or B, both of which include the "deferred" sterile couples because they were assigned to interviewers and answered the questions on Form A. In contrast, Table 9 relates to Sample B-1, which does not include the "deferred" sterile couples who were not asked the more numerous and detailed questions on Form S. This change in reference is necessary because of the procedures connected with the adjustment for sampling.

As shown in Tables 9 and 10, schedules had been completed for 860 fecund couples and for 220 sterile couples. For reasons described in the preceding sections, the percentage distribution by parity of the total 1,080 couples differs markedly from that of the 2,589 couples composing the original universe of eligible couples. (*See* Table 11, lines 1 and 3.) These differences are due mainly to the sampling procedures by parity, and introduce the need for proper weighting of any rates or averages for two or more parities combined that are computed in the analysis of the data. In other words, there is the necessity of adjusting for sampling.

In order to determine the weights that should be used for each parity in this adjustment for sampling, it was necessary to consider whether the couples for whom schedules were completed could justifiably be assumed to be typical of the other couples of the same parity, and if so, for how many of them. Each of the categories in

Table 9. Study status, at termination of field work, of the 2,589 couples in the original universe and of the 1,758 couples in Sample B-1 by number of live births reported in the Household Survey.

Study Status at Termination of Field Work	Total	No Live Birth	One Live Birth	Two Live Births	Three Live Births	Four or More Live Births
Original Universe	2,589*	529	727	801	310	221
Not In Sample B-1	831	104	330	397	0	0
Not Seen	724	0	329	395	0	0
Seen, Relatively Sterile, "Deferred"	107	104	1#	2#	0	0
In Sample B-1	1,758	425	397	404	310	221
Not Seen	217	116	34	35	19	12
Seen	1,541	309	363	369	291	209
Unknown Eligibility and Fecundity	103	39	24	19	16	5
Not Cooperative	70	20	20	12	13	5
Unknown Cooperation	33	19	4	7	3	0
Ineligible, Unknown Cooperation	234	64	45	46	37	42
Relatively Fecund	125	9	26	26	22	42
Relatively Sterile	45	28	6	7	4	0
Unknown Fecundity	64	27	13	13	11	0
Eligible	1,204	206	294	304	238	162
Cooperative	1,084	174	260	278	221	151
Relatively Fecund	863	94	183	236	199	151
Schedules Completed	860	93	182	236	199	150
Schedules not Completed	3	1	1	0	0	1
Relatively Sterile	221	80	77	42	22	0
Schedules Completed[1]	220	80	76	42	22	0
Schedules not Completed	1	0	1	0	0	0
Not Cooperative	77	18	23	17	10	9
Relatively Fecund	67	15	19	15	9	9
Relatively Sterile	8	3	4	1	0	0
Unknown Fecundity	2	0	0	1	1	0
Unknown Cooperation	43	14	11	9	7	2
Relatively Fecund	35	9	8	9	7	2
Relatively Sterile	5	2	3	0	0	0
Unknown Fecundity	3	3	0	0	0	0

* Includes one couple not reporting number of live births in the Household Survey.

Apparent misclassification due to errors in Household Survey reports on number of live births. Interviewers in Study found that these three couples had no live births; deferred, sterile couples.

Table 9 was examined in turn. The disposition of the 234 couples who were found to be ineligible for the Study was easily decided. These should be disregarded in determining the weights desired.

Table 10. Extent of adjustment for sampling, by fecundity and number of live births.

Live Births Reported in Household Survey (1)	Eligible Cooperative Couples			Weights for Inflating
	Estimated Total Number[1] (2)	Schedules Completed (3)	Additional Schedules Needed (4)	(2) ÷ (3) (5)
	RELATIVELY FECUND COUPLES			
Total	1,444	860	584	
0	137	93	44	1.47
1	385	182	203	2.12
2	539	236	303	2.28
3	221	199	22	1.11
4	105	98	7	1.07
5+	57	52	5	1.10
	RELATIVELY STERILE COUPLES			
Total	533	220	313	
0	248	80	168	3.10
1	164	76	88	2.16
2	97	42	55	2.31
3	24	22	2	1.09
	ALL COUPLES (BY ADDITION)			
Total	1,977	1,080	897	
0	385	173	212	
1	549	258	291	
2	636	278	358	
3	245	221	24	
4	105	98	7	
5+	57	52	5	

[1] Representing numbers desired in the inflated samples of fecund and sterile couples. *See* text for description of method of estimating.

A decision regarding the couples who refused to cooperate was not so simple. Some of these couples undoubtedly were ineligible and should be disregarded for that reason. Those who were eligible were known to be uncooperative but there was no way of determining with assurance whether they differed in other respects from the couples for whom schedules were completed. After studying the problem carefully, the Committee conducting the Study concluded

Table 11. Distribution by number of live births reported in the Household Survey, for the original universe of eligible couples and for the inflated and uninflated groups of fecund and sterile couples for whom schedules were completed.

Study Status	Total	No Live Birth	One Live Birth	Two Live Births	Three Live Births	Four or More Live Births
	PERCENTAGE DISTRIBUTION					
Original Universe	100.0	20.4	28.1	31.0	12.0	8.5
Schedules Completed:						
Total—Inflated Sample	100.1	19.5	27.8	32.2	12.4	8.2
Total—Not Inflated	100.0	16.0	23.9	25.7	20.5	13.9
Fecund—Inflated Sample	100.0	9.5	26.7	37.3	15.3	11.2
Fecund—Not Inflated	99.9	10.8	21.2	27.4	23.1	17.4
Sterile—Inflated Sample	100.0	46.5	30.8	18.2	4.5	0.0
Sterile—Not Inflated	100.0	36.4	34.5	19.1	10.0	0.0
	NUMBERS					
Original Universe[1]	2,589	529	727	801	310	221
Schedules Completed:						
Total—Inflated Sample	1,977	385	549	636	245	162
Total—Not Inflated	1,080	173	258	278	221	150
Fecund—Inflated Sample	1,444	137	385	539	221	162
Fecund—Not Inflated	860	93	182	236	199	150
Sterile—Inflated Sample	533	248	164	97	24	0
Sterile—Not Inflated	220	80	76	42	22	0

[1] Includes one couple not reporting number of live births in the Household Survey.

that couples refusing to cooperate in a Study of Family Life (the title used by the interviewers in talking to couples) might reasonably be considered as more self-centered than cooperative couples, and as differing from them in matters related to the heart of the Study, particularly in attitudes toward size of family. It seemed advisable, therefore, to disregard such couples in determining the weights to be applied to those for whom schedules were completed.

