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ANALYSIS OF ADOLESCENT FERTILITY IN A METROPOLITAN AREA:
THE CHICAGO EXAMPLE

Contract #: AID/SOD/PDC-C-0055

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ANALYSIS OF ADOLESCENT FERTILITY IN A METROPOLITAN AREA:
THE CHICAGO EXAMPLE

INTRODUCTION

Hannah Meara, Ph.D.

Family planning professionals throughout the world are concerned with the problem of understanding the extent and nature of adolescent fertility in the areas in which they work. The problem of methods and approaches for investigating adolescent fertility is considerable for there are more facets to the occurrence than any single person or even any single disciplinary approach can encompass. It is the purpose of this report to provide a first step towards the solution of this methodological problem. It does so by reporting a variety of discipline based approaches to understanding adolescent fertility in a metropolitan area and by using the example of Chicago as the case in point.

It is the intent of the Training and Research Center Staff of Planned Parenthood Association, Chicago Area, to provide in this report examples of the much wider variety of approaches that may be useful to an analysis of adolescent fertility. Readers should note that productive ways to understand adolescent fertility are by no means limited to the analysis methods presented here. Instead, they should serve as models for the particular kinds of analysis methods which they are and as indica-

tors of the greater variety of methods which may also be used. They were selected for their variety and for their promise.

Adolescent fertility behavior does not take place in isolation from the ongoing society in which it resides; it is fully integrated with other aspects of daily life in a metropolitan area. Understanding that this behavior is also very personal and very individual we, nevertheless, emphasize those aspects of it which are demographic, social interactional and economic. Other promising approaches would be psychological, anthropological, historical, and biological.

The first chapter presents a demographer's approach to the analysis of adolescent fertility in a large city, an approach which could be utilized in almost any geographically defined area. It provides a very broad picture of adolescent fertility trends, and particularly of trends in births and illegitimacy, for the city of Chicago. It reveals trends for the city as a whole from 1970 to 1976, for the 76 community areas within the city, and for the 12 community areas which contribute most to those rates. As is customary in a demographic analysis the chapter investigates the relationships between certain socioeconomic factors and adolescent fertility rates.

The second chapter provides a review of a significant body of the published literature on adolescent fertility determinants from a more intimate social

interactional perspective. Assuming that a major factor in the determination of adolescent fertility behavior is the adolescents' understandings about conception and contraception, this chapter reviews published research on that broad subject. Then it looks at the effects of adolescents' experiences in a variety of social interactional contexts on their fertility. Then it proceeds to a consideration of the process of cognitive adaptation of relevant information, the process which is the point of intersection within each individual between social interaction, personality and information.

For the third chapter and example of an approach to the analysis of adolescent fertility in a metropolitan area we turn to an analysis of survey data on the availability of contraceptive services to adolescents. This analysis demonstrates how one can achieve a broad coverage of information on an aspect of adolescent fertility behavior over a wide geographic area. It shows how sociologists gather information and how they bring order to it for purposes of furthering our understanding. Differences in availability of services are related to the wider context in which agencies and clinics operate, to the geographic areas of the city with their associated socioeconomic differences.

Finally, we come to the approach that economists take to the understanding of adolescent fertility. Economists are skilled at the analysis of cost factors

in human behavior. They perform their analyses through the use of abstract models which clearly show the factors which contribute to an economic state. The chapter introduces readers to some economic models of the cost of having a child and describes how such models may be adapted for use in a wide variety of human circumstances.

It is our hope that readers will find in these chapters useful ideas and approaches for their own analyses of adolescent fertility in their own areas of the world. To perform analyses in any context requires adaptation to the factors which are important in that context. Readers should enter these chapters with the expectation that they are examples of methods which have been used in one city, Chicago, and that to be used elsewhere they may and should be changed and adapted.

The Training and Research Center of Planned Parenthood/Chicago Area is grateful to the Agency for International Development (contract number AID/SOD/PDC-0055) for support which permitted the conduct of the work herein reported. The contents, however, are the Center's responsibility and do not reflect points of view of staff members of AID.

The project was initiated under the direction of Brian Copp, formerly Director of Research for the Training and Research Center. Its participants are grateful to him for his direction and for the significant contributions to the work which he made.

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Chapter I

A DEMOGRAPHIC ANALYSIS OF ADOLESCENT FERTILITY:

THE CASE OF CHICAGO, ILLINOIS, 1970-1976

Patricia A. MacClarence, Ph.D. Candidate

This chapter presents a demographic analysis of trends in adolescent fertility for a limited geographic area. It uses the example of trends in the city of Chicago, Illinois for the period of 1970 to 1976 to demonstrate how such an analysis may be conducted. The analysis is conducted first for the city as a whole and then for specific, defined areas within the city. As is typical of a demographic approach to analysis of fertility, the present analysis looks at trends over time and between areas and seeks to understand adolescent fertility rates in terms of their changing and contrasting patterns. Further understanding of contrasting rates for different areas is sought through an analysis of the statistical association of certain demographic factors with those rates. Although this analysis is presented for the city of Chicago, the procedure is meant to be adapted for use in any areas where appropriate statistics are obtainable.

An Area Analysis of Adolescent Fertility

An analysis of fertility requires more than a description of current rates for an area. Such data are only meaningful when placed in the context of such comparative data as are available. In the present case,

data for the city of Chicago, we utilize comparisons with rates for the nation as a whole and with rates for other time periods in the same area. In seeking to understand such rates, we analyze how they vary among different age and race groups within the area. Where there are factors which affect fertility rates, such as the incidence of abortion in the city of Chicago, appropriate data should be included in an analysis. Since appropriate data are not currently available,* such an analysis has not been accomplished for this report. Associated with the general concern with adolescent fertility rates is a concern with the rates of increase of illegitimacy; these data will also be part of the present analysis.

Birth statistics compiled by the Chicago Board of Health were the primary data source for this part of the report, rather than those from the Illinois State Department of Statistics, as they are aggregated for the city as a whole, by single years of age and by legitimacy. The state statistics were used for information regarding the race composition of city births. As this is a non-census year, there is no current, accurate population count. Thus the rates were calculated using the City of

*Locating abortion statistics for the city has proven one of the more problematic aspects of this report. What statistics are available are not tabulated for the City of Chicago. The non-comparability of the state data with the city's population and trends limits the ability to analyze trends of abortion usage and their effects on adolescent pregnancy in Chicago. Therefore, any suppositions made are derived from information regarding state and national trends. They cannot be verified until the state data are tabulated, or aggregated, for the city.

Chicago population estimation-projection prepared by Donald J. Bogue and Kenneth E. Hinze.* This projection procedure has been constructed as a model adaptable cross-nationally.

Chicago Area Adolescent Birth Rates

Birth rates for adolescents in Chicago are revealed on Figure 1 and for the nation on Figure 2. Figure 1 contains birth rates for each of three age categories: 14-17, 18-19, and 20-24. Figure 2, using the same age categories, provides a comparative picture. Adolescents less than 14 years of age have been omitted since their birth rates are considerably lower than are rates from those 14 years of age and older. The birth rate for females 11-14 has declined slightly (9.4%) since 1970. Most of the change for these females can be attributed to a declining Black birth rate (Figure 3). Since 1970 there has been a definite drop in the actual number of births to these females (from 419 to 356). The number of non-Black births remains so small that despite the decrease in their population it is impossible to distinguish any real trend.

*This projection employed the POPPROJ computer program (Donald Bogue and Louise Rehling, RFPPI Manual 12, CFSC, University of Chicago). The procedure, based on a set of national parameter forecasts which are adjusted to local conditions, produces age-sex-race specific population projections. The general forecast method is the cohort-component method. Procedure and projections are pending.

Comparing the Chicago adolescent birth rates (Figure 1) with the national rates (Figure 2) indicates that the Chicago birth rates are significantly higher for all ages. This should be expected, however, considering two findings of a recent national study (Zelnick and Kantner, 1977:56) of teenage sexual behavior which indicates that 1) central city residence is positively associated with adolescent sexual activity and 2) the "largest and most persistent differences in sexual activity among teens" are racial such that at any age half as many white as Black teens report sexual activity. The latter point is relevant to an analysis of the Chicago area since in 1975, 50.7%, as opposed to 14% nationally, of the city's 11-19 year olds were Black.

The overall picture for Chicago demonstrates a pattern of decline in adolescent birth rates. Starting in 1970 the birth rate began a slow but steady descent. By 1974 the adolescent rate was 51.7, down from 55.9, or 4.2 fewer births per 1000 adolescent females. There was a slight increase between 1974 and 1975 and again between 1976 and 1977. Figure 4 shows the relationship between these overall trends for 15-19 year olds and birth rate trends over the same seven-year period for each component of the adolescent years. It shows that the overall trend reflects that of those women who have experienced the greatest change, women 18-19 years of age.

Figure 1. Number of births per 1000 women ages 20-24,
18-19 and 14-17, Chicago: 1970-1977

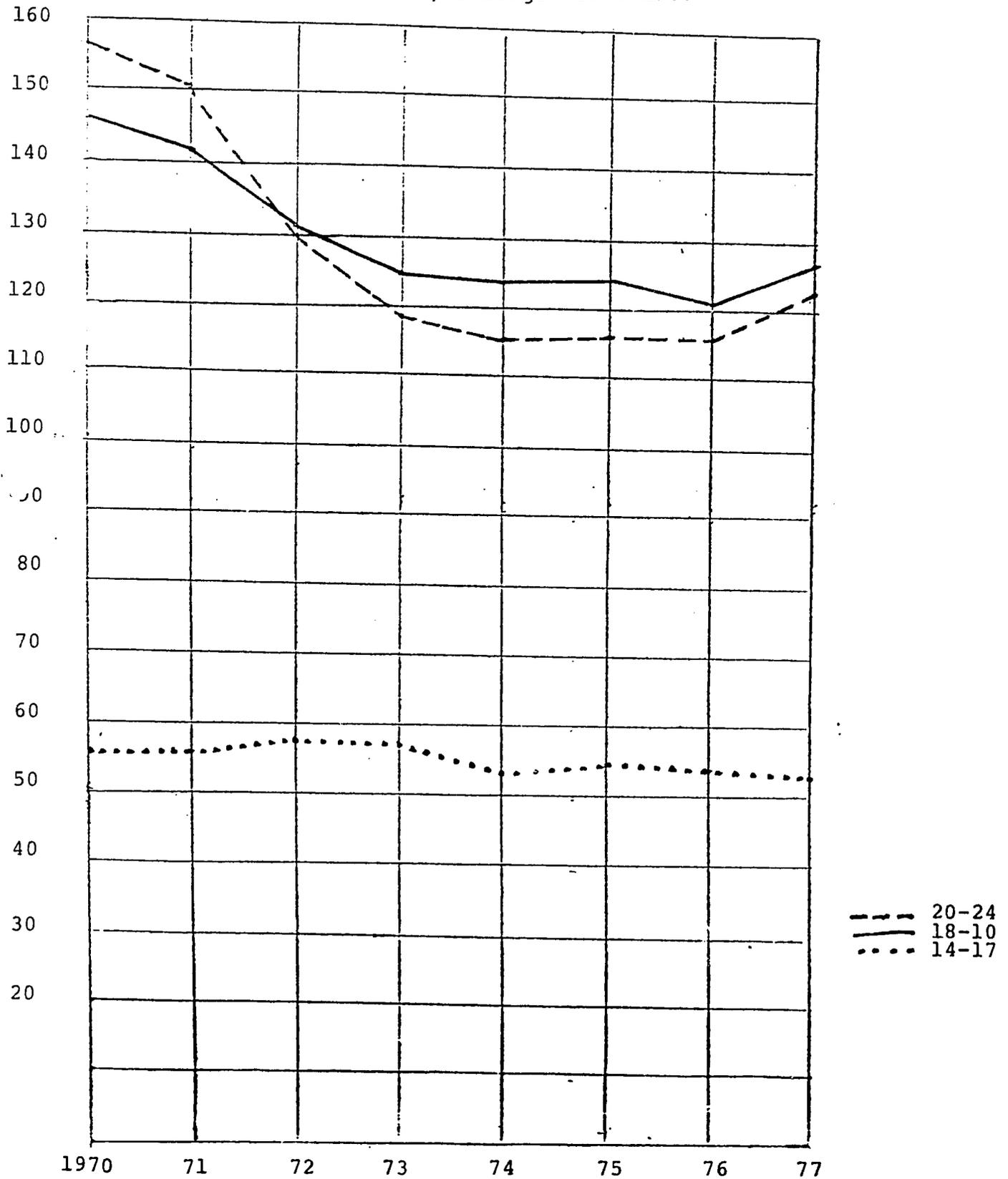


Figure 2. Number of births per 1000 females aged 14-17, 18-19, 20-24, United States, 1970-1974. Source: 11 Million Teenagers. Alan Guttmacher Institute. Fig.8.

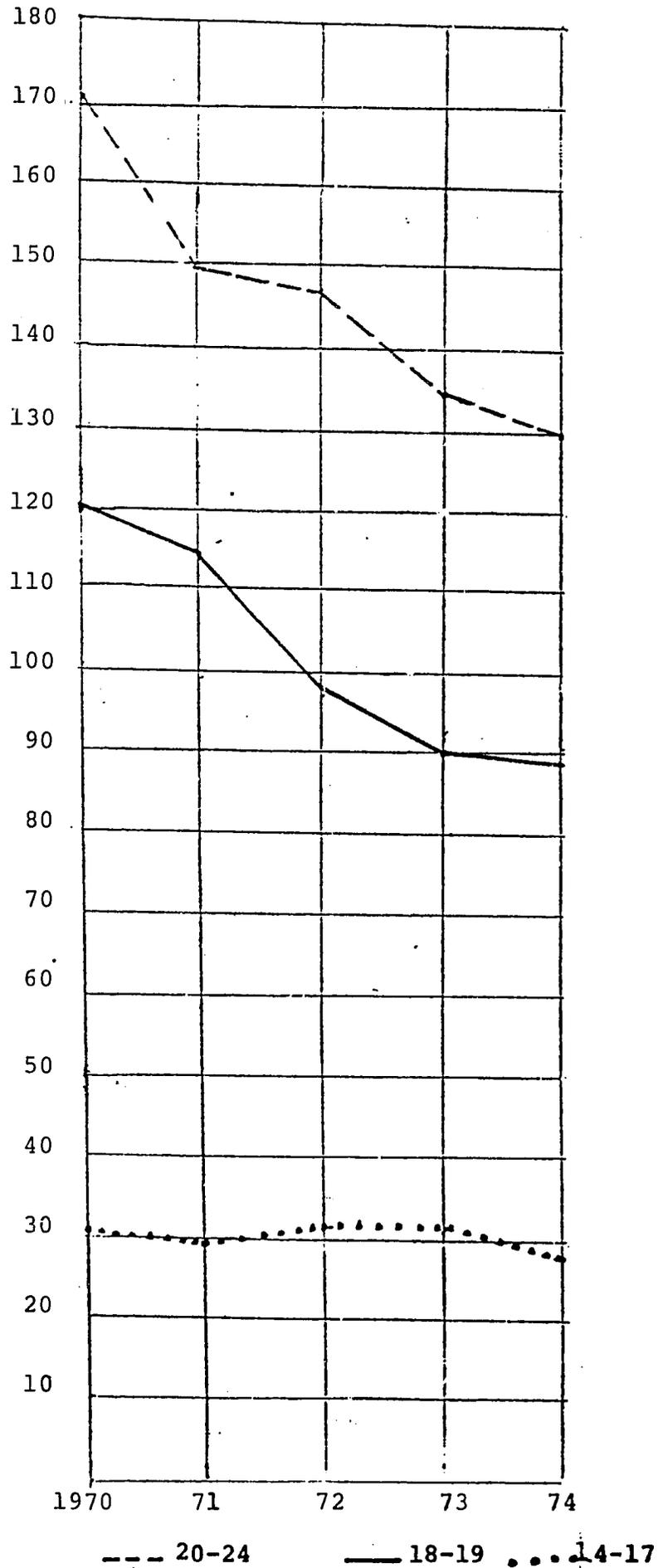


Figure 3. Number of births per 1000 females 11-19 and 11-14, by race, Chicago, 1970-1976

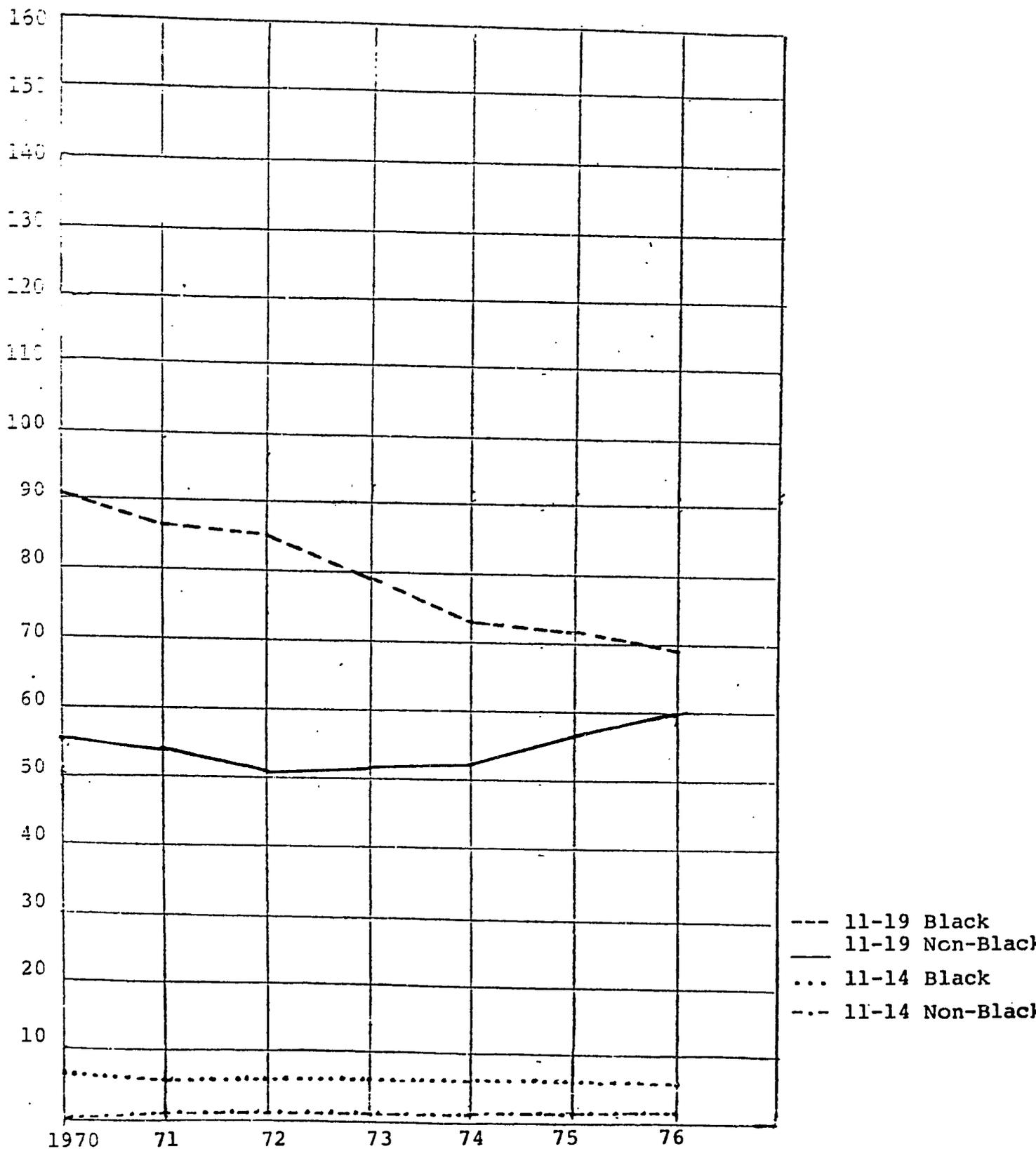
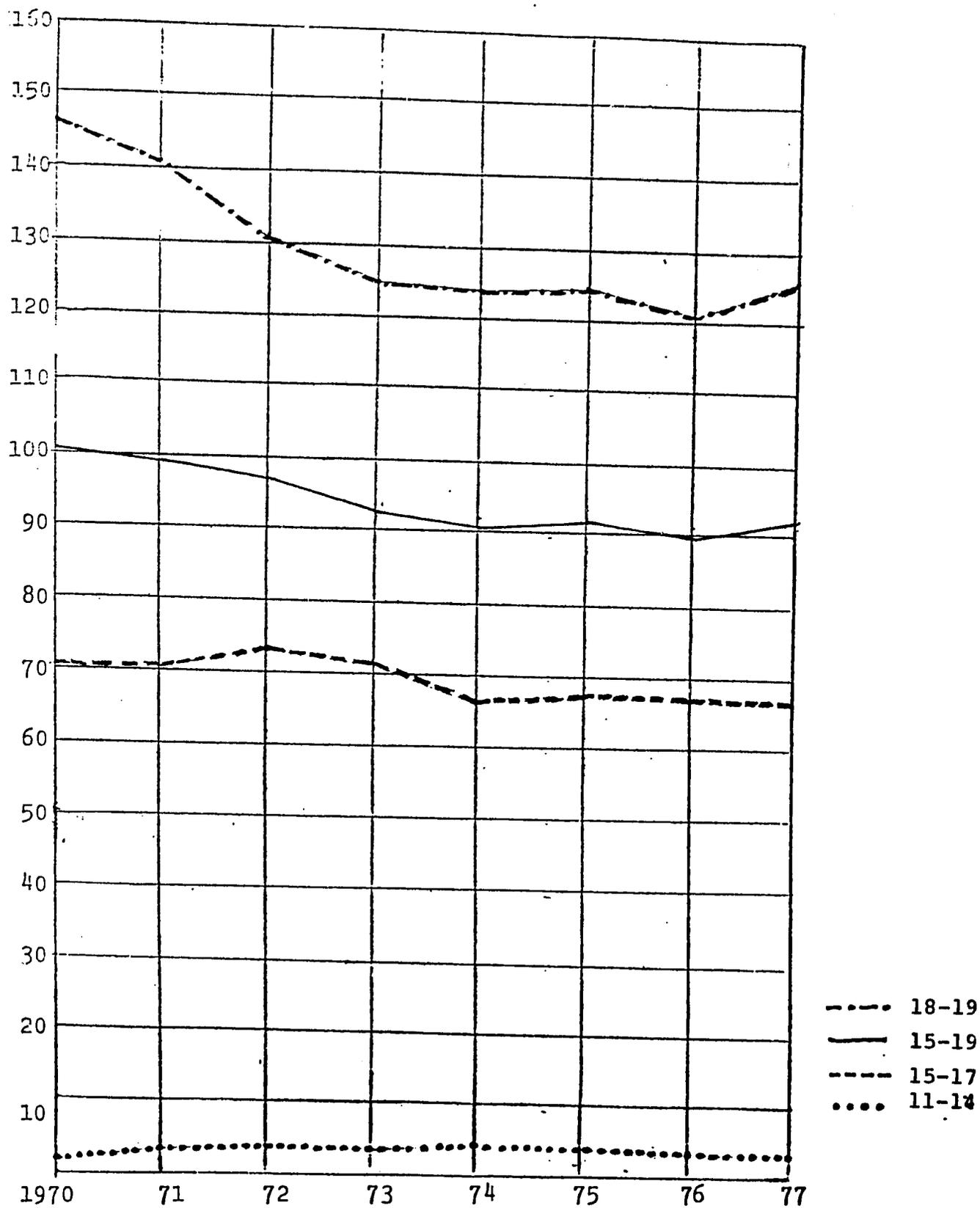


Figure 4. Births per 1000 females for ages 11-14, 15-19, 15-17, and 18-19, Chicago, Occurrence, 1970-1977



Breaking down the birth rate of 15-19 year olds further emphasizes the relative difference in birth patterns by increasing age. Where the birth rate of women 18-19 follows the pattern already described, with an overall decline of 13% (19 fewer births per 1000 women) that of females 15-17 indicates an initial increase of 4%, and an overall decline of 4.7% (3.3 births per 1000 women). Despite the relative difference between the two groups, the decreasing birth rates for each group are important insofar as each represents a decrease in actual numbers of births as well as a decline in the number of females, the former generally of greater magnitude than the latter.

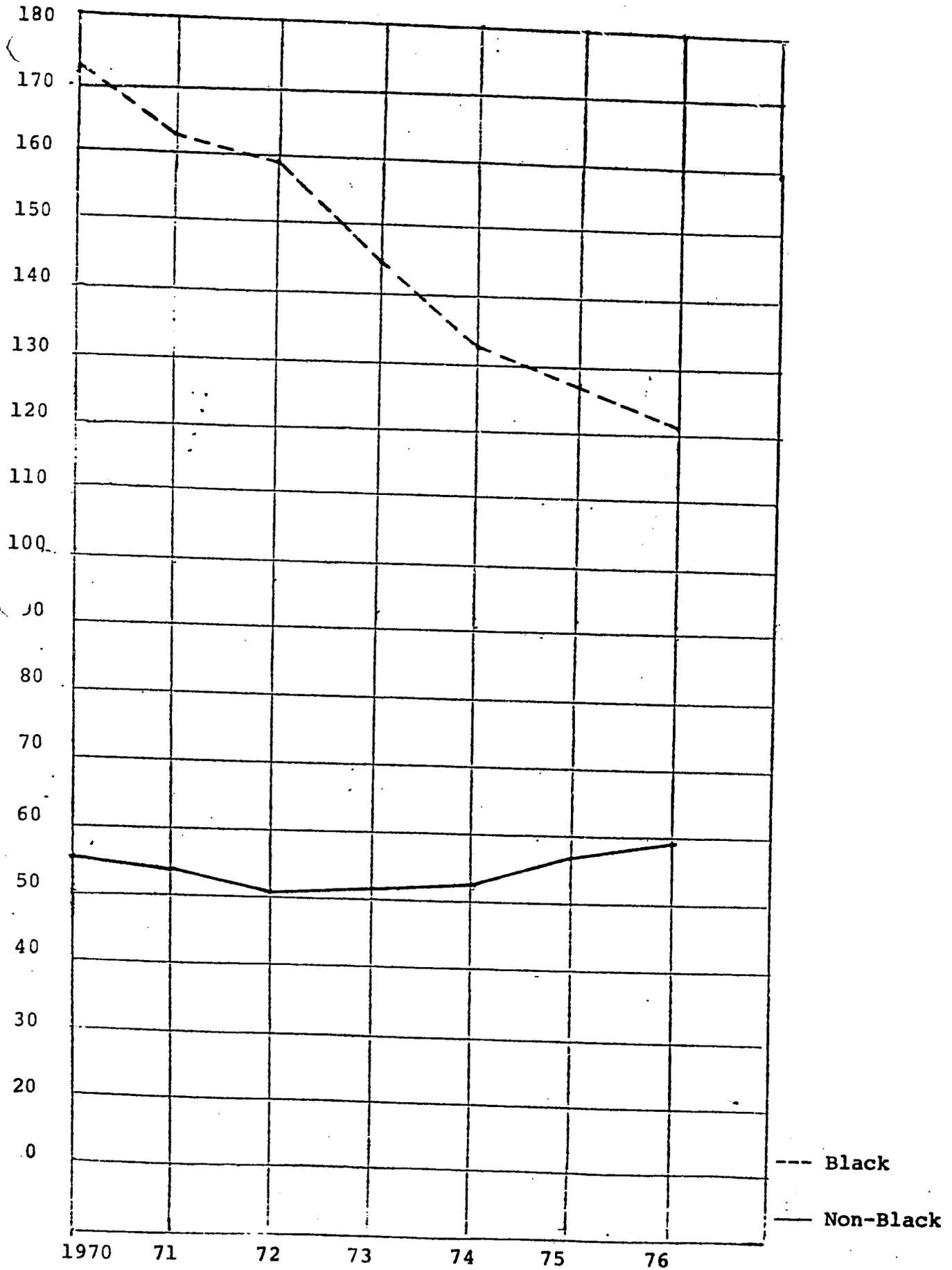
State data for 1976 indicate about 2/3 more abortions to 18-19 year olds than 15-17 year olds.* The 18-19 year olds experienced 61% of the adolescent abortions, 15-17 year olds 37%. But the abortion rate of the 18-19 year olds was only 43 abortions per 1000 births greater than the younger group, indicating that the smaller decline in births to 15-17 year olds accounts for the differences in the two groups. Insofar as there has been less of a change in the number of 18-19 year olds, but the decline in the number of their births is of greater magnitude than for 15-17 year olds, adolescent childbearing has become a greater problem for the younger group since 1970.

*These data were available only for 1976.

Probably the most noticeable difference between Chicago birth rates and the national rates is that, although they paralleled the national trend and have been fairly steadily and rapidly declining, by 1972 the Chicago birth rate for women 18 to 19 years of age exceeded that for women 20 to 24 years of age (see Tables I and II)*. In 1970 the birth rate for women 20-24 at 157 births per 1000 women was 7.4% greater than that for the 18-19 year olds. However, by 1972, their birth rate had dropped 16.9% while that for 18-19 year olds dropped only 10.2%, bringing the birth rate of the older women 0.62% below that of the younger woman. By 1974 the gap had peaked with the birth rate of the 18-19 year olds 6.9% greater than that of the 20-24 year olds. Between 1976 and 1977 the birth rates for both groups increased substantially for the first time since 1970, but the birth rate for the 18-19 year olds remained higher than that of the 20-24 year olds (127.6 and 123.4 respectively). Consistent city trends toward increased age of marriage, delayed child-bearing (mean age 23.6 in 1970, 24.5 in 1976) and perhaps increasing use of abortion among the older group have led to this pattern and maintained it contrary to the national trend which indicates a parallel decline

*By examining both the change in percent contribution by single year of age for 1970-1977 and absolute change in the number of births, using 1970 as a base, we were able to ascertain that this was almost entirely due to the more rapid decline in births to the older women.

Figure 5. Number of births to females 15-19, by race, Chicago, 1970-1976



for these groups with the birth rate of the older group approximately 40% greater (11 Million Teenagers. 1976:12).

There are also differences in birth rates between Black and white adolescents in the Chicago area (Figure 5). Although the Black adolescents still contribute the majority of adolescent births (69.2% in 1976) their birth rate has declined 23.9% since 1970 while the birth rate for non-Blacks has increased 9.4% thus narrowing the gap between these groups 22.5%. Kantner and Zelnick's national survey indicated a substantial increase in the percent of Black teenagers not only using contraception but using the more effective forms of contraception. Their findings also indicate a 4% decline in the numbers of illegitimate Black births but no increase in rates of early marriage. Considering the racial composition of the city, if this trend holds for Chicago this would explain a significant portion of the difference in Black birth rates. Part of this decline is almost certainly due to an increasing number of women choosing to terminate their pregnancies by abortion, though we are presently unable to determine what changes, if any, there have been in the use of abortion among these females. Data for the state of Illinois indicate a slight increase in the abortion rate for Blacks between 1976 and 1977 and for each year the non-Black abortion rate is

slightly less than half that of the rate for Blacks*.

Chicago Area Adolescent Illegitimacy Trends

As overall adolescent childbearing has declined since 1970 this has not been the case with illegitimacy. Since 1970 there has been a steady and rapid increase in the percentage of births to adolescents who are unmarried. Figure 6 reveals trends over an eight-year period (1970-1977) for each of four age groupings as well as the trend for 15 to 19 year olds as a whole. It shows that as age increases, the percentage of births that are illegitimate decreases. Over the eight-year period the percentage of births that were illegitimate increased directly by age of adolescents (Table I). For all age groupings used in Figure 6, increases in the course of the eight-year period are substantial. Illegitimacy among the 11 to 14 year olds has remained around 98% while among 15 to 19 year olds it has increased 30% (from 57.3 to 74.4%) (Table I).

While a greater percent of births to adolescents are illegitimate, adolescent illegitimacy as of 1976 accounted for 12 percentage points less than in 1970 of all illegitimate births in the city, as there has been a consistent increase in the percentage of illegitimate births among older women (see Table I). Though we were

*The abortion rate for Blacks in 1977 at 616 abortions per 1000 births was 11 per 1000 greater than in 1976 and 56.2% greater than the non-Black rate which in 1977 was 346 abortions per 1000 births.

Figure 6. Percent of births which were illegitimate, by age groups, Chicago, 1970-1977

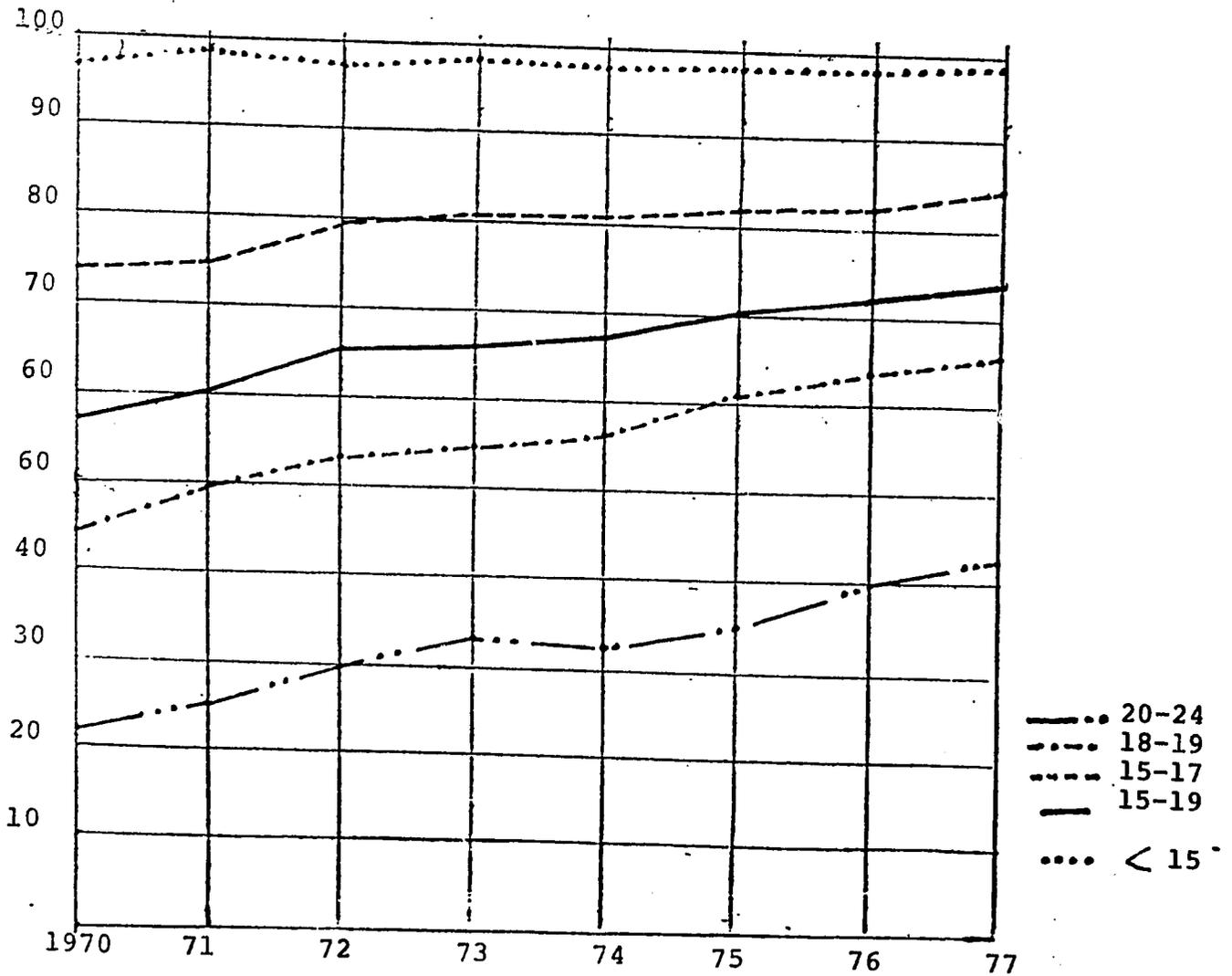


Table 1. Illegitimate Teen Births as a Percent of All Teen Births by Single Years of Age
1970-1977, Chicago Occurrence

	1970	1971	1972	1973	1974	1975	1976	1977	% diff. 1970-1977
11	100.00	100.00	--	100.00	66.66	100.00	--	100.00	--
12	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	--
13	100.00	98.88	100.00	100.00	100.00	100.00	97.50	96.96	-03.04
14	96.94	98.26	97.51	98.50	97.34	97.17	97.79	98.51	+01.61
15	91.72	91.48	94.29	92.36	93.19	94.36	94.85	94.86	+03.42
16	78.44	80.44	82.74	84.15	85.37	85.61	85.29	87.64	+11.72
17	65.05	65.79	70.76	72.19	72.58	75.42	76.47	79.91	+22.84
18	50.33	55.31	59.27	59.91	62.78	65.15	67.62	71.30	+41.66
19	40.42	43.78	48.86	50.78	51.77	56.24	58.92	61.64	+52.49
<hr/>									
<u>illegit. births</u> <u>all teen births</u>	58.57	61.73	66.54	67.76	68.41	71.21	72.87	75.09	+28.20
<hr/>									
<u>15 illegit.</u> <u>15 births</u>	97.46	98.42	97.59	98.73	97.67	97.78	97.78	98.25	+00.81
<hr/>									
<u>15-19 illegit.</u> <u>15-19 births</u>	57.30	60.41	65.40	66.62	67.53	70.23	72.01	74.41	+29.86

Source: Chicago Board of Health

7/25/78

unable to calculate illegitimacy rates [number of births per 1000 unmarried women] the fact that the figures indicate increasing percentages of illegitimacy among older adolescents, as well as among women over 20 years of age, would seem to point up an overall pattern of delayed marriage and of less inclination on the part of the unmarried parent to choose marriage as a solution to the problem of a pregnancy.

A Sub-Area Analysis of Adolescent Fertility

This section of our analysis of adolescent fertility focuses upon comparisons between sub-areas of the wider area of concern, in this case upon 76 well defined areas within the city of Chicago, Illinois. First, this section will introduce the 76 areas which are used in the analysis, presenting them as one example of the many types of sub-area analyses which would be appropriate, depending upon the availability of data in the particular area where such a study was being conducted. Second, it will present data on adolescent fertility in the 76 sub-areas of the city.

Sub-Areas of Chicago: 76 Community Areas

Analysis of data on such topics as adolescent fertility are investigated by means of sub-area analysis because of the common association of a variety of social characteristics, which are distributed differentially in the wider area, with the topic of concern. A break-

down of the analysis into areas which differ in terms of certain important characteristics, largely having to do with socioeconomic factors, facilitates greater understanding of the overall problem.