The next categories examined in Table 9 included the couples unknown as to eligibility or cooperation or both. The majority (831) of these couples were not in Sample B-1 and consisted of two subgroups, namely, 724 couples who were not assigned to interviewers and 107 who were sterile "deferred" and hence unknown as to cooperation. The next largest group consisted of 217 couples in Sample B-1 who were assigned to interviewers but not called on for reasons discussed previously.[24] Finally, there were seventy-six couples who were seen by an interviewer, but who nevertheless could not be classified as to eligibility or cooperation. In the opinion of the Committee, it seemed reasonable to assume that (a) these groups contained eligible couples for whom schedules could have been completed if the field work had been continued longer; (b) the couples referred to in "a" were as numerous relatively within the "unknown" groups as the "known" groups; and (c) the couples for whom schedules were completed were typical of those in "a."

In addition to the foregoing categories in Table 9 it was necessary to consider a category not in the table, namely, the couples who actually were eligible but who appeared to be ineligible because of incorrect entries on the Survey schedules. As indicated in an earlier article, such couples are believed to number between 96 and 114.[25] If they had been visited by an interviewer it is probable that a large

[24] Had the interviewers seen and filled out Form A for these couples, some would have been classified as "deferred" sterile childless couples and hence excluded from Sample B-1.

[25] Whelpton, P. K. and Kiser, Clyde V.: Social and Psychological Factors Affecting Fertility. III. The Completeness and Accuracy of the Household Survey of Indianapolis. The Milbank Memorial Fund *Quarterly*, July, 1945, xxiii, No. 3, p. 296. (Reprint, p. 137.)

majority would have cooperated, and that some would have refused. In theory it would have been correct to assume that the cooperative couples in the group are like the couples for whom schedules were completed. From a practical standpoint, however, it seemed wise to disregard the "apparently ineligible but actually eligible" couples when determining weights because nothing was known about their characteristics and the estimated number of these couples was so small that the weights would be approximately the same if they were included or excluded.

The final problem considered in connection with weighting related to the classification by fecundity. Because some of the couples not in Sample B-1 were known to be relatively sterile (the childless "deferred" couples) it was necessary to obtain separate weights for the relatively fecund and relatively sterile couples. To do so it was assumed that the proportions of relatively fecund and sterile couples among those classified "unknown as to fecundity" were the same as they were among those classified as of known fecundity.

The foregoing considerations appeared to warrant the assumption that the relatively fecund couples for whom schedules were completed are typical of the estimated total number of eligible cooperative fecund couples. Hence it was decided to use the latter group as the basis for adjusting the former to allow for sampling by parity. A corresponding assumption and decision were made with respect to the relatively sterile couples. To estimate the total numbers of eligible cooperative couples (fecund and sterile separately), the procedure outlined below was followed within each parity.

1. Couples classed as "not in Sample B-1 and not seen," "in Sample B-1 but not seen," and "seen but unknown as to eligibility, fecundity, and cooperation" were distributed proportionally among the remaining study-status classes.

2. The percentages of couples classified as relatively fecund and relatively sterile were computed on the basis of those of known fecundity.

3. Within each "eligible" study-status class the couples of "unknown

fecundity" were assigned to fecund and sterile groups on the basis of percentages derived in step 2.

4. Within the eligible fecund and sterile groups separately, couples classed as "unknown as to cooperation"[26] were assigned proportionately to the "cooperative" and "not cooperative" classes.

5. In steps 1 and 4, whenever cases of "unknowns" were logically assigned either to the fecund or sterile "schedules completed" group the actual assignments were made to the "schedules not completed" group. There were thus derived for each parity the adjusted numbers of "eligible, cooperative, fecund" and "eligible, cooperative, sterile" couples for whom schedules were not completed, but presumably would have been completed if all eligible couples in the universe had been interviewed. Adding these numbers to the corresponding numbers of couples for whom schedules were completed and dividing the totals by the latter gave the weights desired. (*See* Table 10.)

Weights of the type described above could be used in either of two ways: (a) the component rates or averages for the several parities could be computed separately and weighted mathematically each time a composite rate is desired;[27] or (b) the punch cards could be "inflated" by duplicating for each parity the number of cards indicated by the weights, and the rates or averages computed directly. The latter plan was adopted. The numbers of fecund and sterile couples for whom schedules were completed and the numbers of additional cases needed are shown by parity in Table 10. Thus, for fecund childless couples, forty-four cases were needed in addition to the ninety-three for whom schedules were completed to yield a total of 137 in the inflated group. The problem, therefore, was that of choosing at random forty-four cases from the group of ninety-three and making one duplicate punch card for each of them. For fecund couples with one live birth, it was necessary to duplicate 161 cases once and twenty-one twice in order to bring the inflated group to 385.

[26] Nearly all of the sterile couples unknown as to cooperation were those "deferred" and classified as "not in Sample B-1" in Table 9.

[27] With this procedure one might use as weights the percentage distribution by parity of the estimated total number of eligible cooperative fecund (or sterile) couples.

To minimize the possibility of bias in the selection of punch cards to be duplicated, Tippett's random numbers were utilized. The 860 punch cards for "fecund couples, schedules completed" were classified by the number of live births reported in the Household Survey.[28] Tippett's random numbers[29] were punched on the cards, beginning with the pack of cards for the childless couples. After all parities were completed, the punch cards for each parity were arranged in order by ascending random number. The process was then simply that of taking for duplication the desired number of cards with lowest random numbers. Thus, of the ninety-three cards for childless fecund couples, the forty-four cards with lowest random numbers were selected for duplication. A similar process was used for the remaining parities of fecund and sterile couples.[30]

D. The Representativeness of the Inflated Sample

The representativeness of the inflated groups may be considered from several points of view. Since the purpose of inflation is to secure representativeness by number of children ever born, the extent to which this objective is attained may first be considered. As indicated in Table 11, lines 1 and 2, when the inflated samples for the fecund and sterile couples are combined, the percentage distribution by parity is very much the same as that observed for the original universe of eligible couples. In spite of the foregoing, one may ask what evidence there is that the two inflated groups are

[28] In a few instances the number of live births reported in the Household Survey differed from the number reported in the intensive interviews of the Study. The former were used for purposes of the inflation, however, since they had formed the basis for the original sampling ratios, and were the only data on live births for couples not seen by interviewers.

[29] There are twenty-six pages in Tippett's booklet, each page containing eight columns and each column fifty four-digit numbers. The first column numbers were used in order. Hence, for the 860 cards for fecund couples, the numbers drawn from Tippett are those in the first columns of pages 1-17 and part of those in the first column of page 18. For the 220 sterile couples the entire first columns of pages 19-21 and parts of those of pages 18 and 22 were utilized. *See* Tippett, L. H. C.: Random Sampling Numbers. London, Cambridge University Press, 1927, 26 pp.