The units of analysis for this section of the report were the 76 Chicago Community Areas. These are areas which were delimited in the 1920s by Ernest Burgess and his students in an attempt to reconcile a number of different criteria used in defining communities. Their research emphasized "some general and persistent components of ecological structures -- the relationship between social and spatial distance and the resulting aggregation of populations into functionally interdependent 'natural community areas,'" (Hunter, 1974, p. 5) as well as natural processes which would change the structure of these areas (urbanization, migration, neighborhood decay...).

The ecological structure of all of these areas has undergone widespread change such that today it is recognized that they are no longer valid social functioning units. Though many of the defined areas are presently recognized by residents as "their community" areas, the population distribution and characteristics as well as the ways in which the land is used have undergone such rapid change that, for most researchers, they are merely a recognized method of sub-dividing the city. The relevance of the community area concept for this report

is that each area is composed of several census tracts, from which the state aggregates residence data for community area reports (e.g., Vital Statistics data).*

Adolescent Fertility in 76 Community Areas

Because of the great variation in population characteristics and distribution between areas, two different methods for observing adolescent childbearing were utilized, 1) the percent of births to adolescents in an area, and 2) the percent of adolescent births each area contributes to the city's yearly total of adolescent births. The first method offers a measure of areal adolescent fertility. This is limited in evaluative power in that the area variations change over time and area compositions are known only for 1970. Thus the second method indicates those areas of the city in which adolescent childbearing is of greatest magnitude. An investigation of various socioeconomic indicators within these areas suggests variables characteristic of high levels of adolescent childbearing. Comparing the distribution within the city of the percent of births

*Data from the Chicago Department of Health were considered. However, these are somewhat deficient in that they are recorded according to place of "occurrence" rather than place of residence (as with the State of Illinois data). This means that several areas of the City are disproportionately represented as having high occurrences of births when the explanation for this is the location of a hospital or home for unwed mothers within these particular areas. Thus, for the purposes of community area comparisons the State data which are recorded by residence of mother and aggregated by community area are to be preferred.

to adolescents in each area between 1970 and 1976 (see Figures 7 and 8) suggests relatively stable groupings of areas of similar percentage. The low percentage areas are clustered to the North, Southwest of the central city continuing down the Southwest side and to the extreme Southeast. Those of high percentage are clustered in the central city area and the South side. These are well delineated trends, consistent over the seven-year period.

By 1976, there were four additional areas in which births to adolescents represented between 30-40 percent of the area births. As can be seen, these changes follow the original cluster pattern. The largest change in this percentile group occurred in the southeast section of the city, which is known to be one of the most dynamic areas of economic and racial transition in Chicago. The impact of the actual composition change, however, cannot be documented until the 1980 census since that is our only source of such data.

Of the areas with more than 30% adolescent births, the population of all but one was more than 95% Black (area 28 was 72.2%) (Community Area Project 1976). Table 18:24); all were above the city mean for persons below poverty level (p.112), and all were well above the mean percent of children 14-17, and 6-13. Thus, not only did they have more teenagers at risk, but they had the potential for continued high exposure. Later in the

report the importance of areal economic and racial composition as predictors of adolescent childbearing will be discussed.

Of the areas below 10% adolescent births, all areas except one are practically of negligible Black population; all but one are well below the mean for percent of persons below poverty level (area 32 was 22.1%), five are only slightly above for 6-13 year olds. By 1976, five of these areas were slightly above 10% adolescent births. Thus the opposite socioeconomic characteristics from the high group seem to indicate areas of a low proportion of adolescent births.

The case of area 32 offers an excellent example of the limitations of the community area definitions. Those sections of this area which are residential are on the area's borders. They are included in health, school and police districts different from each other as well as from the Loop. The adolescent births would most likely represent a neighborhood influence from areas to the south and west; both are areas of high adolescent childbearing.

It is for such cases as area 32, in which a percent distribution of teen births appears extreme but in fact represents a relatively minute phenomenon, thus one of minimal explanatory value, and for which the existing community area definition is misleading, that the second method, comparing the percent of births each area contributed to the total of adolescent births, was initiated.

A comparison of percent contributions indicates those areas in which adolescent childbearing is of greatest magnitude. If births were equally distributed among the areas, each would contribute 1.32% of the city's adolescent births. In 1970 the percent contributions (Table II) ranged from 0.02 to 7.22, with 25 areas contributing more than 1.32 percent, 12 of which contributed 52.0 percent. By 1973, there were 27 areas above the mean with a slightly smaller range (0.04 to 6.53); 12 areas still contributed slightly more than half. In 1976 the range eased slightly (0.02 to 6.23); once again 27 areas were above the mean, with the same 12 areas as in 1973 contributing half of the adolescent births. These 12 areas were the same for every year from 1973 to 1976. As can be seen in Table III, ten of these areas in 1970 and 1971 and 11 in 1972 were among the 12 highest contributors in the city. As of 1976 births were more evenly distributed among these areas,* (i.e., they deviated less from the mean percent contribution for these 12 areas).

The areas of greatest contribution, by percent, to the city total are not necessarily the same as the areas with the highest birth rates. Only half of the

*The coefficient of variation (i.e., the ratio of the standard deviation to the mean) for 1970 was .3763; that for 1976 was .2695; thus contribution differences decreased 28 percent. $\frac{(.3763-.2695)}{.3763}$

twelve areas had adolescent rates of 30% or greater in 1970, though by 1975 eight were in this category (area 49 was 29.6%). Only five areas were of less than 50% legitimacy (Table IV), by 1976 there were nine. Two of these same areas in the seven-year period experienced a 20% drop in legitimacy. These same three areas are the areas (of the 12) in which there are the smallest proportion of Blacks. Two of them (areas 23 and 24) are transition areas of high Latino population; therefore possibly areas which experience higher rates of early marriage. Again this cannot be verified until after the 1980 census. Area 3, the other outlier was, as of 1970, the largest and one of the most densely populated areas in Chicago and one which has a highly diversified socioeconomic composition and is experiencing rapid change.

As demonstrated above, the areas which contribute the majority of adolescent births to the city total are not necessarily the areas with the highest birth rates. But this alone should emphasize the importance of investigating trends in both kinds of areas. If these areas contribute the majority of the city's adolescent births but these births are the effort of a smaller percentage of adolescent females within the area, this leaves a higher percentage of potential contributors than in the other areas.

Due to the limitations of community area data, viewing the percent contributions of areas is an important back-up measure. The community areas are

abstractions, defined for ease in data collection. The composition differs within as well as between areas. Although the census can place individuals in particular city blocks, it cannot account for attitude or behavioral influences across neighborhoods not defined by the community area. This points up not only the necessity of considering the areas in which adolescent childbearing is of greatest magnitude but also the relevance of individual surveys, social-psychological measures of who has the babies and why.

Association of Demographic Variables
with Adolescent Fertility Data

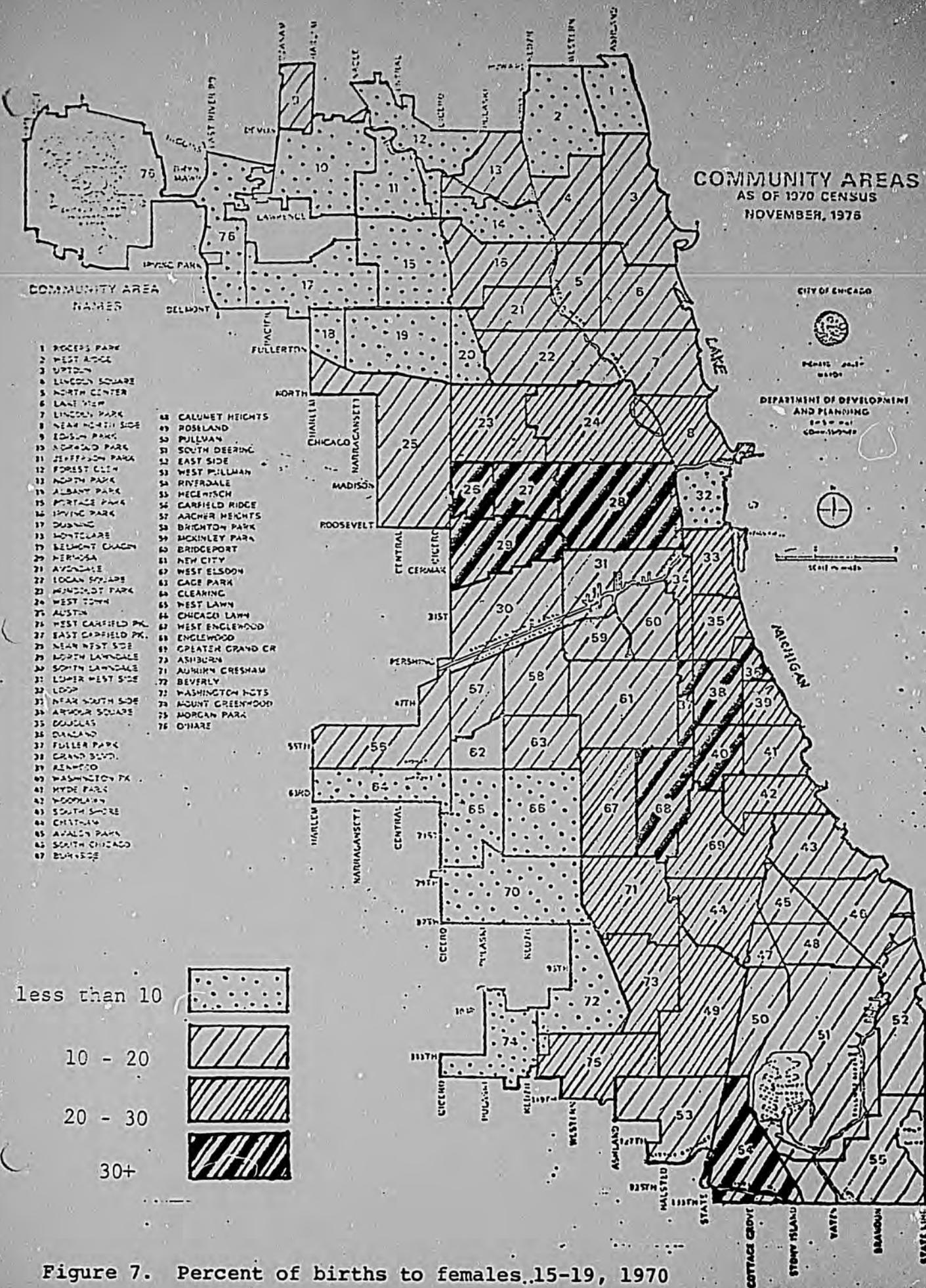
This phase of the analysis of adolescent fertility in Chicago is an empirically-based statistical investigation of the socioeconomic correlates of the adolescent fertility rates of the 76 defined community areas of the city. This is an ecological analysis of areal data, which while posing certain difficulties methodologically can provide strong and useful inferences when carefully managed and interpreted. Such an approach will provide at minimum a socioeconomic indicators model for specifying the type of area where predictions can be made and to the level of the adolescent birth rates. The values of such a model are viewed as threefold. First, the documentation of some of the basic characteristics of adolescents who bear children can be documented. While it must be remembered that ecological

Table II Percent of Adolescent Births Contributed to the Total of Chicago Adolescent Births by Twelve Chicago Community Areas 1970-1976, and Total Percent Contribution of the Twelve Areas

Area	1970	1971	1972	1973	1974	1975	1976
3	3.37	2.93	2.78	2.80	2.94	2.98	2.78
23	2.50	2.55	2.69	3.06	3.26	3.51	3.34
24	4.54	4.76	4.64	4.91	4.50	4.98	5.07
25	3.73	4.14	4.97	5.37	5.55	5.80	6.23
26	3.74	3.52	3.54	3.34	3.17	3.26	2.81
27	4.81	4.22	4.06	3.81	3.33	3.18	2.79
28	5.88	5.27	5.02	4.60	4.65	4.01	4.27
38	5.61	4.91	5.07	4.86	4.42	4.14	4.56
49	1.63	2.02	2.44	2.98	2.93	3.07	2.88
67	2.28	2.99	3.26	3.37	3.77	4.17	4.54
68	5.55	5.39	5.72	5.28	4.52	4.70	4.56
Total	50.86	49.67	50.94	50.89	49.73	49.44	49.04

Table III Twelve Chicago Community Areas Ranked by Percent Contribution to the Total of Adolescent Births 1970-1976

Area	1970	1971	1972	1973	1974	1975	1976
3	9 (9)	10 (11)	10 (10)	12	11	12	12
23	10 (12)	11 (15)	11 (11)	10	9	8	8
24	6 (6)	5 (5)	6 (6)	4	5	3	3
25	8 (8)	7 (7)	5 (5)	2	2	1	1
26	7 (7)	8 (8)	8 (8)	9	10	9	10
27	5 (5)	6 (6)	7 (7)	7	8	10	11
28	2 (2)	3 (3)	4 (4)	6	3	7	7
29	1 (1)	1 (1)	1 (1)	1	1	2	2
38	3 (3)	4 (4)	3 (3)	5	6	6	4
49	12 (21)	12 (21)	12 (15)	11	12	11	9
67	11 (16)	9 (9)	9 (9)	8	7	5	6
68	4 (4)	2 (2)	2 (2)	3	4	4	4



COMMUNITY AREA NAMES

- 1 ROOSEvelt PARK
- 2 WEST EDGE
- 3 UPTOWN
- 4 LINCOLN SQUARE
- 5 NORTH CENTER
- 6 LAKE VIEW
- 7 LINCOLN PARK
- 8 NEAR NORTH SIDE
- 9 EDSON PARK
- 10 NORWOOD PARK
- 11 JEFFERSON PARK
- 12 FOREST CLIFF
- 13 NORTH PARK
- 14 ALBANY PARK
- 15 PORTAGE PARK
- 16 IRVING PARK
- 17 DUNNING
- 18 MONTCLARE
- 19 BELMONT MAISON
- 20 HERVOSA
- 21 AVONDALE
- 22 LOCAL SQUARE
- 23 WINDMILL PARK
- 24 WEST TOWN
- 25 AUSTIN
- 26 WEST CARFIELD PK.
- 27 EAST CARFIELD PK.
- 28 NEAR WEST SIDE
- 29 NORTH LAWNDALE
- 30 SOUTH LAWNDALE
- 31 LOOPER WEST SIDE
- 32 LOOP
- 33 NEAR SOUTH SIDE
- 34 ARMOUR SQUARE
- 35 DOUGLAS
- 36 OAKLAND
- 37 FULLER PARK
- 38 GRAND SOUTH
- 39 RENAISSANCE
- 40 WASHINGTON PK.
- 41 HYDE PARK
- 42 WOODLAWN
- 43 SOUTH SHORE
- 44 CHATHAM
- 45 AVALON PARK
- 46 SOUTH CHICAGO
- 47 BURNING
- 48 CALUMET HEIGHTS
- 49 ROSHLAND
- 50 PULLMAN
- 51 SOUTH DEERING
- 52 EAST SIDE
- 53 WEST PULLMAN
- 54 RIVERDALE
- 55 HECHTSCHE
- 56 CARFIELD RIDGE
- 57 ARCHER HEIGHTS
- 58 BRIGHTON PARK
- 59 MCKINLEY PARK
- 60 BRIDGEPORT
- 61 NEW CITY
- 62 WEST ELSDON
- 63 CAGE PARK
- 64 CLEARING
- 65 WEST LAWN
- 66 CHICAGO LAWN
- 67 WEST ENGLEWOOD
- 68 ENGLEWOOD
- 69 GREAT GRAND CR.
- 70 ASHURN
- 71 AUBURN CRESHAM
- 72 BEVERLY
- 73 WASHINGTON HCTS
- 74 MOUNT GREENWOOD
- 75 MORGAN PARK
- 76 O'HARE

COMMUNITY AREAS
AS OF 1970 CENSUS
NOVEMBER, 1975

CITY OF CHICAGO



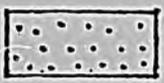
DEPARTMENT OF DEVELOPMENT AND PLANNING

DEPARTMENT OF DEVELOPMENT AND PLANNING



SCALE 1/4" = 1 MILE

less than 10



10 - 20



20 - 30



30+



Figure 7. Percent of births to females 15-19, 1970

COMMUNITY AREAS
AS OF 1970 CENSUS
NOVEMBER, 1975

CITY OF CHICAGO



DEPARTMENT OF DEVELOPMENT
AND PLANNING
105 N. MICHIGAN
CHICAGO, ILLINOIS 60604



Scale in miles

COMMUNITY AREA
NAMES

- 1 WOODS PARK
- 2 WEST RIDGE
- 3 UPTOWN
- 4 LINCOLN SQUARE
- 5 NORTH CENTER
- 6 EAST VIEW
- 7 LINCOLN PARK
- 8 NEAR NORTH SIDE
- 9 LOGS IN PARK
- 10 NORTHAD PARK
- 11 JEFFERSON PARK
- 12 FOREST GLEN
- 13 NORTH PARK
- 14 ALBANY PARK
- 15 PLATAGE PARK
- 16 IRVING PARK
- 17 SHANNON
- 18 MONTCLARE
- 19 BIRMINGHAM CHAGIN
- 20 HEALINGDALE
- 21 AVALONDALE
- 22 IRVING SQUARE
- 23 WASHINGTON PARK
- 24 WEST TOWN
- 25 ALSTON
- 26 WEST GARFIELD PK.
- 27 EAST GARFIELD PK.
- 28 NEAR WEST SIDE
- 29 NORTH LAWNDALE
- 30 SOUTH LAWNDALE
- 31 LOWER WEST SIDE
- 32 LOOP
- 33 NEAR SOUTH SIDE
- 34 ARCADE SQUARE
- 35 DOUGLASS
- 36 CLEVELAND
- 37 FULLER PARK
- 38 GRAND BLVD.
- 39 PENNINGTON
- 40 WASHINGTON PK.
- 41 HYDE PARK
- 42 WOODLAWN
- 43 SOUTH SHORE
- 44 CANTON
- 45 APALON PARK
- 46 SOUTH CHICAGO
- 47 EURY SIDE
- 48 CALUMET HEIGHTS
- 49 PULASKI
- 50 HILLMAN
- 51 SOUTH DEERING
- 52 EAST SIDE
- 53 WEST PULMAN
- 54 RIVERDALE
- 55 HEGEMACH
- 56 CARFIELD RIDGE
- 57 ARCHER HEIGHTS
- 58 BRIGHTON PARK
- 59 MCKINLEY PARK
- 60 BRIDGEPORT
- 61 NEW CITY
- 62 WEST ELSDON
- 63 CAPE PARK
- 64 CLEARING
- 65 WEST LAWN
- 66 CHICAGO LAWN
- 67 WEST ENGLEWOOD
- 68 ENGLEWOOD
- 69 CRYSTAL GRAND CR.
- 70 ASHBURN
- 71 AUBURN CRESHAM
- 72 DEVERLY
- 73 WASHINGTON HILLS
- 74 ADJUNT GREENWOOD
- 75 MORGAN PARK
- 76 OHARE

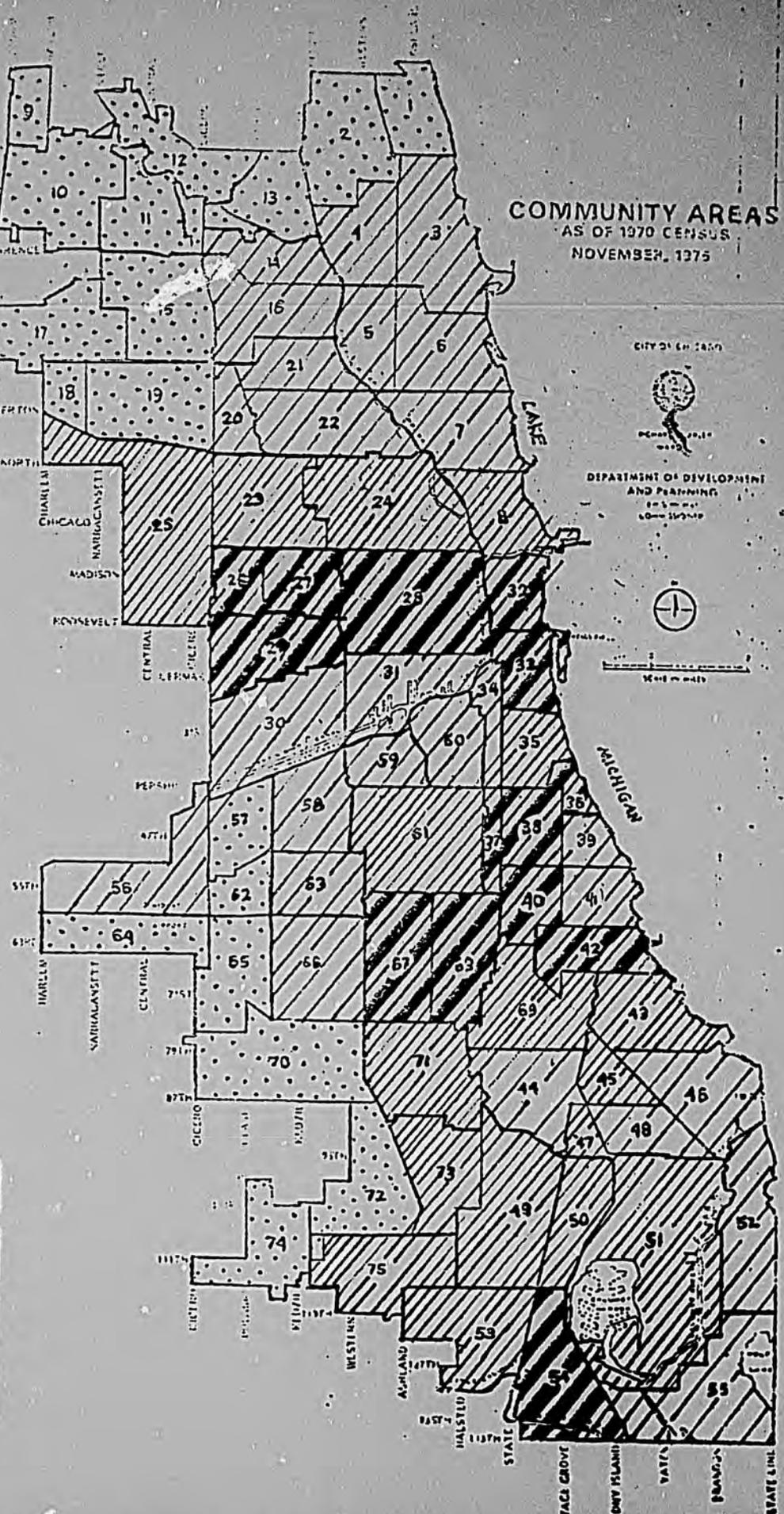
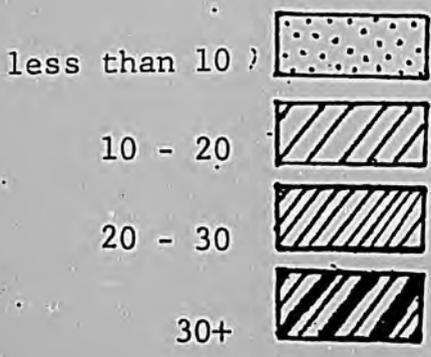


Figure 8. Percent of births to females 15-19, 1976

Table IV Illegitimacy by Rank Order of Those Community Areas
of Less Than 50% Legitimate Births

Comm. Area	1970	1971	1972	1973	1974	1975	1976
08	10	-	14	-	-	-	20
25	-	-	-	-	-	-	18
26	9	8	5	4	5	4	9
27	3	3	3	5	4	8	4
28	8	9	9	10	9	10	10
29	4	5	6	7	6	5	5
32	-	-	-	-	-	-	19
33	-	-	15	13	12	12	7
35	-	-	12	12	11	9	12
36	1	1	1	1	1	1	2
37	7	6	7	6	10	11	14
38	2	2	2	3	3	2	1
39	-	-	11	-	16	-	16
40	5	4	4	2	2	3	3
42	6	7	10	9	8	7	6
49	-	-	-	-	-	-	17
54	-	-	13	11	15	13	13
67	-	-	-	-	14	14	11
68	-	10	8	8	1	6	8
69	-	-	-	-	13	15	15
71	-	-	-	-	-	-	21
	% legit.						
3	81.37	83.43	81.54	81.52	81.37	77.84	75.96
23	79.60	73.97	71.27	70.19	66.11	64.39	58.72
24	83.06	79.75	74.42	72.53	73.60	70.63	68.07

data typify areal units rather than individuals, the consistent and systematic effects of such variables as race and relative affluence cannot be ignored. Second, it is assumed that most policy-determination and social service provision will be implemented with some areal basis, be it through school districts, communities, etc. Thus a delineation of those areas which could be termed most "critical" in regard to the problem at hand is viewed as essential. Third, such analysis invites and demands replication, both inside Chicago with different areal units and comparatively within other cities, states or nations.

The initial investigation to be presented is an intensive analysis of adolescent fertility in the community areas in 1970. 1970 is a necessary starting point because it is the most recent year for which accurate data are available. These data are in the form of Vital Statistics birth reports and U.S. Bureau of the V Census areal data characteristics. After an investigation of the 1970 relationships, the establishment of the validity of these findings for patterns over more recent years will be discussed.

In 1970, the existence of gross variability between the adolescent fertility rates for the different community areas is evident (see Table V).

Table V. Age Specific Fertility Rates: Chicago
Community Areas: 1970

<u>Age Group</u>	<u>Mean</u>	<u>Standard Error</u>	<u>Minimum</u>	<u>Maximum</u>
10-14	2.03	0.3	0.0	0.5
15-19	82.4	6.5	2.3	242.4
10-19	40.0	3.0	1.0	112.0

In order to break down these differences in a manner that allows meaningful statements to be made, we must consider the effects of other attributes of the community areas which might help to explain their variability in the adolescent age specific fertility rates (ASFR). The first variables to be introduced are race and economic status. These are used because of their general importance in American social organization. For race, community areas are classified by whether or not they have proportionally more or less Blacks than the city-wide average (37.3% Black in 1970). The economic status variable used here is whether the community area has proportionately more or less families below the poverty line than the city-wide average. (The use of this indicator is significant, and will be discussed later.)

Table VI presents the average adolescent fertility rates for the four categories of community areas which are determined by a cross classification of race and poverty status. For example, the upper left cell states that the 17 poorer and Blacker community areas have an average adolescent fertility rate of 76.9. As can be

Table VI Average ASFR (10-19) for Community Areas
by Race and Poverty Status: 1970

		POVERTY STATUS		
		Greater Percent Below Average	Lesser Percent Below Average	
RACE	Above average % Black	76.9 (17)	43.0 (9)	65.2 (26)
	Below average % Black	43.0 (6)	24.0 (44)	26.9 (50)
		69.4 (23)	27.2 (53)	40.0 (76)

$$\chi^2 = 23.1 \quad p < .001 \text{ (for raw numbers)}$$

seen, race and poverty status each have a strong effect on adolescent fertility, even though they are strongly related to each other. Areas with an excess of Blacks (the percentage above average) have an average rate which is 38.3 births per 1000 women higher than areas with an excess of non-Blacks. Similarly areas with an excess of persons below poverty-level have an average rate 42.2 births per 1000 women higher than areas with excess of persons above poverty. Furthermore, the Chi-squared test and inspection of the table indicates that an area's status on these two variables is not random, and that the effects of each variable are not random, and that the effects of each variable contribute together to determine the average values presented in each cell of the table.

When the areas with an excess percentage of persons of Spanish descent are removed from the white-indicated category, the ASFR is reduced further from 26.9 to 21.4.

(No Black-indicated areas have an excess of persons with Spanish descent). Table VII indicates that this is both an effect of the relation between percent Spanish and poverty status as well as an independent effect indicated by this ethnic descent group.

Table VII ASFR for White-Indicated Community Areas
Chicago: 1970

	Greater % Below Poverty	Lesser % Below Poverty	
Greater % of Spanish descent	48.4 (6)	40.2 (6)	44.3 (12)
Lesser % of Spanish descent	-- (0)	21.4 (38)	21.4 (38)
	48.4 (6)	24.0 (44)	26.9 (50)

In separate analysis, all of the above findings held true for the 10-14 and 15-19 age groups treated individually, with a tendency for the Spanish effect to be somewhat smaller for the 10-14 year olds. (Further investigation here could be greatly assisted by illegitimacy rates for all groups.)

Thus far the analysis demonstrates a gross differential effect of the racial/ethnic and poverty characteristics of an area on its adolescent fertility rates. However, the known issue of "ecological fallacy" (aggregated relations misrepresenting individual level relations) is problematic here especially as the variables so far used are all highly intercorrelated. The only

widely accepted way to treat this problem is to control for a group of several other possibly active variables to try to destroy the potentially misleading relationships. Only if these factors hold up under control by the new variables will we be able to trust any level of individual inference. Here, this was done by the use of a multiple correlation and regression analysis with the following six independent variables obtained for each community area.

1. Percent persons Black (RACE)
2. Percent persons Spanish (SPANISH)
3. Percent persons aged 10-19 (AGE)
4. Percent families below poverty (POVERTY)
5. Percent households with female head (HOUSEHOLD)
6. Per capita income (INCOME)

All of these variables are related to the level of adolescent fertility in community areas, as well as to each other. The first column of Table VIII shows the

Table VIII. Correlations with Adolescent Fertility Rate, by Community Area: Chicago, 1970

	<u>zero-order</u>	<u>fifth-order</u>
Race	.782	.654
Spanish	.135	.319
Age	.290	-.668
Poverty	.883	.566
Household	.787	-.253
Income	-.776	-.286

correlations between each of these six independent variables and the fertility rates for 10-19 year olds. The second column shows the correlations of each with the same variables, but after the effects of the other five independent variables have been previously controlled for. Basically, we are interested in several types of relationships. First, if a variable shows a strong zero-order correlation to the dependent variable, but this relationship is greatly reduced by controlling for the other variables, we can assert that the zero-order relation is primarily an artifact of the correlation between this first variable and the other independent variables. In this application, such a situation seems to be the case for percent female headed households (HOUSEHOLD), and per capita income (INCOME). The high correlation between these variables and adolescent fertility seems best explained by the other variables. Thus, while they might serve well as predictors of the dependent variable, they do not seem to be major explanatory factors.

The second type of relation we seek to observe is when a strong zero-order correlation is maintained even when controlled for other variables. Such a situation exists here for both percent Black (RACE) and percent below poverty (POVERTY). In this case we can assert that our confidence in the importance of the zero-order relationship is increased, and that race and poverty appear to be critical elements not only in the prediction

of fertility among teens, but also in the explanation of the differential teen fertility in community areas.

The third type of relation is when a zero-order correlation is small, but increases when controlled for other variables. This suggests that the variable has an important effect on the dependent variable but one that was confounded by its differential relation to the control variables. In this analysis, such a relation existed both for percent 10-18 (AGE) and percent Spanish descent (SPANISH). For the Spanish variable, it is rather easy to understand, in that the Spanish descent persons are lumped with the non-Blacks in the RACE variables and all Spanish-indicator areas are also non-Black indicated. As non-Black indicated areas have lower adolescent fertility rates on the whole, and Spanish-indicated areas are still primarily comprised of other whites, the positive effect of Spanish descent on adolescent fertility only becomes clear when the Black - non-Black distinction is controlled for. The preliminary indication is that the adolescent fertility rate for the Spanish ethnic group lies between that for blacks and that for other whites. As the Spanish descent groups are becoming an increasingly important minority group in Chicago, this observation is important to an understanding of the general trends in the city. The age effect seen here is unfortunately not interpretable without further specification of the age structure. It is to be used here for

statistical reasons, and further investigation on its effect is most definitely called for.

Another important observation which arises from this correlational analysis is that percent below poverty holds up as a much more critical measure than per capita income. While both had strong zero-order correlations with the fertility rates (.883 and -.776 respectively), there was a great decrease in the importance of per capita income at the fifth order (-.286) while percent below poverty retained much of its strength (.566). This suggests that the influence of economic status is not continuous over the range of incomes, but that adolescent fertility is much more a phenomenon of distinctly poor areas. (Median income proved to be as poor an indicator as per capita income.) While motive factors, such as education, social relations, and teen culture cannot be delineated by such analysis, the indication the poverty, per se, rather than economic status is a better explanatory variable should be strongly considered by any further researchers.

A multiple regression equation was implemented using these six variables to attempt to fit a model which would accurately predict the adolescent fertility rates for 1970. Such a model, derived by a least-squares procedure, was fitted to the rates for 10-19 year olds, as well as the 10-14 rates and the 15-19 year rates separately. A summary of these equations is presented

in Table IX.

Table IX. Multiple Regression Equations of 3 Adolescent Fertility Variables: Community Areas Chicago 1970

	10-19 Beta	↓ 10-14 Beta	15-19 Beta
Race	.638	.554	.578
Spanish	.139	-.042	.129
Age	-.432	-.245	-.283
Poverty	.613	.852	.542
Household	-.235	-.312	-.162
Income	-.209	.121	-.216
R ²	.878	.683	.890

The R² values in the bottom row are to be interpreted as the total proportion of variation in the various fertility rates of community areas which is explained by these variables. All of these R² values are rather high, with the major differences being that the 15-19 year rates are better predicted than the 10-14 year rates. This could be due to the fact that the 10-14 year rates are so low (the mean was 2.03) that the variability of area rates is proportionately much greater for this group. The Beta are similar in nature to the fifth-order correlations. They indicate how much change would result in the given fertility rate (in a scale of the rate's standard

deviations) from a one standard deviation change in the predictor, with all other predictors held constant. Because they are standardized (in this scale of standard deviations), they are comparable both within and across equations. The betas for each variable are similar across equations with two major exceptions. First, poverty seems to be a much stronger predictor than race for 10-14 year olds, while they are of similar magnitude for 15-19 year olds. Second, the Spanish variable has virtually no effect for 10-14 year olds, while its effect overall has been previously noted. Thus it appears that the Spanish-indicated areas are similar in fertility to the other non-Black-indicated areas for this age group.

This regression result is of limited use when applied only to 1970 data and offers no more information than the correlational analysis could. However, the regression technique has the advantage of providing a methodology for using these results on other data. In this case we are interested in post-1970 adolescent fertility. The data do not allow a complete replication of this analysis for years other than 1970, as all of the numbers used, with the exception of the numbers of births, are now obtainable only from the decennial U.S. Census.

Thus accurate analysis of the adolescent fertility rates for community areas is presently impossible for recent years. It is necessary, though, that some attempt

be made to validate the above findings to other years. Without such validation, any generalization from the 1970 findings would be precarious, as the 1970 findings could easily be artifacts of other ongoing processes.

The strategy used was to apply the 1970 community area data to the Vital Statistics information on adolescent births for 1973 and 1976. Many of the areas themselves have changed much over this period of time, some in almost all compositional traits. Thus a model using 1970 attributes is expected to be a poorer predictor of 1973 and 1976 rates than it would be of 1970 rates. It is precisely this misprediction which is used to validate the generalizability of the 1970 findings. It is purported that if the mispredictions of the regressions run on 1973 and 1976 fertility rates occur primarily in specific community areas which are known to have changed compositionally, and that if the misprediction is in the expected direction, as indicated by our above findings, that we can maintain some faith that the same principles are active in determining differential fertility -- but the arenas of occurrence themselves have changed.

While no community area statistics in regard to racial/ethnic/economic composition exist for recent years, the processes of ecological change in Chicago have been fairly regular. Most significantly, there has been a major net trend for whites to leave the city, and Blacks and Spanish to replace them in the residential

locations which are vacated. These are known, and generally border on previously ethnic areas. Simultaneously, there has been a growth in the economic differentiation between Black residential neighborhoods.

We would expect regressions run using 1970 compositional traits to underpredict the adolescent fertility rates for areas which have become Blacker, poorer, and/or more Spanish. On the other hand we would expect to overpredict for those areas which have become whiter, and/or richer.

These expectations were represented by our findings. The regression equations predicted 70.3% of the variation in the overall adolescent fertility rate for 1973, but only 37.0% of the variation for 1976. These decreases from the 1970 figure of 87.8 were expected. The model was not anticipated to work well, as such. However, an analysis of the residuals (observed rate minus predicted rate) indicates that our expectations as to the sources of this decrease in prediction were correct.

With the exception of O'Hare and the Loop, which are anomalous community areas in many respects and contain few residents, these lists of areas (Table X) would appear to any observant Chicagoan as a list of the areas of major ecological change. Even more supportive is the inclusion of West Pullman, Riverdale, Beverly, and Morgan Park in the 1976 list and their exclusion in the 1973 list. These are all parts of the far south and southwest areas of Chicago which have most recently been undergoing basic change.

Table X. Residual Analysis for 1973, 1976

1973		1976	
Underpredicted	Overpredicted	Underpredicted	Overpredicted
Humbolt Park	Near S. Side	Humbolt Park	Rogers Park
Austin	Armour Square	Austin	Lincoln Park
Loop	Kenwood	Loop	Kenwood
Oakland	Hyde Park	Oakland	Hyde Park
Burnside	Chatham	Burnside	O'Hare
Roseland	O'Hare	Roseland	
New City		W. Pullman	
W. Englewood		Riverdale	
		New City	
		W. Englewood	
		Beverly	
		Morgan Park	

The sole contention from this analysis of regression residuals is that the factors discussed for the 1970 data seem to be of importance in later years, and the causes of adolescent fertility in community areas have not undergone fundamental change since 1970. Many organizations are attempting to procure reliable estimates of more recent figures, but until this is achieved, this residual analysis is seen as the only way to validate the generalizability of our 1970 findings.

Summarizing the above analysis, it has been demonstrated that most of the variation in adolescent fertility rates in the community areas of Chicago can be explained by a series of compositional traits of those areas. Significantly, race, poverty status, and Spanish characteristics alone can explain 77.5 percent of the areal variations in 1970. The analysis confirms that Black area rates are higher than non-Black area rates, with Spanish rates falling in between, even with economic and social controls. It also indicates that, even with ethnic and social controls, that it is those areas typified by absolute poverty that have the highest adolescent fertility rates. Furthermore, a validation test suggests that these relations still hold for the areas of Chicago, even though formal analysis is impossible past 1970.

It must be emphasized that the units of analysis here were the community areas, and not the childbearing adolescents themselves. Yet for two reasons this method of analysis seems valuable. First, the important relations were strong enough when controlled for other variables to suggest that individual inferences from this areal data are possible, though they must be made with care. Second, it is likely that it is areas themselves, rather than individuals, through which the provision of action programs to reduce adolescent fertility must be implemented.

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Chapter II

ADOLESCENT FERTILITY BEHAVIOR: A REVIEW OF THE SOCIAL
AND PSYCHOLOGICAL LITERATURE

Karen Bloomberg, M.S.W.