[30] The mechanical work of duplicating the cards was done in the statistical office of the School of Hygiene and Public Health, The Johns Hopkins University, through the courtesy of Professor Lowell J. Reed, Chairman of The Committee on the Study of Social and Psychological Factors Affecting Fertility.

representative of the respective fecund and sterile parts of the universe with respect to distributions by parity. It will be recalled that the numerical distributions by parity of the inflated groups of fecund and sterile couples are equivalent to the numbers estimated for fecund and sterile "eligible cooperative" couples. These were obtained by utilizing the detailed sampling status of the total universe for purposes of allocating the couples "not in Sample B-1," "in Sample B-1 but not seen," and "seen but unknown as to fecundity, eligibility, and cooperativeness." Hence, to the extent that no biases by parity are introduced by the exclusion of ineligible, apparently ineligible but actually eligible, and noncooperative couples, the distribution by parity of the inflated groups of relatively fecund and sterile couples combined should resemble that for the original universe of 2,589 couples. The fact that this similarity does exist supports the belief that the distributions by parity in the inflated groups of fecund and sterile couples separately are substantially correct.

The above considerations refer to the representativeness achieved by the proper *amount* of inflation for each parity of fecund and sterile couples. A question still remains concerning representativeness within each parity. This is a function of the *method* of selecting the punch cards that were to be duplicated. As previously stated, Tippett's random numbers were used in the hope that the inflated group for a given parity would not depart significantly from the uninflated group in so far as characteristics of the couples are concerned. That this objective was achieved may be seen in the similarity of the inflated and uninflated groups of fecund couples and in the similarity of the inflated and uninflated sterile groups with respect to the descriptive characteristics considered in Tables 12-18. These characteristics relate to age, state of birth, and education of the husband and wife; year of marriage; and tenure and rental value of the dwelling unit.

By way of illustration, a few comparisons may be made between

the inflated and uninflated groups of relatively fecund one-child couples. Thus, the median age of husband is 36.5 years in the inflated, and 36.6 years in the uninflated group. The median age of wife is precisely the same, 34.3, in the two groups. (*See* Tables 12-13.) The proportions of husbands and wives born in Indiana, in other northern areas, and in the South are essentially the same for the inflated as for the uninflated groups. (*See* Table 14.) The median grade in school completed by husband is precisely the same, 12.2, in both groups. The median grade completed by wife is 12.2 in the inflated group and 12.3 in the uninflated group. (*See* Tables 15-16.) The distributions of couples by year of marriage and tenure of the home are virtually the same in the inflated and uninflated groups. The median rent of dwelling unit ($34.44 and $34.49) is also almost exactly the same for the two groups.

The comparison of the inflated with the uninflated groups, of course, is no rigorous test of Tippett's random numbers. Suffice it to say, however, that other students have carried out special tests of Tippett's numbers and have reported favorably on their random character. In the present instance the important point is that Tippett's numbers appeared to "fill the bill" quite well. The inflated groups are quite similar to the uninflated groups of given parities among both fecund and sterile couples.

Furthermore, within each parity the inflated groups of fecund and sterile couples combined are fairly representative of the original universe of eligible couples. This may be seen by comparing the two top lines under each parity in Tables 12-18. Several figures may again be cited for one-child couples by way of illustration. Thus, the median age of husband is 36.5 in the "total inflated" groups and 36.9 in the "original universe." For median age of wife the respective figures are 34.5 and 34.6. The median highest grade in school completed is 12.2 for the husband and also for the wife in each of the two groups. The median monthly rental is $34.44 for the "total inflated" group and $35.05 for the "original universe." Equally close

Table 12. Median age and percentage distribution by age of husband for couples of given study ıus and number of live births.

Study Status	Median Age	Percentage Distribution by Age of Husband								
		29–31	32–33	34	35	36–37	38–39	40–41	42–44	45–54
		NO LIVE BIRTH								
ıl Universe	38.1	1.9	10.6	9.1	13.1	18.8	15.4	14.6	8.3	8.2
Inflated Sample	37.7	1.3	13.0	10.4	14.5	18.7	13.2	17.4	5.7	5.7
i—Schedules Completed										
ıted Sample	37.8	1.5	8.8	11.7	12.4	23.4	15.3	14.6	7.3	5.1
Inflated	37.7	2.2	9.7	11.8	10.8	25.8	14.0	11.8	7.5	6.5
—Schedules Completed										
ıted Sample	37.5	1.2	15.3	9.7	15.7	16.1	12.1	19.0	4.8	6.0
Inflated	37.6	1.3	15.0	10.0	15.0	16.3	12.5	18.8	5.0	6.3
		ONE LIVE BIRTH								
al Universe	36.9	7.3	13.7	11.3	12.7	22.3	14.9	6.2	6.4	5.1
Inflated Sample	36.5	9.8	14.2	14.6	11.3	19.7	15.8	2.7	5.5	6.4
d—Schedules Completed										
ated Sample	36.5	9.6	16.4	11.2	12.5	19.5	15.6	3.1	4.9	7.3
Inflated	36.6	9.3	15.9	11.5	12.6	19.2	15.9	3.3	4.9	7.1
—Schedules Completed										
ated Sample	36.4	10.4	9.1	22.6	8.5	20.1	16.5	1.8	6.7	4.3
Inflated	36.5	10.5	9.2	21.1	9.2	21.1	17.1	1.3	6.6	3.9
		TWO LIVE BIRTHS								
ıal Universe	36.4	9.7	16.6	11.9	13.6	18.7	12.9	8.9	5.2	2.5
Inflated Sample	36.2	10.1	18.1	11.9	14.3	19.3	12.1	8.8	3.5	1.9
d—Schedules Completed										
ated Sample	36.2	8.5	18.2	12.8	15.2	19.3	11.9	8.5	3.3	2.2
Inflated	36.2	9.3	18.2	12.3	15.3	19.5	11.4	8.9	3.0	2.1
—Schedules Completed										
ated Sample	36.2	18.6	17.5	7.2	9.3	19.6	13.4	10.3	4.1	0.0
Inflated	36.0	19.0	19.0	7.1	9.5	19.0	11.9	9.5	4.8	0.0
		THREE LIVE BIRTHS								
ıal Universe	36.6	8.7	15.9	12.3	12.3	21.7	13.9	9.4	3.9	1.9
Inflated Sample	36.5	9.0	16.8	11.5	12.3	23.4	12.3	9.8	3.7	1.2
id—Schedules Completed[1]										
lated Sample	36.5	8.6	17.7	11.8	12.3	22.3	12.7	9.5	3.6	1.4
Inflated	36.5	8.6	16.7	12.1	12.1	22.7	13.6	9.1	3.5	1.5
		FOUR OR MORE LIVE BIRTHS								
ıal Universe	34.8	17.6	29.0	11.3	8.6	15.4	9.5	4.5	3.6	0.5
(or Fecund) Inflated Sample	34.8	14.8	30.9	14.2	9.3	13.0	10.5	3.7	3.7	0.0
(or Fecund) Not Inflated	34.9	15.3	30.0	13.3	10.0	13.3	10.7	4.0	3.3	0.0

istributions are not shown for the relatively sterile couples with three live births, since there were only 22 ıch couples (24 in the inflated group).