Considering the various and ample literature on adolescent fertility behavior it seems productive to approach it first in terms of previous investigations having to do with determinants of adolescent pregnancy. Since contraception is a major factor in determining whether sexual behavior leads to conception, we turn next to research on adolescents' experiences with information on contraception. Understanding that adolescents experience all of these factors within the various contexts of their lives, we next consider literature on these contexts. Finally, we review literature on adolescent cognitive adaptation, the individual result of various supra-individual factors.

Research on Adolescent Pregnancy Determinants

Previous research has generated a great deal of controversy about the causes of teenage pregnancy. One school of thought has been devoted to identifying psychological factors within the individual that cause the pregnancy. Another body of research, particularly in vogue during the 1950s and 1960s, has been devoted to a sociological model of causality pointing to environmental factors, especially the "culture of poverty," to account for the pregnancy. Johnson (1974), Osofsky (1970),

Stewart (1976) and Eddinger and Forbush (1977) provide brief histories of the development of these two competing causal explanations.

The authors that expound a psychological theory of causation find such etiological factors as narcissistic character structure (Bonan, 1963), a weak ego and acting-out behavior (Babikian and Goldman, 1971; Kravitz et al., 1966; Floyd and Viney, 1974; Meyerowitz and Malev, 1974), unmet dependency needs and alienation from mother (Kimball, 1969; Abernethy, 1974), reactions to significant object loss and attempt to reinternalize a substitute for the lost object (Greenberg et al., 1959; Kane et al., 1974) and external locus of control (MacDonald, 1970; Meyerowitz and Malev, 1974).

The major problem with these studies is that the samples are derived from psychiatric populations and, hence, they establish an association between their psychological disturbances and their being patients and not between pregnancy and their psychological disturbance.

The sociological explanation of teenage pregnancy formerly concentrated on the "culture of poverty" or the Black subculture. Greenberg and Loesch (1959) and, more recently, Fischman (1977) imply that, for the lower-class Black adolescent girl, pregnancy and motherhood provide the only recognition and status in an otherwise unfulfilling environment and existence. The idea that there is a culture of poverty which promotes premarital

pregnancy has found less support in the past decade. However, Furstenberg, the best known of the recent proponents of the social situational explanations, finds strong motivations to avoid pregnancy and illegitimate births that these Black teenage mothers are unable to realize in their social and economic context (Furstenberg, 1976). Shlakman (1966) and Johnson (1974) refute the theory of a sociological cause of teenage pregnancy by pointing out the inadequacies in the data which supported the thesis and by pointing out the mutual interaction between poverty and adolescent pregnancy rather than a cause and effect relationship with poverty being a necessary antecedent condition.

Lorraine Klerman, a recent author with a sociological perspective, believes our society fosters conditions which lead to teenage pregnancy but these societal factors are not specific to a culture of poverty but rather to the dominant American culture as a whole. Our society's lack of a meaningful role for the adolescent, our view of the proper role for women and the ambiguity about what we say and what we do about sexual practices all contribute to the incidence of teenage pregnancy (Klerman, 1975).

There is an increasing realization that causative explanations dependent upon a priori psychological and/or sociological theoretical assumptions do not appropriately consider the individual experiences of the adolescent

today. Many authors review weaknesses of both major theories or find theories of causality as currently useless (Pope, 1967; Pauker, 1971; Brunswick, 1971; Gordon, 1972; Cutright, 1972; Johnson, 1974; Juhasz, 1974; Plionis, 1974). Current approaches to the occurrence of early pregnancy and its causation stress in one fashion or another that in order for an adequate explanation of teenage pregnancy to be formulated researchers must distinguish between adolescent sexuality and adolescent pregnancy (Crider, 1976). Baizerman, for example, asks for studies which stress not only why some young women become pregnant but also why the great majority do not (Baizerman et al., 1974).

By distinguishing between adolescent sexuality and adolescent pregnancy, greater stress would be placed upon pregnancy as the unanticipated result of sexual activity rather than upon sexuality as the result of a conscious or unconscious desire for pregnancy (Furstenberg, 1971; Cobliner, 1974; Cvetkovich, 1975). Johnson points out that there are distinct stages at which prevention of live births to teenagers can be conceptualized: 1) preventing intercourse; 2) preventing conception; and 3) terminating the pregnancy; and goes on to say that "preventing conception may presently be the most practical juncture for a concerted societal effort to effect a change in the incidence of births to teenagers" (Johnson, 1974).

Research on Adolescent Contraception Information

When we turn our attention to preventing conception, a major question arises. Will adequate information and accessibility of contraception lead to an appreciable decrease in adolescent pregnancy? The research in this area presents confusing findings. First, there are the studies which describe patterns of contraception information and use by teenagers. The best known of these are the Kantner and Zelnik studies which present a profile of 4,611 randomly selected women from 15 to 19 years of age. Fifty-three percent of the subjects had failed to use any kind of contraception at the time of last intercourse. Even more importantly, these authors describe the high degree of ignorance of the nature of the monthly cycle, the birth process and of effective birth control methods among the majority of teenagers who did practice birth control (Kantner and Zelnik, 1973; Zelnik and Kantner, 1978). Other authors find similarly high levels of ignorance regarding birth control methods coupled with sexual activity (Sorenson, 1973; Miller and Simon, 1974). Some authors descriptively study contraceptive knowledge and experience in selected populations such as Black pregnant teenagers (Furstenberg et al., 1969), teenage mothers married and unmarried (Presser, 1974), high school males (Finkel and Finkel, 1975) and Planned Parenthood clients (e.g., Goldsmith et al., 1972; Settlage et al., 1973; Reichelt and Werley, 1975). The

problem with all of these studies is that they usually use a one-shot attitude survey model and do not inform us as to why some sexually active teens contracept and others do not or why some effectively contracept and others do not. As Zelnik and Kantner state in their 1978 article, "defining the dimensions of the sexual and reproductive behavior of female teenagers does not necessarily explain that behavior."

Another group of studies has been more specifically directed to answer this latter question, but the validity of the methodology has been questionable and the findings have been contradictory. The research technique most often used is to ask the subjects why they are or are not contraceptors. One major reason found was lack of correct information or knowledge or they "didn't feel they could get pregnant" (Shah, Zelnik and Kantner, 1975). Other reasons involved problems with obtaining contraception, the physiological dangers involved and its interference with pleasure and spontaneity (Shah et al., 1975; Evans et al., 1976). However, other studies do not find the major reason to be lack of knowledge or information. In a recent study by Cvetkovich and Grote, "there were no differences in sex knowledge or contraceptive knowledge found between good versus poor contraceptive users. All of the sexually active were equally knowledgeable (or ignorant if you prefer) about risk of unprotected coitus, and about specific contraceptive methods and their

effectiveness" (Cvetkovich and Grote, June 1977). This would seem to indicate that, at least for their sample, increasing information will not be a major key to reducing unwanted fertility.

Another example of this point of view is presented by Sklar and Berkov in an article referring to the experience of the state of California:

...Cutright and Furstenberg place their bet on improving the means of reducing fertility but completely ignore the problem of what will motivate teenage girls to use these means. Our studies indicate that this is a highly simplistic approach to the study of reproductive motivation among teenage girls.
(Teenage Illegitimacy: An Exchange, 1974)

Along these same lines, Reichelt and Werley, in a longitudinal study, found that one rap session at a Planned Parenthood Clinic was successful in correcting some previously held misbeliefs about some birth control methods but was unsuccessful in convincing the teenagers that their belief about other birth control methods was incorrect (Reichelt and Werley, 1975). Also, in a recent study by Evans et al., it was found that those sexually active teenagers who only experienced a "pregnancy scare" did not show any improvement in contraceptive use (Evans et al., 1976).

When the question arises as to whether greater information and availability will promote greater effective use of contraception, we must ask other questions. What are the sources of this information and what is the

process by which the adolescent integrates or doesn't integrate the information? What other factors need to be considered when looking to facilitate the adolescent's ability to adapt knowledge to practice? Cvetkovich feels the direction of improvement lies not in better informational programs, but better educational ones--not only providing information but also allowing teenagers the opportunity to explore their own feelings and attitudes as well as the thinking of others about human sexuality (Cvetkovich and Grote, 1977). Other researchers are also becoming aware that other and different factors are involved in this process, particularly subjective ones. Brunswick suggests that "it may be useful to shift focus from attitudes and characteristics of the girls themselves on to what is happening in their life situation" (Brunswick, 1971). Johnson feels that more effective plans for intervention will ensue with "increased knowledge and understanding of the adolescent's total interactional field" (Johnson, 1974).

Research on Adolescent Interactional Contexts

Research studies regarding adolescent contraception practices have not specifically investigated the various adolescent interactional contexts whereby and how information is exchanged and adapted. There are studies, however, which while not investigating the process which takes place within these contexts do begin to inform us about what the important contexts are. The family, the

peer group, and the sexual partner are of primary importance.

Furstenberg found that adolescents are more likely to use birth control when they have discussed it with their mothers, when the daughter thinks the mother is aware of her sexual activity, and when the mother's attitude toward premarital sex is permissive. The author suggests that when the mother reveals an awareness that her daughter may be having sexual relations, "the girl in turn is allowed to define sex less as a spontaneous and uncontrollable act and more as an activity subject to planning and regulation" (Furstenberg, 1971). Gordis et al., however, felt that the requirement of parental consent may have been one of the impediments to growth of and utilization of a program for preventing adolescent pregnancy in Baltimore (Gordis et al., 1970). Goldsmith et al. found that knowledge of sexual topics, the birth process, and birth control methods was not related to exposure to sex education courses not to discussion with parents but did correlate quite closely with age (Goldsmith et al., 1972). In considering the quality of communication between parent and adolescent (based on teenagers' reports), Cvetkovich found only one difference in parental behavior which was related to birth control use. Good birth control users reported that their parents were less strict in the enforcement of rules than did women with less effective birth control histories

(Cvetkovich and Grote, June 1977).

Thornburg informs us that the major source of sex information for teenagers is their peer group (Thornburg, 1972). A study examining sexual and contraceptive knowledge and practice of male adolescents concurs with this finding, yet it was interesting to note that of those males who approved of the use of condoms, 38% did not want their friends to know that they used them. This was so despite the fact that 93% of the 421 respondents denied that it was important to them to do what their friends do (Finkel and Finkel, 1975).

The interactional context of the sexual couple or the nature of their relationship also affects whether birth control is used. Several studies indicate a positive correlation between frequency of sexual intercourse and better contraception use (Furstenberg et al., 1972; Kantner and Zelnik, 1973; Cvetkovich and Grote, 1977). Furstenberg differentiates between temporary relationships and stable relationships and finds that the positive correlation between frequency of sexual intercourse and birth control use still holds for both types of relationships with higher percentages of birth control use being present within both intercourse frequency levels of the stable relationships (Furstenberg, 1971). Cvetkovich found that the more protected women tended to be involved with male partners who showed a greater emotional commitment to the relationship (Cvetkovich

and Grote, June 1977). He also found a drop in contraceptive use related to the women's perception of the relationship with their partners. It seems that the side effects of the pill were ignored by the users until they experienced a negative social relationship with the partner at which time the pill side effects were reported as the reason for discontinuance (Cvetkovich and Grote, June 1977). Jorgenson reports in a limited study that 97% of the postpartum adolescent girls who discontinued contraception at one year follow-up did so due to pressures from families and/or boy friends because of media publicity on contraceptive side effects, but the discontinuance was related to the impact of the individuals closest with the girl--whether it be parent, grandparent, or boyfriend (Jorgenson, 1973).

An interesting study by Campbell and Barnlund links contraceptive failure with communicative inadequacies. Using a pregnant group matched on all other variables with a group having succeeded at preventing pregnancy, they found the less effective communicators were the least effective contraceptors. The implication may be that if one is deficient in communication skills there is more difficulty in discussing clearly and responsibly the issues of contraception necessarily involved in the sexual context (Campbell and Barnlund, 1977).

The interactional context of school and teachers may be another relevant and influential arena for the

adolescent. Cvetkovich and Grote reported that interactions with non-family members sometimes offer a much less threatening atmosphere for the discussion and exploration of sexual attitudes. They found that many teenagers seek out such contacts and have as their confidants, not only counselors and sex education instructors, but also other teachers who have befriended them (Cvetkovich and Grote, June 1977). Goldsmith et al., as cited earlier, found that knowledge of sexual topics, the birth process, and birth control methods was not related to exposure to sex education courses. In the same study it is reported that the contraceptive group was "significantly more oriented toward higher education and the postponement of marriage" than either the abortion patients or the maternity home residents. The authors speculate that the "same initiative which motivated them toward education and achievement probably also moved them toward effective contraception" (Goldsmith et al., 1973). Admittedly, the numerous authors who cite educational ambition as a significant factor in the delay of early pregnancies are operating on a different level of conceptualization than studies which would take into account the whole interactional context of school. Two studies which found educational ambition as the one variable that most accurately predicted the eventual successful practice of birth control by previously pregnant teenagers were based upon samples of relatively

low socioeconomic status and therefore, as admitted by both authors, it was difficult to obtain significant findings related to socioeconomic variables (Klerman and Jekel, 1973; Furstenberg, 1975).

The other adolescent interactional context that must be considered where exchange and adaptation of information takes place is that of health professionals and, more specifically, professionals from teenage contraceptive clinics. Both Lehfeldt (1971) and Sandberg and Jacobs (1971) recognize the importance of iatrogenic factors in the psychology of contraceptive failure. Sandberg and Jacobs, although not specifically referring to adolescent patients, state that the influence of the physician and his associated personnel is substantial. Negative attitudes or ambivalence or anxiety can be transferred to patients. "Obviously a total clarification of potentiality and an attempt to understand patients' interpretations and psychological responses to explanations regarding their virility or fertility are absolute requirements for responsible and compassionate patient care" (Sandberg and Jacobs, 1971). In a clinical study with a teenage population, Lane et al. stress the importance of patience and continuing supervision on the part of the personnel who inform adolescents about birth control methods. The authors suggest that the objectivity and thoroughness with which the diaphragm was described played a role in the successful use of the diaphragm

which was at least as important as the social characteristics of the client (Lane et al., 1976). In a study by Furstenberg et al. entitled "How Can Family Planning Programs Delay Repeat Teenage Pregnancies?" it was found that the continuing contraceptive users at the two-year follow-up interview were those who had received more staff consultations (Furstenberg et al., 1972). However, Cvetkovich and Grote found that teen clinic rap sessions are ineffective when they are perceived as a "payment," a meeting which the client must attend before receiving contraception (Cvetkovich and Grote, September 1977).

Research on the Adolescent as Adaptor

Some authors relate contraception use to the concept of levels of stages of development involved in normal adolescence. Hatcher, in a clinical study with abortion patients, uses a psychoanalytical developmental framework to show how the whole experience of pregnancy (including knowledge of conception and contraception) is dependent upon the psychological stage of early, middle, or late adolescence. She suggests that the lack of this perspective in other research accounts for the array of contradictory findings since, without specifying it, some authors are talking about early adolescence while others are talking about middle or late adolescence. She also demonstrates how the developmental stage is not necessarily related to chronological age (Hatcher, 1973).

Other authors, however, have found age to be an important variable correlating with conception and contraception knowledge (e.g., Goldsmith et al., 1972).

Coblener in a study on pregnancy and adolescent development, stresses the role of stages of cognitive development in contraceptive use. Using Piaget's theory to explain his findings, he submits that adolescents (and many other persons for that matter) have not yet fully reached the stage of formal operative thinking which involves the anticipation of future events. "It is obvious that any form of birth control practice, except the intrauterine contraceptive device, is predicated on operative thinking" (Coblener, 1974). Crider points out how Coblener's concept is reminiscent of the statement of Kantner and Zelnik that teenagers often cannot plan ahead in order to ensure that intercourse will not lead to an unwanted pregnancy because of their desire that sexual activity be untainted with forethought and premeditation (Crider, 1976). Pannor, like Coblener, found that "unmarried parents fail to relate the sexual act to possible consequences" and instead adhere to an "orientation with the present as opposed to planned behavior affecting the future" (Pannor et al., 1971). In this study on unwed fathers, however, Pannor does not draw Coblener's conclusion regarding levels of development and their possible relationship with the lack of effective birth control practice. Also, Pannor, like

other researchers, has studied unwed parents without considering those who are sexually active and do not conceive.

When we consider the world of the adolescent we must consider his internal world and his external interactional contexts, his biological experiences as well as his interpersonal experiences. Warren Miller along with others (e.g., Blos, 1971; Kagan, 1971; Bernard, 1975; Maddock, 1973) reminds us that adolescence is a vulnerable stage in the life cycle for, like other transitional stages, it involves movement from a fairly stable situation into new and unfamiliar situations encompassing new experiences biologically and internally as well as interpersonally. The onset of puberty and the involvement in sexual intercourse are both new experiences with which one must adapt. Miller states that at some time during this transition there must be a change of attitude or perception towards the self as a biologically fertile person. The transition from low to high fecundity is gradual and, in such a setting, "with the risks changing, the learning and use of contraceptive vigilance is difficult" (Miller, 1973).

Other authors are at least cognizant of the ambivalence involved in the introductory phase of sexuality and how this new experience may be related to contraceptive practice. Evans et al., in a recent article, recognize the struggle surrounding the introductory phase of

sexual activity and note that certain contraceptive clinic policies do not help the adolescent clear the hurdles (Evans et al., 1976). Even sample survey research points to the importance of dealing with the problems from the subjective viewpoint of the adolescent. In the study by Goldsmith et al., the authors state that their findings suggest "that an attitude accepting one's own sexuality is a more important correlate with contraceptive use than such other factors as exposure to sex education, knowledge of sex and contraception or religious background" (Goldsmith et al., 1972). Gispert and Falk, in a recent study of young Black adolescents, suggest that shame in sexual intercourse interferes with the rational use of contraception but does not interfere with sexual behavior as such (Gispert and Falk, 1976). Kantner and Zelnik's national survey data show that only the medically administered birth control methods (pill, IUD, diaphragm) are clearly associated with greater tendency toward use of contraception at last intercourse (Kantner and Zelnik, 1973). The implication here may be that in order to prepare for sex by using effective contraception one has to be comfortable with and willing to admit to oneself as well as to others (like those in the medical profession) that one is a sexual being. Along these same lines, Lane stresses that the particular form of birth control needs to be considered when helping individual clinic clients. Thus, she notes, girls who are

"comfortable with their own sexuality" and with their bodies will find the diaphragm easier to use consistently than others who cannot admit their sexuality (Lane, 1973). The clear implication in these studies is that the subjective viewpoint of the adolescent and his individual interactional world must be taken into consideration.

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Chapter III

DETERMINING METROPOLITAN AREA CONTRACEPTIVE SERVICES FOR ADOLESCENTS: THE TELEPHONE SURVEY

Judith Wittner, Ph.D.

As adolescent sexual activity leads to an increased need for contraceptive services, it is likely that privately and publicly funded programs offering contraceptive services to adolescents (defined by most servicing agencies discussed in this report as persons between the ages of 12 and 19) will attract a growing client population. A study that attempts to determine the accessibility to adolescents of existing services, to plot the range and relevance of these services, and to isolate some of the general problems of service delivery will be valuable to those who are engaged in developing new and ongoing programs. This chapter will outline the ways in which one can conduct such studies by telephone and will report on the results of a telephone survey of agencies and programs offering contraceptive services to adolescents.

The chapter is divided into three sections: Part one discusses the method of telephone interviewing, detailing the process from the construction of the questionnaire and the search for respondents to the conduct of the telephone interview itself. Part two describes the findings of the survey. Part three highlights some of the issues revealed by the data.