Table 13. Median age and percentage distribution ... and number of live births.

Study Status	Median Age	Percentage Distribution by Age of Wife							
		Under 30	30–31	32–33	34	35	36–37	38–39	40–44
NO LIVE BIRTH									
Original Universe	35.7	4.7	14.0	17.8	10.6	12.5	16.1	10.0	14.4
Total Inflated Sample	35.5	8.1	13.8	16.6	11.9	12.2	19.5	6.8	11.2
Fecund—Schedules Completed									
Inflated Sample	35.2	0.7	16.1	25.5	11.7	10.2	19.7	5.8	10.2
Not Inflated	35.2	1.1	16.1	24.7	11.8	9.7	20.4	5.4	10.8
Sterile—Schedules Completed									
Inflated Sample	35.6	12.1	12.5	11.7	12.1	13.3	19.4	7.3	11.7
Not Inflated	35.7	11.3	12.5	11.3	12.5	13.8	20.0	7.5	11.3
ONE LIVE BIRTH									
Original Universe	34.6	6.9	19.2	22.3	11.9	13.1	12.6	8.3	5.8
Total Inflated Sample	34.5	7.3	19.3	24.0	13.3	11.5	12.4	9.3	2.9
Fecund—Schedules Completed									
Inflated Sample	34.3	7.5	20.8	24.7	13.5	9.9	11.4	9.6	2.6
Not Inflated	34.3	7.1	20.3	25.3	13.7	9.9	11.5	9.3	2.7
Sterile—Schedules Completed									
Inflated Sample	34.9	6.7	15.9	22.6	12.8	15.2	14.6	8.5	3.7
Not Inflated	34.8	6.6	15.8	23.7	13.2	14.5	14.5	7.9	3.9
TWO LIVE BIRTHS									
Original Universe	33.9	11.6	20.5	25.8	9.9	9.4	11.6	7.4	3.9
Total Inflated Sample	33.4	13.5	25.0	25.6	8.8	6.8	12.1	6.3	1.9
Fecund—Schedules Completed									
Inflated Sample	33.5	11.3	26.9	24.7	8.9	6.9	12.6	6.5	2.2
Not Inflated	33.4	11.9	27.1	24.6	8.9	6.8	12.3	6.4	2.1
Sterile—Schedules Completed									
Inflated Sample	33.1	25.8	14.4	30.9	8.2	6.2	9.3	5.2	0.0
Not Inflated	33.1	26.2	14.3	31.0	7.1	7.1	9.5	4.8	0.0
THREE LIVE BIRTHS									
Original Universe	33.5	11.7	26.3	24.7	10.4	8.8	11.0	3.6	3.6
Total Inflated Sample	33.6	11.5	23.4	28.3	10.2	7.4	11.9	3.3	4.1
Fecund—Schedules Completed[1]									
Inflated Sample	33.6	11.8	22.7	27.3	10.9	7.7	12.3	3.6	3.6
Not Inflated	33.7	11.6	22.2	27.8	12.1	8.1	11.1	3.5	3.5
FOUR OR MORE LIVE BIRTHS									
Original Universe	32.3	22.2	31.7	21.3	9.5	6.3	5.4	2.3	1.4
Total (or Fecund) Inflated Sample	32.3	20.4	33.3	21.0	9.3	5.6	8.0	1.9	0.6
Total (or Fecund) Not Inflated	32.3	20.0	32.7	22.0	8.7	6.0	8.0	2.0	0.7

[1] *See* footnote 1 to Table 12.

Table
couples

the husband and wife for

Study Status	Per Cent of Husbands Born in			Per Cent of Wives Born in		
	Indiana	Other Northern States	Southern States	Indiana	Other Northern States	Southern States
	NO LIVE BIRTH					
Original Universe	68.8	19.8	11.4	69.1	19.0	12.0
Total Inflated Sample	71.6	20.1	8.3	70.4	20.8	8.8
Fecund—Schedules Completed						
Inflated Sample	70.6	17.6	11.8	72.3	21.9	5.8
Not Inflated	69.6	18.5	12.0	72.0	21.5	6.5
Sterile—Schedules Completed						
Inflated Sample	72.2	21.4	6.5	69.4	20.2	10.5
Not Inflated	72.5	21.3	6.3	70.0	20.0	10.0
	ONE LIVE BIRTH					
Original Universe	69.8	17.9	12.3	70.9	18.5	10.6
Total Inflated Sample	73.9	16.6	9.5	69.8	20.0	10.2
Fecund—Schedules Completed						
Inflated Sample	75.8	13.8	10.4	68.8	19.7	11.4
Not Inflated	75.8	14.3	9.9	68.7	19.8	11.5
Sterile—Schedules Completed						
Inflated Sample	69.1	23.5	7.4	72.0	20.7	7.3
Not Inflated	69.3	24.0	6.7	72.4	21.1	6.6
	TWO LIVE BIRTHS					
Original Universe	70.8	17.1	12.0	72.4	15.7	11.9
Total Inflated Sample	70.4	17.6	11.9	73.9	14.6	11.5
Fecund—Schedules Completed						
Inflated Sample	71.1	17.8	11.1	73.3	15.6	11.1
Not Inflated	70.3	18.2	11.4	73.3	15.7	11.0
Sterile—Schedules Completed						
Inflated Sample	67.0	16.5	16.5	77.3	9.3	13.4
Not Inflated	66.7	14.3	19.0	76.2	9.5	14.3
	THREE LIVE BIRTHS					
Original Universe	70.5	16.6	13.0	72.6	17.3	10.1
Total Inflated Sample	72.0	16.0	11.9	71.9	19.4	8.7
Fecund—Schedules Completed[1]						
Inflated Sample	72.1	16.9	11.0	71.6	19.3	9.2
Not Inflated	72.1	17.3	10.7	70.9	19.9	9.2
	FOUR LIVE BIRTHS					
Original Universe	68.3	14.5	17.2	73.8	13.6	12.7
Total (or Fecund) Inflated Sample	72.2	13.0	14.8	75.9	11.7	12.3
Total (or Fecund) Not Inflated	71.3	13.3	15.3	76.0	12.0	12.0

[1] *See* footnote 1 to Table 12.

Table 15. Median grade and percentage distribution by [illegible] for couples of given study status and number of live births.

Study Status	Median Grade	Percentage Distribution by Highest Grade of School Completed by Husband								
		G. S. 8	High School					College		
			1	2	3	4	"Unk."	1-3	4+	"Unk."
NO LIVE BIRTH										
Original Universe	12.2	22.3	4.2	11.9	5.9	31.6	1.3	9.8	12.5	0.4
Total Inflated Sample	12.1	26.5	5.5	9.6	5.2	28.1	2.1	8.8	14.3	0.0
Fecund—Schedules Completed										
Inflated Sample	12.3	19.0	4.4	11.7	5.1	29.2	3.6	11.7	15.3	0.0
Not Inflated	12.3	17.2	4.3	11.8	5.4	31.2	3.2	10.8	16.2	0.0
Sterile—Schedules Completed										
Inflated Sample	11.8	30.6	6.0	8.5	5.2	27.4	1.2	7.3	13.7	0.0
Not Inflated	11.9	30.0	6.3	8.8	5.0	27.5	1.3	7.5	13.8	0.0
ONE LIVE BIRTH										
Original Universe	12.2	19.9	5.6	10.5	6.1	29.3	1.4	12.5	13.6	1.1
Total Inflated Sample	12.2	19.5	5.8	11.7	7.1	27.7	1.3	12.2	14.8	0.0
Fecund—Schedules Completed										
Inflated Sample	12.2	19.2	4.9	10.9	7.5	30.4	1.8	10.6	14.5	0.0
Not Inflated	12.2	19.8	4.9	10.4	7.1	30.8	1.6	10.4	14.8	0.0
Sterile—Schedules Completed										
Inflated Sample	12.1	20.1	7.9	13.4	6.1	21.3	0.0	15.9	15.2	0.0
Not Inflated	12.1	21.1	6.6	14.5	5.3	22.4	0.0	14.5	15.8	0.0
TWO LIVE BIRTHS										
Original Universe	12.1	21.0	7.3	12.5	5.8	26.4	1.4	11.0	14.6	0.1
Total Inflated Sample	12.1	19.8	7.5	14.8	5.0	25.3	0.3	12.1	15.1	0.0
Fecund—Schedules Completed										
Inflated Sample	12.2	18.4	6.5	15.8	4.3	27.3	0.4	12.6	14.8	0.0
Not Inflated	12.2	18.6	6.4	15.7	4.2	27.5	0.4	12.3	14.8	0.0
Sterile—Schedules Completed										
Inflated Sample	10.9	27.8	13.4	9.3	9.3	14.4	0.0	9.3	16.5	0.0
Not Inflated	11.0	26.2	14.3	9.5	9.5	14.3	0.0	9.5	16.7	0.0
THREE LIVE BIRTHS										
Original Universe	11.2	29.8	4.2	13.6	8.1	26.9	0.3	4.5	12.0	0.6
Total Inflated Sample	11.5	25.4	5.7	14.3	7.8	29.1	0.4	5.3	11.1	0.8
Fecund—Schedules Completed[1]										
Inflated Sample	11.6	25.5	5.9	13.2	8.6	30.0	0.0	4.1	11.8	0.9
Not Inflated	11.6	26.3	5.6	12.1	9.1	29.8	0.0	4.5	11.6	1.0
FOUR OR MORE LIVE BIRTHS										
Original Universe	9.8	41.2	10.0	16.7	8.1	14.9	0.9	5.0	3.2	0.0
Total (or Fecund) Inflated Sample	10.0	37.7	11.1	15.4	9.9	15.4	1.2	5.6	3.7	0.0
Total (or Fecund) Not Inflated	10.0	38.0	10.7	16.0	10.0	14.7	1.3	6.0	3.3	0.0

[1] *See* footnote 1 to Table 12.

ıble 16. Median grade and percentage distribution by educational attainment of the wife for les of given study status and number of live births.

Study Status	Median Grade	Percentage Distribution by Highest Grade of School Completed by Wife								
		G. S. 8	High School					College		
			1	2	3	4	"Unk."	1–3	4+	"Unk."
		NO LIVE BIRTH								
Universe	12.2	18.9	3.8	11.2	4.7	45.3	1.1	6.4	8.1	0.4
flated Sample	12.2	17.4	5.2	14.5	5.5	43.4	0.5	4.7	8.8	0.0
—Schedules Completed										
ed Sample	12.4	17.5	1.5	9.5	2.2	51.1	1.5	10.9	5.8	0.0
nflated	12.4	15.1	1.1	9.7	2.2	52.7	1.1	10.8	7.5	0.0
-Schedules Completed										
ed Sample	12.0	17.3	7.3	17.3	7.3	39.1	0.0	1.2	10.5	0.0
nflated	12.0	16.3	7.5	17.5	7.5	40.0	0.0	1.3	10.0	0.0
		ONE LIVE BIRTH								
Universe	12.2	12.7	7.4	12.2	7.4	39.1	0.8	9.9	10.2	0.3
nflated Sample	12.2	9.8	8.7	13.7	8.2	40.3	0.0	11.7	7.7	0.0
—Schedules Completed										
ed Sample	12.2	6.8	9.6	16.4	7.3	40.8	0.0	12.2	7.0	0.0
nflated	12.3	7.1	9.3	15.9	7.1	41.2	0.0	12.1	7.1	0.0
-Schedules Completed										
ed Sample	12.2	17.1	6.7	7.3	10.4	39.0	0.0	10.4	9.1	0.0
nflated	12.2	17.1	6.6	6.6	10.5	39.5	0.0	10.5	9.2	0.0
		TWO LIVE BIRTHS								
l Universe	12.2	15.9	7.1	14.0	6.5	36.6	1.1	9.6	9.1	0.1
nflated Sample	12.2	14.6	7.5	13.8	7.7	37.7	1.1	9.1	8.3	0.0
—Schedules Completed										
ed Sample	12.2	14.5	5.8	14.1	8.0	39.0	1.3	9.5	8.0	0.0
Inflated	12.2	14.4	5.9	14.0	8.1	39.4	1.3	8.9	8.1	0.0
-Schedules Completed										
ted Sample	11.8	15.5	17.5	12.4	6.2	30.9	0.0	7.2	10.3	0.0
Inflated	11.3	16.7	19.0	11.9	7.1	28.6	0.0	7.1	9.5	0.0
		THREE LIVE BIRTHS								
l Universe	11.4	21.7	6.1	18.1	8.7	29.1	0.6	7.1	8.4	0.0
nflated Sample	11.6	19.7	5.7	20.1	6.6	31.6	0.8	7.0	8.6	0.0
—Schedules Completed[1]										
ted Sample	11.9	19.5	6.4	18.2	6.4	32.3	0.9	7.7	8.6	0.0
Inflated	11.8	19.7	6.1	18.7	6.6	32.3	0.5	7.6	8.6	0.0
		FOUR OR MORE LIVE BIRTHS								
l Universe	10.4	30.3	12.7	19.9	8.1	24.0	0.0	3.6	1.4	0.0
or Fecund) Inflated Sample	10.4	27.2	13.6	23.5	8.0	21.6	0.0	4.3	1.9	0.0
or Fecund) Not Inflated	10.4	28.0	12.7	22.0	8.7	22.7	0.0	4.7	1.3	0.0

See footnote 1 to Table 12.