The Telephone Survey Method

In order to learn precisely what contraceptive services were available to adolescents in the Chicago Metropolitan area, Planned Parenthood Training and Research Center staff members conducted a telephone survey of health centers, clinics, and social service agencies. This section will describe the problems and potentialities of the telephone as a research instrument, the construction of the telephone questionnaire (a copy of which is provided at the end of this chapter), and the development of the list of appropriate service agencies and clinics.

Problems and Potentials of Telephone Interviewing

Information on availability of contraceptive services for adolescents for this report was gathered by use of a telephone interview, a rather common method of obtaining information among survey researchers in the United States. It is important to note, by way of introduction to this method of data collection however, that similar surveys could readily be conducted with personal interviews or mailed questionnaires. If a telephone system is functional for all data collection units (in this case, for all agencies offering services to adolescents), the telephone is a valuable research tool for a research task that demands contact with many individuals over a wide geographical area. What might otherwise have taken

weeks to accomplish by direct personal contact was completed in days by telephone interviews. Some agencies in a sample might not allocate their staff members time for responding readily to mailed requests for information. However, the telephone interview introduces and assures completion of the task in a personally compelling way.

Telephone interviewing, however, is not a method that can or should be used indiscriminately, without attention to its inherent limitations and difficulties. For example, not everyone is willing to give information of any kind by telephone, and it is likely that information dealing with adolescent sexuality will be guarded. However, if the research is sponsored by a well known and well regarded group, fewer barriers to information collection will exist. In this study, the name "Planned Parenthood Association" contributed to the general willingness to answer most questions. Still, it is likely that agency personnel were more reticent in their responses than would have been the case in a personal interview, creating a bias in the data gathered.

A second problem involves time demands on clinic personnel and underscores the importance of a brief and well planned interview schedule. Especially at understaffed and overcrowded clinics, workers have no time for extensive conversations with interviewers. Badly worded, confusing, or unwieldy questions which are

difficult to answer make respondents impatient to be finished and thus affect the quality of the information gathered. The question on page 3 of the interview schedule: "What two or three services do most of your teenage clients seek? Could you rank these?" was such a question because it required that the respondent hold the set of ten responses in his or her head long enough to make choices and rank them.* In addition, ranking answers was a problem for many, who perceived service demands as a cluster of items, none of which predominated over the others. At the same time, many data are available from comments and additional conversation during the course of the telephone interview. For example, one family planning nurse noted that there was a growing demand for natural family planning instruction in her clinic. Another respondent in a different clinic mentioned in passing that there was a rise in requests for IUDs and a drop in requests for the pill. Such comments could lead to new hypotheses, and suggest new directions for investigation. For example, trends in demands for specific kinds of contraceptive services from the teenage clients themselves illustrate how individuals may actively structure and control the kinds of services available to them. If further investigation shows this to be the case, then such clients usefully might be incorporated into program planning and development.

*In later use respondents were asked the question and their responses were classified by us, using the item categories.

Construction of the Telephone Questionnaire

The questionnaire was designed to provide information about the availability of contraceptive services to adolescents and to uncover any obstacles that may confront those seeking such services. In particular, it was designed to obtain information from administrators and other personnel at clinics and agencies which provide such services. In determining the availability of services in an area, key sources are those who are in positions which provide access to information of a legal and a situational nature; such was the competence of agency and clinic personnel who were surveyed. Another complementary approach would be to determine the availability of services from the perspectives of those to be served, in this case the adolescents.

In particular, questions focus on how and to whom particular services were offered, the cost of these services, and the types of restrictions (for instance, parental consent and residency requirements) which could limit their availability. With a clear picture of what information was desired, researchers proceeded to construct a questionnaire which met two essential requirements: (1) that the questions asked actually elicit the desired information and (2) that these questions be manageable enough, both individually and as a set, to be delivered by telephone.

Developing the List of Respondents

While the construction of the data collection instrument was a fairly straightforward task, demanding a set of manageable questions, the discovery of appropriate respondents demanded an intensive search, made more difficult by the absence of any central data-gathering body. One starting point was a list of contraceptive services for adolescents which was compiled by a local television station. The telephone directory (Yellow Pages) provided a second list of agencies, some of which offered services to adolescents. The city social service directory was a third source. Finally, the question which ends the interview ("Do you know of other places in the city where teenagers can obtain contraceptive services?") brought several new agencies and programs to our attention.

Results of the Chicago Area Survey

Sixty-five separate clinics, service agencies, hospitals, outposts, and health centers were identified in the area extending from Gary and Hammond, Indiana, southeast of Chicago, Kankakee and Joliet south of Chicago, and Berwyn and Oak Lawn west of Chicago to counties north of Chicago. Of these, one would give no information, and another, the Board of Education of the City of Chicago, offered only sex education and counseling (rather than contraception and referral services).

The data reported below, therefore, are collected from 63 agencies.

The figure of 63 is somewhat misleading. As will become clear, it includes clinics which fail to advertise their services or to offer them at times when adolescents are likely to be able to make use of them. For example, the Cook County Board of Health has many outposts on the south and west sides of Chicago but these do not remain open much beyond regular school hours, offer a limited range of services, and, until recently, have been barred by law from referring adolescents to agencies offering contraceptive services and/or abortion.

The data on agencies offering contraceptive services to teenagers are arranged by region. (Starred items are clinics specifically for adolescents.)

North and Northwest Suburbs and Towns (11)

Lake County Health Department

Cook County Health Department

Evanston-North Shore Health Department

Mundelein Family Planning

Round Lake Family Planning

Crossroads Clinic, Rolling Meadows

Elgin

* Wheaton Planned Parenthood Association (Teen)

* Links, Northfield (Teen)

Lutheran General Hospital, Park Ridge

Suburban Women's Health Center, Lombard

(private)

South and Southwest Suburbs and Towns (11)

- Proviso-Lyons Community Health Center
 East Chicago Heights Health Center
 Des Plaines Valley Health Center, Argo
 Cook County Health Department , Oak Lawn
 Family Planning Clinic, Harvey
 Gary, Hammond, and East Chicago
 Planned Parenthood Associations
 Family Planning Center, Joliet
 Kankakee Family Planning
 * Aunt Martha Youth Service Center, Park Forest
 * Southwest YMCA Clinic-Teen Scene, Oak Lawn
 * Youth in Crisis, Berwyn

North Side-Chicago (13)

- Board of Health (3 outposts)
 Infant Welfare Society of Chicago
 Eve Neighborhood House
 Prentice Women's Hospital
 Near North Adult Health Center (Prentice outpost)
 Grant Hospital
 Illinois Masonic Medical Center
 Albany Clinic (Midwest Family Planning)
 Concord Medical Center
 Midwest Population Center
 Midwest Family Planning, Elston Avenue

South Side-Chicago (20)

Michael Reese Hospital
 Clinic in Altgeld
 Martin Luther King Health Center
 South Lawndale Health Center
 Board of Health (13 outposts)
 Planned Parenthood Teen Scene Clinics,
 Downtown, Hyde Park and Roseland

West Side-Chicago (8)

Board of Health (2 outposts)
 Mile Square Health Center
 Fifth City Human Development Project
 (health outpost)
 Illinois Children's Home and Aid Society
 Bethany Health Center
 Cook County Hospital, Fantas Clinic
 Mount Sinai Hospital

Some regional variation is apparent from this list. Aside from the four Planned Parenthood Teen Scene Clinics, one of which is located in a suburb, only four programs for adolescents were reported to exist, and these are located in suburban areas. Hospitals and private abortion services are concentrated on the north side, while Board of Health clinics predominate on the south side. These differences coincide with racial differences in the north and south side populations,

the former being predominantly white, the latter mainly Black.

Age Requirement

Age requirements of individual agencies are determined by law. Thus, anyone over 12 may legally avail him/herself of contraceptive services without parental consent. An exception is abortion, for which parental consent is required by persons under 16 years of age; also a two-day waiting period is required for those 16 to 18 years of age. Board of Health outposts sometimes require parental consent for any services offered to persons 15 and under.

The Range of Birth Control Techniques Offered

Programs which offer contraceptives to adolescents generally offer the total range of services, with the exception of sterilization and natural family planning. In the south suburban and north suburban areas and on the north side of the city, no sterilization was available to minors, except by referral in cases of medical necessity. On the west side, 86% and on the south side, 94% of the service providers would not provide sterilization to teenage clients. Natural family planning instruction, a technique requiring trained personnel, was offered in 82% of the south suburban clinics, 42% of the north side clinics, and 100% of all others, although it remains to be determined just how extensive these offerings are in

actual practice.

Counseling and Other Services

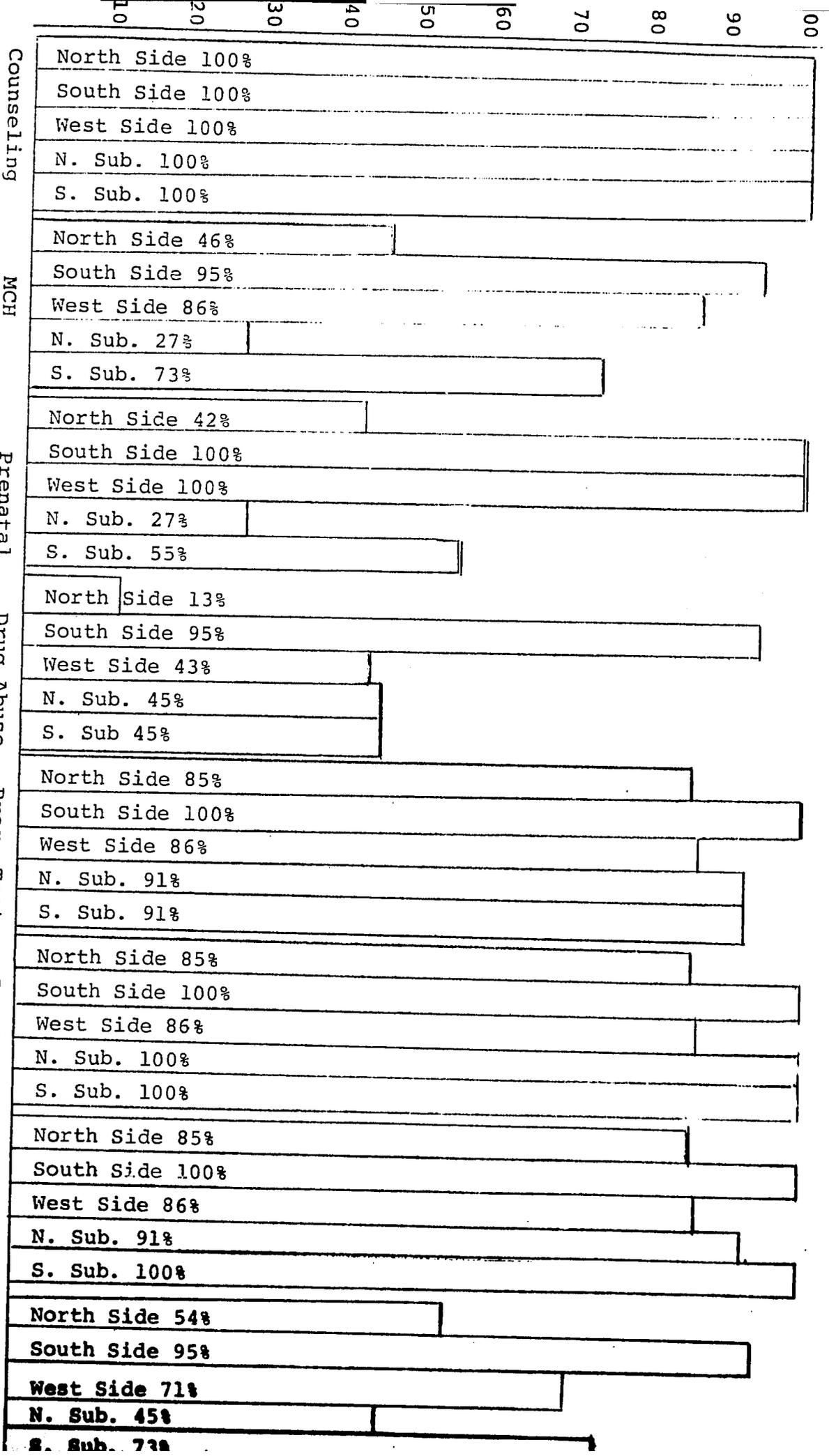
Table I shows the support and diagnostic services which are available by regions. The variation in services, especially between the west and south side and all others, reflects the greater availability in those two areas of non-specialized health clinics dispensing birth control information and services as part of a program of total health care available to the community.

Fees

There is a range of fees, many indeterminate and figured on a sliding scale based on ability to pay, in all areas studied. Nevertheless there are differences between areas in the proportion of public and private services available. Suburban and north side agencies are more likely to charge flat rates, including extra laboratory and method fees, and are less likely to accept clients on public aid. South and west side agencies, serving poor and minority communities, are more often subsidized or publicly supported and accept public aid clients.

Availability of Abortion

Abortions are available to adolescents with several restrictions. The law requires a two-day waiting period for persons under 18 and parental consent for those 15 and under. Clinic and agency practice is to refrain



Services Available to Adolescents by Region

Table I

from imposing additional restrictions beyond these legal limits.

On the north side of the city five separate agencies and hospitals (Prentice Hospital, Albany Clinic, Concord Medical Center, Midwest Family Planning and Midwest Population Center) provide abortion services and will accept adolescent clients. However, none of these accepts public aid clients. Counseling and referral services are offered by an additional five (Grant Hospital, Erie Neithborhood House, Infant Welfare Service, Illinois Masonic Hospital and Near North Adult Health Center). Board of Health clinics until recently provided no referral information to clients.

In northwest suburbs and towns, all agencies offer counseling and referral only.

In south suburban communities and towns, the Gary area PPA plans to open a facility which will offer abortion among other services. All other agencies provide counseling and referral only.

On the south side, Michael Reese Hospital, Martin Luther King Clinic, and the Clinic in Altgeld provide abortion services. South Lawndale Health Center refers its clients to Cook County Hospital for abortion. Board of Health Centers until recently have been prevented by state law from referring clients for abortion.

The west side community resembles the south side. Illinois Children's Home and Aid Society, Bethany Health

Center, and Cook County Hospital provide abortions to adolescents. Mile Square Health Center, Fifth City Human Development Project, and Mount Sinai Hospital refer clients to other facilities.

Hours

Services offered to adolescents must be offered at times which do not conflict with the school schedule. Table II shows the segments of the day and week during which services to adolescents are available.

Table II
Availability of Services to Adolescents

	Days(9-4)	After school and <u>evenings</u>	Saturday
North Side	45% (5)	10% (1)	45% (5)
South Side	79% (14)	21% (4)	0
West Side	17% (1)	67% (4)	17% (1)
North Sub	20% (2)	50% (5)	30% (1)
South Sub	30% (3)	60% (6)	10% (1)

Figures in parentheses are frequency of mention.

If we collapse the after-school and Saturday categories, we have a simple measure of availability of services to persons attending schools (Table III).

Table III

Percentage of Services Available in Non-School Hours

North Side	55%
South Side	21%
West Side	84%
North Sub	80%
South Sub	70%

Services are least available on the south side, and most accessible on the west side and in communities outside Chicago. The west side figure is misleading, because it is derived from a smaller base (6) than are the others. Thus there are fewer places on the west side which provide services to adolescents, although they offer these services at more convenient times of the day and week.

Barriers to Ready Accessibility of Services

Regardless of area, three concerns dominate the provision of services to adolescents. These center on matters of time, location, and perceived confidentiality.

It is not surprising that persons engaged in providing services to adolescent clients find time to be a major problem because a substantial proportion of services are offered during school hours only. The fact that some agencies see clients by appointment only further compounds the problem. Other informants report that long waits in the clinics are likely. A north suburban clinic remains

open on shopping nights (Mondays and Thursdays) to provide easier access (and maybe a plausible excuse for parental consumption) to teenage clients.

Transportation, predictably, is a greater problem in suburban and exurban locations, although this was limited to north suburban locations.

Problems of confidentiality -- worries about exposure to parents and friends -- are by far the most pervasive perceived concerns. Yet there is a conflict between the desire to maintain anonymity while making use of contraceptive services and the need for easy access to centers. Confidentiality is best maintained when services are provided outside the community but this reduces the accessibility of the servicing agencies. Neighborhood health center personnel report that teenagers are sometimes reluctant to avail themselves of services where they are likely to be recognized. Regional centers, on the other hand, report a serious problem of access.

Table IV shows the number of times a particular problem is mentioned by region. Sometimes a respondent may report that there are no barriers to the provision of services, adding that this is because problems of time, transportation, or confidentiality have been solved. These responses are included in the tabulation of recognized problems.

Table IV
Problems with Service for Adolescents

<u>Area</u>	<u>Time</u>	<u>Transport</u>	<u>Confidence</u>	<u>No Barriers</u>
North Side	6% (1)	13% (2)	53% (8)	27% (4)
South Side	16% (1)	0	33% (2)	50% (3)
West Side	0	0	80% (4)	20% (1)
North Sub	25% (4)	94% (7)	4% (2)	19% (3)
South Sub	14% (2)	14% (2)	36% (5)	35% (5)

Figures in parentheses are frequency of mention.

Advertising and Promotion of Services

Contraceptive services for adolescents may be offered at the most convenient times, be totally confidential, and be easily accessible, but if persons who might make use of these services do not know that they exist, then they will not be used. Therefore, respondents were asked if and how they publicized their programs and services.

Answers to this question fell into three categories. A substantial proportion of agencies relied principally on the local high schools to reach the potential client population. Speakers and printed literature were the means by which the clinic's location and services were advertised.

A second and related strategy was to inform the community of the agency's services by door-to-door canvassing and community meetings. Generally, these

efforts were part of a more broadly based community education project undertaken by a neighborhood health clinic. Thus, information about contraceptive services was part of a package of health services about which local residents were to be informed.

A third effort focused on media campaigns, ranging from radio announcements and talk programs to brochures, fliers, and advertisements in local newspapers. Private clinics also placed advertisements in the telephone directory.

The distribution of these efforts is again related to area, reflecting differences in the service providers. On the south side, for example, schools were a major resource, although plans were afoot in many Board of Health outposts and other clinics to engage in more active educational campaigns in the local community. On the west side, by contrast, increased efforts were not projected. The two communities otherwise are not very different in the minimal efforts that they presently invest in disseminating information. This may, of course, be a result of the fact that in these areas birth control services are part of a range of health services offered to the working and welfare poor, whose general health needs overwhelm a staff too busy to "recruit" even more clients.

Much more activity, most of which centers in the schools, can be seen in north and south suburban areas. In addition, some use is made of radio announcements,

newspaper releases, cards distributed at schools and churches, and speakers.

The north side shows aspects of both areas. Many respondents indicated that there was not the need, the time, or the inclination to promote their already overburdened services. Others, the private abortion clinics, engaged in systematic advertising in community newspapers and the telephone directory, and with published materials

Age Distribution of Clients

Impressionistic data were gathered from informants about the proportion of adolescents under 15 years of age who seek contraceptive services. While the data are not maximally informative, certain tendencies are notable. North side estimates are low, ranging from 1% to 30%, with the modal category at 10%. The north suburban area shows an even lower proportion of under-15-year-olds, with estimates ranging from none to 10%. For the south side, the range is from 10% to 30%. West side estimates range from 15% to more than 50%. South suburban figures go as high as 40%, with many estimates falling within a range of 10% to 30%. These figures suggest local community differences either in sexual practices of young teens or in their willingness or ability to make use of formally organized birth control services.

The Range of Services Requested

A clear picture of demands is drawn by answers to the question, "What two or three services do most of your teenage clients seek?" Most respondents found it difficult to rank their answers but instead listed the two or three services offered by them which were most in demand. It is necessary to interpret the answers to this question with some caution because the demand for services is in part a reflection of the kinds of services provided by the agencies themselves. Contraceptive services are listed most frequently, accounting for from 33% of all responses by north side agencies (where abortion facilities exist) to 44% of all west side responses. Pregnancy testing is a close second choice, ranging from 21% of services demanded from south-side agencies to 36% in the south suburbs. Workers in south and west side agencies (14% and 22% respectively) list VD screening as a significant service demand. This response, and the fact that 14% of west side services involved prenatal care, probably is a result of the fact that general health facilities, and not specialized birth control agencies, are the more likely service providers in these areas. In the northern suburbs, abortion counseling and referral represent 19% of the demand for service, reflecting the fact that all agencies and programs polled in that area were referral agencies. These data are summarized in Table V.

Table V
Services Requested by Adolescents

	Contraceptive Services	Pregnancy Testing	Gyn Exam	Abortion	Abortion Counseling and Referral	VD Screening	PN Care	Contra-ceptive Informa-tion
	33%	24%	18%	12%	6%	3%	3%	
(9 Responses)								
South Suburbs (28 Responses)	36%	36%	7%		7%	4%	0	7%
North Suburbs (26 Responses)	35%	23%	4%		19%			15%
North Side (20 Responses)	43%	43%			5%	5%		
South Side (21 Responses)	48%	43%			5%	5%		

Conclusion

In conclusion, it seems productive to underline the methods that have been used to arrive at some understanding of the availability of contraceptive services to adolescents in a metropolitan area. A method of data collection, the telephone survey, was selected because it best met the combined requirements of efficiency, effectiveness, and economy. The large proportion of predetermined response categories in survey methods facilitates the collection and tabulation of comparable data from a large number of sources. In the present case, telephoning was used in preference to mailed questionnaires because of the greater control it gives the data collection staff over the cooperation and full response of subjects to the study. Personal interviews, while they would have permitted a fuller assessment of the availability of services to adolescents, would have necessitated our obtaining information from a much smaller sample because of the considerably greater time involved in contacting each sample member. The questions we asked were framed out of the experience of Planned Parenthood Training and Research Center staff members with services for adolescents. Where our experience enabled us to form precoded responses to questions we did so, with a resultant gain in efficiency during data collection and analysis phases. Not having access to a list of all agencies in the metropolitan area which

offer services to adolescents, we began our sampling with the most complete available list, then checked other available lists, and finally checked sources of which sample members made us aware.

As with our sampling procedure, our analysis procedure was fully developed during the data collection and analysis process itself. Where the world under study is very well known, data analysis procedures can be well laid out in advance of data collection. In the present case it was useful to inspect data from all agencies and clinics and then to determine which broader variables were associated with our data. It is characteristic of survey methods that information collected is seen, for purposes of analysis, as data about "variables." There are, for example, variable services available to adolescents. Each of the topics we have covered in this chapter has been conceptualized in this manner. But an additional form of "variable" analysis also takes place and typically so in analyses of surveys. A search is initiated for ways to understand differences among agencies in terms of services and their access. In the present analysis the variable of geographic area of the city has been utilized to permit some understanding of the differences that do exist. In other contexts variables having to do with the type of agency offering services might be more appropriate.

Inventory of Contraceptive Services for
Adolescents

Name of Organization: _____

Address: _____

_____ Telephone: _____

Contact Person: _____

Title: _____

Do you offer contraceptive services (not abortion) to
teenagers? Yes No

If "No", do you make referrals for teens to receive
contraceptive services? Yes No

Is there an age requirement? Yes No

If "Yes", what ages? _____

Do you require parental consent before providing
services? Yes No

What contraceptive services do you provide?

pill spermicidal jellies/creams sterilization (f)
 IUD diaphragm sterilization (m)
 condom natural f.p. instruction other _____

What other services do you provide to teenagers?

counseling drug-abuse counseling v.d. screening
 MCH care pregnancy testing sickle cell
 pre-natal care gynecological exam screening

Do you charge for these services? Yes No

If "Yes", is there a general fee? Yes No

If "Yes", how much? _____

Is there a method fee? Yes No

Questionnaire (continued)

Is there a lab fee? ___ Yes ___ No

Are the fees determined on a sliding scale? ___ Yes ___ No

Do you provide abortions to teenagers? ___ Yes ___ No

If "Yes", do you ask for or require parental consent? ___ Yes ___ No

Do you provide problem pregnancy or abortion counseling? ___ Yes ___ No

Do you provide referrals for abortions? ___ Yes ___ No

What are the clinics' hours and days?

Do you accept teenage clients on public aid? ___ Yes ___ No

Do you have the capacity to deal with Spanish-speaking clients? ___ Yes ___ No

Can you provide any statistical data regarding your services? ___ Yes ___ No

If "Yes", would you be willing to share it with PPACA? ___ Yes ___ No

What barriers do teenagers face in possibly coming to your facility for contraceptive services?

Do you promote/advertise your program/services? ___ Yes ___ No

If "Yes", how and when?

What two or three services do most of your teenage clients seek? Could you rank these? (#s 1-10)

- ___ Contraception Services (not including abortion)
- ___ Pregnancy Testing
- ___ V.D. Screening
- ___ Contraception Information (only)
- ___ Gynecological Examination
- ___ Abortion Counseling and/or referral
- ___ Abortion
- ___ Pre-natal Care
- ___ MCH Care
- ___ Drug-abuse Counseling

What percentage of your teenage clients are less than 15 years old? _____

Do you know of other places in the City where teenagers can obtain contraceptive services?

COSTS TO ADOLESCENT AND OLDER PARENTS OF HAVING A CHILD:
ECONOMIC CONTRIBUTIONS TO FAMILY PLANNING

Joyce G. Skeels, Ph.D.

Introduction

Determining the cost of having a child, even in its most specific context, requires a host of decisions -- quantitative and qualitative -- before a monetary value can be assigned to a single item. In a universal context these decisions skyrocket both in number and nature. Some elements that make for such complexity are fairly obvious: Over what period of years is a new human being a "child?" What expenditures that take place during this time are attributable to the child? Where do its birth and living take place? Other elements tend in varying degrees to be more obscure and are best dealt with in the discussion of procedures itself.

Nevertheless, it can be said here that the myriad considerations going into determining the cost of having a baby from a worldwide view rise from the extremely varied economic circumstances within which a child can be born. We have only to think a moment about the infinite uniqueness of each household within one small apartment building or a few homes along a span of country road: How large is the household income? Who earns it? What are the economic values and aspirations of the people who live in it? To what extent does it fulfill or depend on the market for economic needs? Indeed, what

"things" do its dwellers consider to be economic needs? Cumbersome is the only word to describe the job of dealing with these questions locally, and even more so on a worldwide basis. For then infinite combinations exist of such matters as geography, economic organization, production methods, indigenous standards of material living and quality of life.

It has been our goal in what follows to provide a framework for as many of these economic factors as possible. We hope this framework is both comprehensible and useful to individuals, to families, and to those persons who offer them counsel, in this most prior matter of all -- the existence of another human life on our planet.

Economics and Family Planning

Throughout history there has existed a connection between economics and family planning, long before either field enjoyed its own identity to the extent even of having its own name. A revolution took place, with regard to the relationship between the two, in 1798, with the publication of Thomas Malthus' An Essay on the Principle of Population as it Affects the Future Improvement of Society. His work created an emotional upheaval; as the economist Bonar said, "For thirty years it rained refutations." Part of its impact was due to its very outspoken language, such as the now euphemistic term "moral restraint," meaning, of course, abstinence. But

perhaps the greater share of the impact of his work, and more importantly the impossibility of relegating it to oblivion, was a result of the way he dealt with population size: he based his reasoning on sound economics, employing statistics and socioeconomic (even mathematical) concepts.

Between the time of the Malthusian Revolution and about two decades ago fertility studies have consisted of projecting future growth rates based on past trends, with little discernment of socioeconomic changes that intervened. Since about 1960, however, economic science has taken fertility studies into its realm on a broad economic framework. Studies now are based on economic concepts like utility, value of input allocated to child-rearing, and the relationship between income and fertility. Another way family planning has been more scientifically incorporated into economics is by the application of statistical techniques and a continuous search for new ones. Gary S. Becker (1960) pioneered in the former aspect of the new trend, and Eva Mueller (1972) and (1976) has been a major contributor to the latter aspect. Many other economists of note have participated in the new and continuing outpouring of research and writing in the arena of fertility economics.

Costs of Having a Child: Perceived and Actual Costs

One of the main contributions of economics is its

methods of determining the costs of having a child. The importance of this contribution is magnified by the inability of most people to determine these costs accurately for their own life situations. Much of the economic literature in the area of family planning deals with the distinction between perceived and actual costs of having a child for there is a gross underestimation of the latter by parents and others in many cultures and in many income levels. Just the fact that new figures on costs of having a baby or sending a child to college make attractive feature articles in household magazines and in newspapers supports this contention. But it is also backed by solid statistical evidence which we will discuss below in connection with Table I. For these reasons we will refer to the discrepancy between perceived and actual costs as the "universal gap."

Prominent among research on the universal gap is the work of Mueller (1972) and of Fawcett (1972), a psychologist. Table I is based upon the work of Fawcett (1972) and his colleagues and of Espenshade (1977). It shows a contrast between perceived and actual costs for urban Caucasian parents in Hawaii and mainland United States, both of middle-class income levels.

Table I
Perceived and Actual Economic Costs of Children
 (by percent of annual income)

Number/order of Children	Perceived Costs	Actual Costs	Discrepancy
All children (per child)	14.7	40.7	-27
First child	8.1	30.5	-16.4*
Second child		14.7	

Source: Espenshade (1977), Tables 17 and 24.

Table I indicates the universal gap to be 16.5 to 26 percentage points of annual income. The magnitude of the gap suggests that there is some significance for the family planner in the conceptual distinction. Suggestions are forthcoming from Mueller (1972), the Value of Children (VOC) project (Arnold, 1975), and Espenshade (1977) as to how it may be used, and they are described briefly below.

First, the statistics in Table I or similar presentations serve as means of driving home to many persons, groups or institutions with whom family planning professionals work just how far from economic reality is the thinking, even among middle class parents. It follows that if rational decision making is desired, perceived costs are going to have to be brought up to realistic levels in parents' minds.

*Because no distinction was made between the first and the second child in the data on perceived costs, this figure was derived by combining the actual costs and dividing them by two.

The concept is useful to family planning counselors in another way also. The research of Mueller and VOC has produced clues, so to speak, as to the categories of persons in whose minds perceived costs are more likely to be high or low.* People who are more likely to underestimate the economic costs of children relative to the income derived from them are those who have the lesser contact or involvement with the market. In Taiwan, farmers, in contrast to self-employed persons or those who worked for others, expected a great deal of economic help from children (as direct labor during the latters' childhood and the parents' old age). The reader may again refer to Table I to see the economic unsoundness of this reasoning in family planning.

Along these lines another observation can be made from the qualitative research performed. Degree of urbanization appears to bring about a more realistic awareness of the minus quality of the universal gap, more so than the level of income or degree of education (perhaps because parents' expectations are that their own income will keep pace, at least, with the costs of

*We should point out that in neither of the studies was a quantitative and objective base established for actual costs against which the size of the universal gap might be measured. But here we are dealing with the qualitative factors such as socioeconomic status (SES) and we already have established that there is a sound and broad acceptance of the negative quality of the universal gap. The VOC project does, however, deal with positive and negative values of having children, but on a qualitative and subjective basis only.

children).

The degree of realism with regard to net cost of children appears, from both Mueller's and the VOC studies, to be greater if parents are presented with the concept of family size rather than net cost per child. Even in rural areas, there was wide acceptance of the economic advantages of smaller families (two children or less) over larger families (five or more children).

Two general observations grow from studies that are useful to family planning professionals in their direct contact with parents. One is the reluctance of parents even to discuss economic aspects of child rearing. (Large numbers were disqualified by pretests.) Reference, explicit or implicit, to children as economic entities evokes negative attitudes, a fact which suggests that educational efforts should be sensitive to acceptable circumstances and ways to introduce economic costs of children.

Costs of Having a Child: Scope and Method

The method chosen to wield a workable instrument from the highly complex issue of how much a child costs was to present and discuss two major topics, each in a separate section. Included is a variety of footnotes, tables, references, and suggested prescriptions for actual cost determination in specific situations. We hope thereby to maximize the benefits from combining

universality (which by itself could not provide one usable statistic) and specificity (which at its extreme would defy computerization because the programming alone would require volumes).

Topic I presents and explains a general qualitative model (a set of equations) whose primary function is to describe in an organized fashion as many as possible of the variables that go into the cost of having a child any place in the world.

By contrast, Topic II is a presentation of a quantitative model of actual dollar estimates for what it costs to have a child in Chicago, Ill., U.S.A. Its symbol is CIE/U (capital intensive economy/urban). The model is actually a double one because separate breakdowns are given for two family standards of living -- low and moderate--either of which could apply to adolescents in different circumstances.

Both Topic I and Topic II are given symbols, and the equations employed are coded. This is done not only to facilitate clarity and accuracy within each topic but also to provide a more concise vocabulary for the final topic.

Persons desiring economic input for family planning can select and combine data in a way that provides good approximations of what it costs a particular person and family to have a baby under specific but relatively unique conditions. Factors allowed for are geographical

area, economic organization (relative to the roles played by the market, household, and government), and the variety of income levels, personal and sociological preferences and subjective evaluations.

We have presented, then, a simple, basic model for determining the cost of a child anywhere in the world -- Model G. It can be contracted or expanded to exclude or include factors that match the reality to which it is applied. Topic II is a presentation of Model CIE/U which was produced from Model G. A hypothetical counterpart for all other economies (Model AE) can be developed, with a little ingenuity, for any specific economy. Under Topic II we will explain some of the methodological problems involved in transforming a statistical model from a symbolic one. The techniques for establishing and using ratios and index numbers are not difficult to find in the published literature. But the statistics for base references, ratios, and index numbers are another matter. We refer the reader to the sources given in footnotes. (This applies to methodological techniques also.) With full recognition that in most areas of the world quantitative statistics, such as found in United States Government documents, are very hard to come by, we suggest the following potential sources as alternatives:

- (1) The publications and offices of the United Nations and other international organizations, public and private;
- (2) Local embassies of foreign countries (where the necessity for reporting "back home" may have led to gathering of primary statistics, without their being published for outside use);
- (3) Journalists of all kinds (for even in Washington, D.C., it is sometimes said that the best informed single source of current events is the Fourth Estate);
- (4) Universities -- domestic and foreign (where libraries as well as administrators and teaching personnel may be rich sources of local statistics because of their collection and research functions).
- (5) Family planning professionals themselves (who can conduct local surveys or, through personal contacts, interest other individuals or institutions in helping them with survey techniques or perhaps in engaging in surveys themselves).

The symbols for the models themselves present our philosophy regarding the relativity of economic values both within economics itself and vis-á-vis other aspects of human life. CIE designates capital intensive economies, and AE designates all other types of economies. By the word capital we mean plant and equipment, and, parenthetically, the highly developed engineering and market technology that accompanies, indeed, is necessitated by it. We will not belabor the blatant lack of correlation within such an economic organization between the degree of technological development and the quality of existence of all its participants. Rather we will underscore the use of capital intensity as a

distinction between different geographical locations as it applies to family planning tools. For capital intensity is the crux of economic input for family planning. The reasons are two: the technology necessitated by it in areas where it is great creates categories for organization of data and the collection of it, which in many ways enhances family planning tools; where capital intensity is low, the tools are thereby harder to come by and (to a larger extent than in the former case) may have to take the form of personal calculations and conceptual modifications of the statistical tools used in Topic II. In no way, however, is the validity or usefulness of the general model developed in Topic I diminished, and to this we now turn.

TOPIC I: GENERAL MODEL FOR THE COST OF HAVING A CHILD

Economists often use models to describe a situation to which values can be assigned and to show how its elements are related. This chapter presents such a model for the cost of having a child. Models are merely sets of statements, or equations. They say, in effect, something equals or is determined by these particular factors.*

*Sometimes these models are created by a combination of fact assembling and probability analysis, and then used to make statements about situations where similar sets of relationships exist but have fewer or different data. We need not concern ourselves with that type of model in this study, although we have drawn upon a few put together by other researchers. Some of the figures in Topic II's quantitative models originated in probabilistic models.

The basic model, summarized in Table II, that describes the cost of having a child is Equation G:

$$\frac{NC}{\text{NET COST}} = \frac{GC}{\text{CROSS COSTS}} - \frac{I^*}{\text{INCOME FROM CHILD}}$$

This equation is the statement that the net cost of having a child, NC, is determined by the gross costs, GC, it entails minus the income, I, received as a result. This model applies for adolescent parents as well as for parents who have children at a later period in their lives.

We will now expand Model G by breaking its components into further equations and sometimes subdividing these through repetition of the same process. To be able to do this is one of the beauties of using models in economic discussions: Side trips can be made along the way without losing contact with the main road; referring to the line above gets one back to the main road.

The reader is advised to tag Table II for ready reference during the ensuing discussion of Topic I because it provides a summary of all of this material. This table has three ways of identifying each of the

*For ease of communication the symbols in the model are marched to the initial letters of the words they represent unless duplication would result. In this study symbols are chosen that have some relationship to the words they describe.

Table II

COSTS OF HAVING A BABY

MODEL G - General Model and Selected Expansions

Equation Identification	Equation and Description
<u>G</u>	$\underline{NC} = \underline{GC} - \underline{I}$ <p><u>Net Cost</u> of having a child <u>equals</u> <u>Gross Cost</u> minus <u>Income</u> derived from having a child</p>
<u>G-1</u>	$\underline{GC} = \underline{GC}_D + \underline{GC}_O$ <p><u>Gross Cost</u> of having a child <u>equals</u> <u>Gross Direct Cost</u> plus <u>Gross Opportunity Cost</u></p>
<u>G-1.1</u>	$\underline{GC}_D = \underline{(GC}_D)_B + \underline{(GC}_D)_F + \underline{(GC}_D)_H + \underline{(GC}_D)_C + \underline{(GC}_D)_T + \underline{(GC}_D)_M + \underline{(GC}_D)_{IS} + \underline{(GC}_D)_G + \underline{(GC}_D)_S + \underline{(GC}_D)_{AO} + \underline{(GC}_D)_{CO}$ <p><u>Gross Direct Cost</u> <u>equals</u> <u>Gross Direct Cost</u> of child<u>Birth</u> <u>plus</u> <u>Food</u> <u>plus</u> <u>Housing</u> <u>plus</u> <u>Clothing</u> <u>plus</u> <u>Transportation</u> <u>plus</u> <u>Medical</u> <u>expense</u> <u>plus</u> <u>Insurance</u> <u>plus</u> <u>Gifts</u> <u>plus</u> <u>Savings</u> <u>plus</u> <u>All Other</u> child-raising costs <u>plus</u> <u>College</u></p>
<u>G-1.1.1</u>	$\underline{(GC}_D)_{CO} = \underline{[(GC}_D)_{CO}]_{PC} - \underline{SEA}$ <p><u>Gross Direct Cost</u> of <u>College</u> <u>equals</u> <u>Gross Direct Costs</u> of <u>College Parents</u> <u>Commit themselves</u> to minus <u>Student's</u> (child's) <u>Earnings</u> during college years and outside <u>Aid</u> directly applied to college costs</p>

Table II (continued)

Equation Identification	Equation and Description
<u>G-1.2</u>	$\underline{GC}_O = \underline{(GC}_O)_{IN} + \underline{(GC}_O)_{SP} + \underline{(GC}_O)_{HC}$ <p><u>Gross Opportunity Cost equals Gross Opportunity Cost of: foregone INcome on wealth accumulated if current income were not spent on having a child plus foregone market earnings of SPouse attributable to having a child plus foregone future return on Human Capital that may have been developed in other members of the household with funds currently applied to having a child</u></p>
<u>G-2</u>	$\underline{I} = \underline{I}_{LA} + \underline{I}_{SU} + \underline{I}_O$ <p><u>Income derived from having a child equals Income received by parents from direct Labor performed by child plus Income received by parents from Subsidies due to having a child plus Income derived by parents from Opportunities the child under consideration will allow parents to take advantage of</u></p>
<u>G-2.1</u>	$\underline{I}_{LA} = \underline{(I}_{LA})_{CH} + \underline{(I}_{LA})_{OA} + \underline{(I}_{LA})_E$ <p><u>Income received by parents from direct Labor performed by child equals direct Labor performed by child during Childhood plus during Parents' Old Age plus during Emergencies</u></p>

equations. First, an identification code for the equation allows it to be spoken of in a way that not only is concise but also positions it in relation to other equations. Second, the equation is stated in symbolic and verbal form. Third, individual components are briefly defined.