couples of given study status and number of live births

Study Status	Year of Marriage			Tenure		
	1927	1928	1929	Owner	Renter	Other
NO LIVE BIRTH						
Original Universe	29.5	30.6	39.9	39.0	57.2	3.8
Total Inflated Sample	28.3	33.5	38.2	43.9	54.3	1.8
Fecund—Schedules Completed						
Inflated Sample	24.1	39.4	36.5	48.9	48.2	2.9
Not Inflated	24.7	37.6	37.6	49.5	48.4	2.2
Sterile—Schedules Completed						
Inflated Sample	30.6	30.2	39.1	41.1	57.7	1.2
Not Inflated	31.3	31.3	37.5	41.3	57.5	1.3
ONE LIVE BIRTH						
Original Universe	29.8	32.0	38.1	45.0	53.3	1.7
Total Inflated Sample	25.9	38.3	35.9	44.1	53.9	2.0
Fecund—Schedules Completed						
Inflated Sample	23.9	35.8	40.3	42.3	54.8	2.9
Not Inflated	23.1	36.3	40.7	43.4	53.8	2.7
Sterile—Schedules Completed						
Inflated Sample	30.5	43.9	25.6	48.2	51.8	0.0
Not Inflated	30.3	43.4	26.3	47.4	52.6	0.0
TWO LIVE BIRTHS						
Original Universe	30.8	30.3	38.8	47.3	51.6	1.1
Total Inflated Sample	30.5	30.3	39.2	52.0	47.3	0.6
Fecund—Schedules Completed						
Inflated Sample	29.7	30.6	39.7	51.8	48.2	0.0
Not Inflated	29.2	30.5	40.3	51.3	48.7	0.0
Sterile—Schedules Completed						
Inflated Sample	35.1	28.9	36.1	53.6	42.3	4.1
Not Inflated	35.7	28.6	35.7	52.4	42.9	4.8
THREE LIVE BIRTHS						
Original Universe	33.9	33.2	32.9	39.2	59.9	1.0
Total Inflated Sample	34.3	32.2	33.5	41.0	58.2	0.8
Fecund—Schedules Completed[1]						
Inflated Sample	33.5	33.0	33.5	41.8	57.3	0.9
Not Inflated	32.7	33.2	34.2	41.9	57.1	1.0
FOUR OR MORE LIVE BIRTHS						
Original Universe	30.8	32.1	37.1	28.5	69.7	1.8
Total (or Fecund) Inflated Sample	30.9	34.6	34.6	30.9	67.3	1.9
Total (or Fecund) Not Inflated	30.7	33.3	36.0	30.7	67.3	2.0

[1] *See* footnote 1 to Table 12.

e 18. Median rental value and percentage distribution by rental value of dwelling unit for s of given study status and number of live births.

Study Status	Median Rental Value	Percentage Distribution by Rental Value of Dwelling Unit								
		Under $20	$20–24	$25–29	$30–34	$35–39	$40–49	$50–59	$60–74	$75+
NO LIVE BIRTH										
niverse	$37.07	9.4	6.8	12.0	14.6	17.4	17.2	12.4	6.8	3.4
ted Sample	35.56	12.6	8.2	13.7	13.5	17.3	13.7	10.7	6.6	3.6
chedules Completed										
Sample	37.22	3.8	9.1	16.7	14.4	13.6	17.4	18.2	3.8	3.0
ated	37.50	3.3	7.7	15.6	15.6	15.6	15.6	18.9	4.4	3.3
hedules Completed										
Sample	34.83	17.7	7.8	12.1	12.9	19.4	11.6	6.5	8.2	3.9
ated	35.17	16.0	8.0	12.0	13.3	20.0	12.0	6.7	8.0	4.0
ONE LIVE BIRTH										
niverse	35.05	11.4	8.5	15.6	14.4	14.5	13.8	10.7	5.1	6.1
ıted Sample	34.44	11.0	8.2	16.0	16.7	14.9	12.6	9.7	5.9	5.0
Schedules Completed										
Sample	34.44	8.6	9.1	15.2	19.3	15.2	11.2	10.7	6.4	4.3
lated	34.49	8.5	9.6	14.7	19.2	15.3	11.3	10.2	6.8	4.5
chedules Completed										
Sample	34.44	16.5	6.1	17.7	11.0	14.0	15.9	7.3	4.9	6.7
lated	34.38	15.8	6.6	18.4	10.5	14.5	15.8	6.6	5.3	6.6
TWO LIVE BIRTHS										
Jniverse	33.68	15.1	10.9	14.2	13.4	14.8	11.6	7.8	6.1	6.1
ated Sample	33.59	15.7	9.0	14.8	14.6	17.6	12.1	6.0	5.4	4.8
Schedules Completed										
l Sample	34.31	13.0	9.3	14.3	15.5	18.1	13.8	6.3	5.0	4.7
lated	33.99	12.8	10.0	14.9	15.7	17.0	14.0	6.4	5.1	4.3
chedules Completed										
l Sample	28.28	31.2	7.5	17.2	9.7	15.1	2.2	4.3	7.5	5.4
lated	28.57	30.0	7.5	17.5	10.0	15.0	2.5	5.0	7.5	5.0
THREE LIVE BIRTHS										
Jniverse	28.56	27.4	11.6	15.5	9.6	12.9	12.5	2.0	3.6	5.0
lated Sample	29.03	27.1	10.8	15.0	11.3	13.8	11.7	1.7	4.2	4.6
Schedules Completed[1]										
d Sample	28.79	26.9	11.6	15.3	10.6	13.4	13.0	1.4	4.2	3.7
flated	29.11	25.8	12.4	14.4	9.8	14.4	13.4	1.5	4.1	4.1
FOUR OR MORE LIVE BIRTHS										
Universe	19.76	51.2	14.3	12.9	7.8	5.5	4.6	1.8	0.0	1.8
Fecund) Inflated Sample	19.70	51.6	13.8	11.3	8.2	5.7	3.8	2.5	0.0	3.1
Fecund) Not Inflated	19.93	50.3	14.3	11.6	8.8	5.4	4.1	2.7	0.0	2.7

e footnote 1 to Table 12.

similarities may be observed for the couples with other numbers of children.

The reasons for the foregoing types of representativeness are simply that (a) within a given parity the interviewed couples are like those in the universe (partly because a deliberate stratification by rent was followed in selecting couples for interview), and (b) the foregoing inflation of the groups effects no substantial change in the descriptive characteristics within given parities of fecund or sterile couples and at the same time provides a presumably proper fecund-sterile ratio within each parity.

Since the inflated groups of fecund and sterile couples combined are fairly representative of the "original universe" within each of the several parities and since the total inflated group is representative of the "original universe" by parity itself, it follows that the total inflated group should resemble the "original universe" by descriptive characteristics when all couples, regardless of parity, are considered. The extent to which this holds true may be illustrated by the following:

	"Original Universe"	*"Total Inflated Group"*
Median Age — Husband	36.8	36.4
Median Age — Wife	34.2	34.0
Median School Grade Completed — Husband	12.0	12.0
Median School Grade Completed — Wife	12.1	12.1
Median Rental Value	$33.29	$32.81

E. Comparison of Couples in the Study With Those in the Household Survey

It is of interest to consider briefly the characteristics of the inflated group in relation to a universe larger than that of the 2,589 couples. As explained previously, the 2,589 couples are those eligible for the Study on the basis of information from the Household Survey. These couples were reported in the Survey as having the following characteristics: native white, Protestant, married during

1927-1929, husband under 40 and wife under 30 at marriage, neither spouse previously married, couple resided in a large city most of the time since marriage, and both husband and wife had at least graduated from grammar school.

The question naturally arises concerning the bearing of the above-mentioned selections on other descriptive facets of the Study sample. The best answer that can be made is based on a comparison between a few descriptive items for the couples in the inflated Study group and for all native-white, once-married couples with wife under 45 in the Indianapolis Household Survey.[31] First of all, the couples in the Study are heavily concentrated by age as compared with those in the Survey. The Survey included all wives 15-44, regardless of age of husband. Since the Study was confined to couples married during 1927-1929, in which the age at marriage was under 30 for the wife and under 40 for the husband, the resulting age limits (as of 1941) are 26-44 for the wives and 29-54 for the husbands.[32] Actually, over one-half of the wives in the Study fall into the 30-34 age group, since the popular bridal ages are 18-22. There is a corresponding concentration of husbands in the 35-39 age group, owing to the tendency of grooms to be a few years older than brides. The age-concentration of husbands, however, is not quite so marked as that of wives, owing to the less severe restrictions imposed on age of grooms than of brides in so far as eligibility for the Study is concerned.

The Study group is characterized by somewhat higher economic status (as measured by monthly rental value of dwelling unit) than is the Survey. For instance, 9.7 per cent of the Study couples as compared with 6.8 per cent of the Survey couples are in the "$60 and over" rental class. The percentages of couples in the "under $20" category are 18.2 and 21.8, respectively. The median rental values

[31] Items for the Survey group are taken from Whelpton, P. K. and Kiser, C. V.: Social and Psychological Factors Affecting Fertility. The Milbank Memorial Fund *Quarterly*, July, 1943, xxi, No. 3, pp. 221-280. (Reprint, pp. 1-80.)

[32] The younger age limits assume a minimum age at marriage of 15 for wife and 18 for husband.

are $32.81 and $30.64 for the Study and Survey couples, respectively. This somewhat higher economic status of the Study couples may be due chiefly to the restriction of the latter to wives and husbands who had completed at least the elementary grades and to husbands at least 29 years of age. Contrary to what might be expected, the higher economic status of Study couples than of Survey couples cannot be attributed to the restriction to Protestants, for Catholics constitute the major non-Protestant group in the Indianapolis Household Survey and are characterized by somewhat higher median rental values than Protestants.[33]

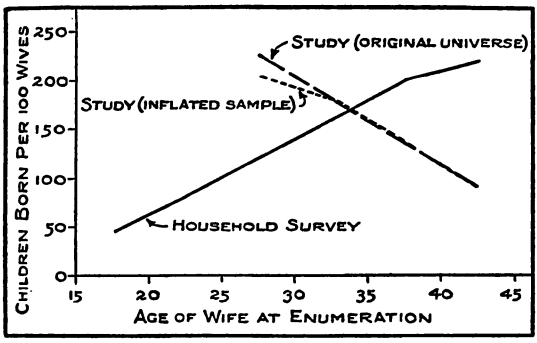


Fig. 1. Number of children ever born per one hundred wives by age of wife, for Protestant couples in (a) the Household Survey; (b) the original universe of couples eligible for the Study; and (c) the inflated Study sample. *See* Table 19.

Since the ratio of Protestants to non-Protestants is relatively high in the South, the restriction on religion might be expected to raise the proportion of southern-born persons in the Study. Apparently this restriction is more than offset by the restrictions on education and years lived in a large city since marriage. At all events, only 10.8 per cent of the husbands and 10.3 per cent of the wives in the inflated Study group are southern-born as compared with 13.5 per cent and 12.7 per cent, respectively, in the Household Survey.

Finally, one may ask what bearing the qualifications for eligibility have on fertility. Before making comparisons, however, it is necessary to keep in mind the age and age-at-marriage characteristics of the Study couples. Since the eligible couples were married during 1927-1929, all Study wives under 30 at enumeration in 1941 were married before their 19th birthday, and over two-thirds before their

[33] Whelpton and Kiser, *Ibid.*, p. 231. (Reprint, p. 11.)

Table 19. Number of children ever born per 100 wives by age and age at marriage for Protestant couples in (a) the Household Survey, (b) the original universe of couples eligible for the Study and, (c) the inflated Study sample.

Age of Wife at Enumeration and at Marriage	Household Survey	Study	
		Original Universe	Inflated Sample
	CHILDREN BORN 100 WIVES		
Age at Enumeration: 25–29	120	226	205
Age at Marriage: Under 17	249	243	217
" " " 17–19	175	187*[a]	179*[a]
Age at Enumeration: 30–34	158	180	181
Age at Marriage: Under 17	293	236*	249*
" " " 17–19	220	191	190
" " " 20–22	151	162	164
Age at Enumeration: 35–39	199	135	136
Age at Marriage: 20–22	181	146	146
" " " 23–25	137	134	135
" " " 26–28	99	104*[b]	107*[b]
Age at Enumeration: 40–44	219	91	90*
Age at Marriage: 26–28	129	102	93*
" " " 29–31	69	58*[c]	—
	NUMBER OF WIVES		
Age at Enumeration: 25–29	7,167	253	218
Age at Marriage: Under 17	605	176	148
" " " 17–19	2,162	77[a]	70[a]
Age at Enumeration: 30–34	6,857	1,387	1,105
Age at Marriage: Under 17	651	42	39
" " " 17–19	1,964	755	616
" " " 20–22	1,810	590	450
Age at Enumeration: 35–39	6,038	780	571
Age at Marriage: 20–22	1,705	253	178
" " " 23–25	967	449	347
" " " 26–28	503	78[b]	46[b]
Age at Enumeration: 40–44	5,283	163	82
Age at Marriage: 26–28	420	125	75
" " " 29–31	179	38[c]	7[c]

* Based on 25-99 cases (see numbers in lower part of table).
[a] Age at marriage: 17-18.
[b] Age at marriage: 26-27.
[c] Age at marriage: 29.

17th birthday. Conversely, wives 40-44 in 1941 were married at ages 25-29.[34] In general, therefore, whereas the younger women eligible for the Study married very young, the older women married comparatively late. Because of this fact, and because duration of marriage is held virtually constant, the age-specific cumulative fertility rates (based on total number of children ever born) of wives in the Study vary inversely with age of wife. In the population as a whole, of course, the total past fertility varies directly with age of wife. The situation is shown graphically in Figure 1, based on Table 19. Thus, at ages 25-29 the number of children ever born per one hundred wives is considerably higher for the Study than for the Survey. At ages 30-34 the difference is smaller but in the same direction. At ages 35-39 the order is reversed and the difference is important. At ages 40-44 the rate for the Study is less than half that for the Survey.[35]

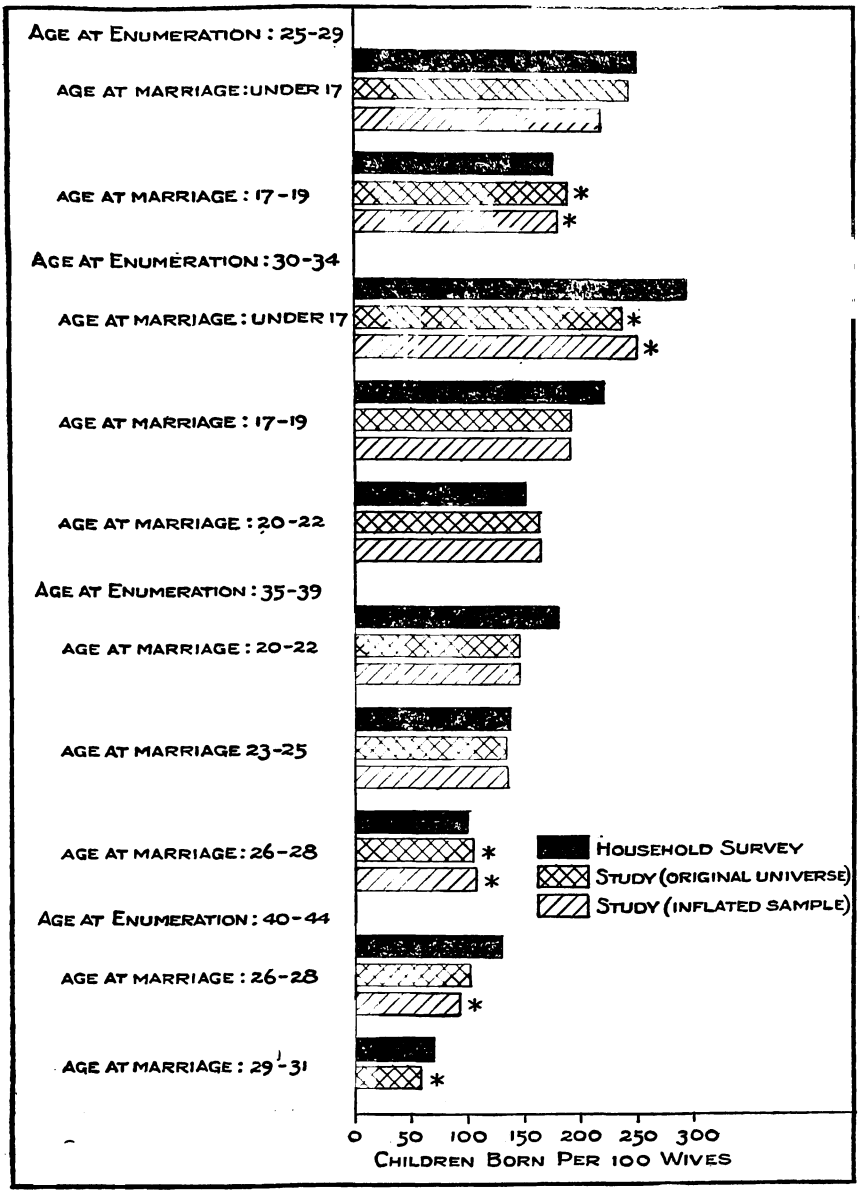
Obviously, therefore, simple age-specific comparisons are not sufficiently refined for comparisons of the Survey and Study couples with respect to fertility. Age at marriage as well as age must be considered. When this is done, as in Figure 2, the fertility rates for the Survey and Study couples become much more similar in magnitude and in pattern of variation. The differences in magnitude that do exist are rather consistently in the direction of higher rates for the Survey than for the Study couples, but this would be expected in view of the educational and urban residence restrictions of the latter group.

Summary

The Household Survey of Indianapolis yielded a total of 2,589 couples qualifying for inclusion in the intensive Study of Social and Psychological Factors Affecting Fertility. Because the number

[34] Wives 30 or over at marriage were not eligible for the Study.

[35] In the above, the Survey data (like those for the Study) are restricted to Protestant couples. Age-specific rates for couples of all religions in the Survey differ very slightly because the Survey is heavily weighted by Protestants. *See* Whelpton and Kiser, *Ibid.*, p. 229. (Reprint, p. 9.)



* Rate based on 25-99 cases.

Fig. 2. Number of children ever born per one hundred wives by age and age at marriage for Protestant couples in (a) the Household Survey; (b) the original universe of couples eligible for the Study; and (c) the inflated Study sample. *See* Table 19.

of one and two-child families planned as to size was much larger

than the corresponding number of families with no children, or with three or more, it was desirable to sample the one and two-child groups. Similarly, the high proportion of childless couples classified as relatively sterile led to the secondary sampling of sterile childless couples. The primary sampling ratios adopted were designed to secure approximately equal numbers of completed schedules for fecund couples of each parity planned as to family size, couples with four or more children being combined into one group. The sample for each parity was stratified by rental value of the home.

For various reasons the interviewers were unable to fill out schedules for, or even to call upon, all of the couples assigned to them. Some of the couples had moved away from Indianapolis or to an unknown address, some were not found at home at repeated visits, others were seen but were not interviewed for miscellaneous reasons. Available tests indicate that the omission of these couples causes no substantial bias in the final results.

Approximately 11.1 per cent of the couples seen by interviewers refused to cooperate in the Study. Owing to a higher proportion childless, the average number of children per family is smaller for the uncooperative than for the cooperative couples. The differences between the two groups are negligible for the remaining items on the Survey schedules, but may be important for certain items on the detailed Study schedules. Hence, the exclusion of the uncooperative couples may have introduced some bias.

The sampling plan made necessary the adjustment of any summary rate or average computed from data obtained from couples of all parities combined. Provision for automatic adjustments of this type was made by "inflating" the sample. This was done by duplicating predetermined numbers of punch cards, selected at random, for couples of given parity. Tests indicate that the total inflated group is very similar to the original universe of eligible couples not only with respect to distribution by family size, but also with respect to various other descriptive items.

The number of children born for 100 wives by age at marriage and current age of wife is somewhat lower as a rule for couples in the Study than for other once-married Protestant couples in Indianapolis. The differences probably are due to the exclusion of couples from the Study if either the wife or husband had not completed the eighth grade, or if the couple had not lived in a large city most of the time since marriage.