Equation G is not only the basic equation for the present topic but also a statement that applies to the discussion of Topic II. The equation stems from the very simple rationale that the end cost to persons having a child consists of all the costs this entails minus the income derived from having a child.

Throughout the entire presentation the words costs and income will refer to cost and income borne or received by the parent or parents of the child. For those adolescents whose children are economically supported by their parents, cost and income references are to the grandparents. The only exceptions will be clearly stated and will usually appear as side remarks about the cost of children to society at large.

Gross Costs

Equation G-1 begins the breakdown of Equation G -- specifically of factor GC:

$$GC = GC_D + GC_O$$

GROSS COST = GROSS DIRECT COST plus GROSS OPPORTUNITY COST

Equation G-1 states that there are two categories, for our purposes, of gross costs of having a child: direct costs, D, and opportunity costs, O. The concept of direct cost will become clear in the immediate discussion. Opportunity cost is not so familiar a concept, nor is it used frequently in everyday life. Briefly, it refers to the value of a foregone opportunity; in summing up the cost of having a child, for example, an important opportunity cost is the value of whatever income a family loses if a spouse's earnings are reduced or eliminated by the coming or presence of a child in the household.

Direct Costs

Equation G-1.1 categorizes the direct costs of having a child. Two major, once-and-for-all, items are childbirth costs, $(GC_D)_B$, and higher education, $(GC_D)_{CO}$. The other direct costs are maintenance costs that must be met over the years of raising a child, either to college age or to one of financial independence. These costs, with their symbols are

$\underline{(GC_D)_F}$ = Food	$\underline{(GC_D)_T}$ = Transportation	$\underline{(GC_D)_G}$ = Gifts
$\underline{(GC_D)_H}$ = Housing	$\underline{(GC_D)_M}$ = Medical	$\underline{(GC_D)_S}$ = Savings (precautionary)
$\underline{(GC_D)_C}$ = Clothing	$\underline{(GC_D)_{IS}}$ = Insurance	$\underline{(GC_D)_{AO}}$ = All Others

Equation G-1.1 follows:

$$GC_D = (GC_D)_B + (GC_D)_F + (GC_D)_H + (GC_D)_C + (GC_D)_T + (GC_D)_H + (GC_D)_G + (GC_D)_S + (GC_D)_{AO} + (GC_D)_{CO}$$

Equation G-1.1.1 is a further breakdown of a direct cost.

$$(GC_D)_{CO} = [(GC_D)_{CO}]_{PC} - SEA$$

GROSS DIRECT COLLEGE COSTS TO COLLEGE COSTS TO PARENTS - COLLEGE COSTS TO PARENTS - STUDENT'S EARNINGS APPLIED TO COLLEGE COSTS AND OUTSIDE AID APPLIED TO COLLEGE COSTS

The purpose of Equation G-1.1.1 is to bring the concept of higher education costs to the parent more in line with reality by taking into account funds that originate with the child as a student which defray some college costs to the parent. The funds are given the symbol SEA and consist of student earnings (saved or current) and student aids. (The concept also covers tax advantages to parents, earmarked inheritances, and similar funds.) Thus, Equation G-1.1.1 allows for a reduction, owing to these factors, of college costs parents are committed to;

$$\underline{(GC_D)_{CO}} = \underline{[(GC_D)_{CO}]_{PC}} - SEA$$

Opportunity Costs

Funds, foregone by the parents as a result of having a child and symbolized as GC_O , are broken down in Equation 1.2:

$$\underline{(GC_O)} = \underline{(GC_O)_{IN}} + \underline{(GC_O)_{SP}} + \underline{(GC_O)_{HC}}$$

In the main, opportunity costs are those described after the symbols which are as follows:

$(GC_O)_{IN}$ = Foregone income on wealth that would be accumulated if current income were not spent on having a child.

$(GC_O)_{SP}$ = Earnings from work performed by one or both spouses foregone because of the expectation of or having a child. They include the influence of the child on job mobility for both spouses.

$(GC_O)_{HC}$ = Foregone future return on human capital that might have been developed in either parent or other children with funds allocated to direct costs for a child. More commonly foregone are higher education for parents or professional school for other children.

Income

Equation G-2 includes the three major elements that yield income -- that is, economic value -- to parents because they have had a child. The equation's components and their descriptions are as follows:

I_{LA} = Income derived by parents from the direct labor performed by the child under consideration. Work performed in the fields in rural, or peasant, economies is an example.

I_{SU} = Income derived from subsidies (public and private, including tax advantages) that parents receive because they have a child.

\underline{I}_O = Income derived from opportunities because the child allows a parent to be employed at work of higher value than the work the child performs; e.g., care of younger children while parents work in fields in rural, peasant, societies.

The income derived by parents from the direct labor performed by a child falls into at least three finer categories. Equation G-2.1 refers to them:

$$\underline{I}_{LA} = \underline{(I_{LA})_{CH}} + \underline{(I_{LA})_{OA}} + \underline{(I_{LA})_E}$$

The categories with their symbols are:

$\underline{(I_{LA})_{CH}}$ = Income received by parents from direct labor performed by the child during childhood.

$\underline{(I_{LA})_{OA}}$ = Income derived by parents from direct labor performed by the child during the parents' old age -- a type of social security.

$\underline{(I_{LA})_E}$ = Income derived by parents from direct labor performed by child during emergencies. An example of this "extra" labor is the work done by children in peasant societies during floods and other catastrophes.

Having introduced our basic model and its components, we will now turn to Topic II, its direct application.

TOPIC II: THE COSTS OF HAVING A BABY IN CHICAGO

The main purpose of Topic II is to present a quantitative model for the average cost of an additional child to a family in the Chicago area, Model CIE/U (Capital intensive economy/urban).

However, the model itself has two further potential uses. First, it is useful as an organizational prototype for other capital intensive economies, particularly urban; for example, the various breakdowns of statistical values can be used as empty boxes, so to speak, for monetary figures that pertain to some other CIE/U areas, be they Albany or Amsterdam. Second, the methodology for gathering statistics and making adjustments could guide family planning counselors anywhere in the world in quantitative model creation, for broad or even single family use.

In this section the following subjects will be covered: the adaptation of Model G to symbolic Model CIE/U and presentation of the latter in Table III; presentation of quantitative Model CIE/U as two separate models and discussion of each; discussion of cost components in quantitative Model CIE/U and how we have arrived at them.

The reader will be impressed with how our economic assessment of the costs of having a child is based entirely upon objective rather than subjective measures. Omitted from consideration in this section, then, are

Table III

MODEL CIE/U - Capital Intensive Economy/Urban

Equation Identification	Equation and Description
<u>CIE/U</u>	$\underline{NC} = \underline{GC}$ <p><u>Net Cost</u> of having a child <u>equals</u> <u>Gross Cost</u></p>
<u>CIE/U-1</u>	$\underline{GC} = \underline{GC}_D + \underline{GC}_O$ <p><u>Gross Cost</u> of having a child <u>equals</u> <u>Gross Direct Costs</u> <u>plus</u> <u>Gross Opportunity Costs</u></p>
<u>CIE/U-1.1</u>	$\underline{GC}_D = \underline{(GC}_D)_B + \underline{(GC}_D)_F + \underline{(GC}_D)_H + \underline{(GC}_D)_C + \underline{(GC}_D)_T + \underline{(GC}_D)_M + \underline{(GC}_D)_{IS} + \underline{(GC}_D)_G + \underline{(GC}_D)_S + \underline{(GC}_D)_{AO} + \underline{(GC}_D)_{CO}$ <p><u>Gross Direct Cost</u> <u>equals</u> <u>Gross Direct Cost</u> of: <u>childBirth</u> <u>plus</u> <u>Food</u> <u>plus</u> <u>Housing</u> <u>plus</u> <u>Clothing</u> <u>plus</u> <u>Transportation</u> <u>plus</u> <u>Medical expense</u> <u>plus</u> <u>Insurance</u> <u>plus</u> <u>Gifts</u> <u>plus</u> <u>Savings</u> <u>plus</u> <u>All Other</u> <u>child-raising costs</u> <u>plus</u> <u>College</u></p>
<u>CIE/U-1.1.1</u>	$\underline{(GC}_D)_{CO} = \underline{[(GC}_D)_{CO}]_{PC} - \underline{SE}$ <p><u>Gross Direct Cost</u> of <u>College</u> <u>equals</u> <u>Gross Direct Costs</u> of <u>College Parents</u> <u>Commit themselves to</u> <u>minus</u> <u>Student's (child's)</u> <u>Earnings</u> <u>during</u> <u>college</u> <u>years</u></p>
<u>CIE/U-1.2</u>	$\underline{GC}_O = \underline{(GC}_O)_{SP}$ <p><u>Gross Opportunity Costs</u> <u>equals</u> <u>foregone market earnings</u> of <u>Spouse</u> <u>attributable</u> <u>to</u> <u>having</u> <u>a</u> <u>child</u></p>
<u>CIE/U-2</u>	$\underline{I} = \underline{0}$ <p><u>Income</u> <u>derived</u> <u>from</u> <u>having</u> <u>a</u> <u>child</u> <u>equals</u> <u>zero</u></p>

non-economic values and costs of children (Espenshade, 1977). Examples of non-economic values, or psychic satisfactions, are not only the more obvious rewards like stimulation, novelty, and fun but deeper emotional gratifications such as expansion of self or immortality and adult status and social identity (Hoffman and Hoffman, 1973). And, of course, there is the more general experience of pleasure which fortunate people experience in one another's company.

. Costs of having a child are, in strictly economic ways, no different for adolescents than they are for parents in other age groups. This observation applies to non-economic costs as well because the same emotional burdens fall on adolescents as on older parents. It must be said, however, that not only are young parents considerably affected by these costs but their own parents share the burdens as well. In applying our model of the costs of having a child to the case of adolescent child bearers, one should consider that application will come in one of two ways. In the first case, the adolescent couple will begin an independent household at an earlier than average time of life and will be likely to incur those costs which apply to parents with a low income level. In the second case, the adolescent mother will continue to reside within her parents' household, and wage earners in that household will incur the costs of an additional child appropriate to their income.

Model CIE/U: an Adaptation of Model G

The most prominent aspect of Model CIE/U relative to Model G is that it is shorter. This is to be expected because Model G is universal and conceptual, while Model CIE/U, or any other model created to apply to a specific area and to contain actual statistics is going to be limited in extent. Thus Model CIE/U contains only six equations.

The first of the equations is a prime case in point for brevity:

$$NC = GC$$

$$NET\ COST = GROSS\ COST$$

Equation CIE/U states that the net cost of having a child in the Chicago area equals the gross cost. No allowance is made for income, I, that parents might receive from having a child. We set up the first equation this way for realistic reasons: (1) Studies of CIE's have shown that such income is limited, even in rural areas where children sometimes work on the land. (2) In urban areas, where it is not unusual at nearly all income levels for children to work outside the home, seldom do parents receive the earnings outright. Net reductions in clothing and transportation costs that could affect the parents' budget are most likely to be lost, that is, used only to increase the child's standard of living.

As shown in Equation CIE/U-1, both direct and

opportunity costs are included in the Chicago area model:

$$GC = GC_D + GC_O$$

GROSS COST	=	GROSS DIRECT COSTS	+	GROSS OPPORTUNITY COSTS
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Direct costs, broken down in equation CIE/U.-1.1, consist of the same factors as the general model:

$$GC_D = (GC_D)_B + (GC_D)_F + (GC_D)_H + (GC_D)_C + (GC_D)_T + (GC_D)_M + (GC_D)_{IS} + (GC_D)_G + (GC_D)_S + (GC_D)_{AO} + (GC_D)_{CO}$$

The next breakdown, for college costs, allows for the fact that a reduction in college costs to the student's parents does come about through general practice and custom by way of student earnings:

$$(GC_D)_{CO} = [(GC_D)_{CO}]_{PC} - SE$$

GROSS DIRECT COLLEGE COST	=	GROSS DIRECT COLLEGE COST BY PARENTS	-	STUDENT'S EARNINGS
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However, student aids have been eliminated from CIE/U-1.1.1 because of the large variation that exists among different families. Income levels and the child's scholastic abilities are the chief among them.

Equation CIE/U-1.2, like its general counterpart, covers opportunity costs, but it differs from the general model beyond that:

$$GC_0 = (GC_0)'_{SP}$$

GROSS	SPOUSE'S
OPPORTUNITY	FOREGONE
COSTS	MARKET
	EARNINGS

Only the opportunity cost factor SP - foregone earnings of the spouse(s) because of expecting or having a child, is included, and a further limitation is that only the foregone earnings of the wife are considered. These omissions occur because of the absence of statistics or a meaningful way to impute average figures, and we must keep in mind that this is a statistical model. Statistics on costs for husbands are inconsequential because there are very few "house husbands" in the Chicago area. (Stockholm might well present a different case.) Furthermore, for neither spouse are there any average statistics on the job mobility opportunities which having a child may force them or cause them to choose to forego.

Another classification of opportunity costs in the general model omitted from CIE/U is the foregone income on wealth that could be accumulated were current income not allocated to direct costs of the child. Besides financial investments, such as savings accounts and securities, spouses might select to undertake an individual proprietorship rather than have a child. The profits from income invested in, say, a bakery or small manufacturing firm then would equal the opportunity costs of having chosen to have a child instead. There is no meaningful average for this cost that could be

used in a model. Conceivably for each household in Chicago there could exist a different value, depending on the type of business that might be considered along with its location and other characteristics.

For similar reasons we have omitted opportunity costs stemming from the fact that, in place of having a child, funds could be applied to the further development of the earning abilities -- human capital -- for another member of the household. Unfortunately these two classifications constitute substantial funds and not including them in the statistical model grossly understates the cost of having a child.

As stated at the beginning of the discussion, income derived from having a child is not taken into account in Topic II's model. Thus equation CIE/U-2 merely states that $I_{\text{CIE/U}}$ equals zero.

With regard to direct labor components, I_{LA} , in Model G, or more precisely their absence in Model CIE/U, we can state that the amount of income parents receive from direct labor of a child, even when the child works, is not clear cut enough to warrant inclusion in this model. Although it is fairly common at nearly all income levels in an area like Chicago, for a child to work outside the home during out-of-school time, including weekends and vacations, a major problem arises in ascertaining how earnings are proportioned between offsetting direct costs of a child's presence in the

household on one hand and raising or changing the composition of the household's (or child's) standard of living on the other hand. For example, the child is very likely to increase the quantity of her or his wardrobe beyond the level that funds from parents would have allowed and to purchase meals or snacks in short order eating places (many of which depend on such business for their survival!) at prices considerably higher than their home-originated equivalents.

Other types of direct income brought out in the general model but not relevant to CIE/Us are earnings of a child that provide income to the parents during old age and emergencies, (I_{LAOA}) and $(I_{LA E})$. Here again, although parents do receive funds from their children, the funds are received in a variety of ways and so sporadically that the income cannot be taken into account statistically. More important, however, is the fact that in capital intensive economies people look to the state, work place, or private savings more than to their children for income in old age and in emergencies. The income most often takes the form of social security payments, pensions, investments, credit unions, and public aid. There are income sources other than direct labor of their children available to parents in CIE/Us, as compared to other types of economies, that cannot be treated statistically although in fact they exist. Excluded from consideration on this account in

Model CIE/U, therefore, are the I_{SU} and I_O components of Model G. The first of these -- income derived from public and private sources by parents because they have a child -- is or can be substantial at all income levels, depending on factors ranging from public aid for subsistence to ingenuity in personal income tax reporting. The second component -- income derived from opportunities a child allows a parent to take advantage of -- might take the form in CIE/Us of savings in babysitting fees for any succeeding children. The value of these services is not sufficient to warrant thought at the time parents are considering the cost of having the child. This component, even if it were substantial like the first, must be ruled out of Model CIE/U because no meaningful statistics would apply to an average situation.

Thus our Model CIE/U for Chicago is consistent with the conclusions of two experts (Hoffman and Hoffman, 1973, p. 60) in family planning research: "There is no evidence in the United States that children are raised for profit."

Quantitative Model CIE/U: Two Models

This section is devoted to a discussion of Table IV and very frequent reference is made to it. The table translates the more abstract formulas with which we have been dealing thus far into concrete monetary figures that mean a great deal to families and to family planning professionals.

Organization

Table IV actually consists of two CIE/U models: one for households of lower income levels, IV-a., and another for those of moderate income levels, IVb. The disposable (after tax) annual incomes for Model IVa range from about \$9,000 to \$15,000, and for Model IVb, from \$15,000 up to about \$22,000.

We have restricted the number of models to two because households above and below these income levels fall into special categories as far as family planning is concerned. Below the \$9,000 level either the financial situation is thought to be quite temporary, as with many student couples, or costs are sustained by the state. In the latter case costs are therefore largely determined by the amount of aid available, and beforehand estimates become meaningless. Both situations require special family planning techniques for individuals, counselors, or both, and they will be dealt with further in Topic III. Beyond the \$22,000 income level, because we are referring to young heads of household for the most part, the financial aspects of having a child tend to fall into the background. This tendency is reinforced by the rapidity of income growth that characterizes households with high level incomes in their formative years.

Income level growth is a characteristic not confined to well-to-do families, however. It is for this

Table IVa

CIE-U: LOW INCOME LEVEL
 Total Costs of Having a Child (through 4 years of college) in Chicago 1978

Item	Order of Child		First Child				Second Child				Third Child					
	Type of Cost		Average Annual		Total	Average Annual		Total	Average Annual		Total					
	Age Range		0-5	6-11	12-17	0-5	6-11	12-17	0-5	6-11	12-17					
<u>Direct Costs of:</u> *	\$										\$					
Childbirth			2627				1927				1927					
Raising the Child																
Food	665	1357	2211					336	473	1235						
Housing	637	1379	1252					- 35	383	842	- 22	408	869			
Clothing	266	737	1384					72	147	687	55	137	690			
Transportation	- 2	129	403					17	115	304	- 5	97	307			
Medical	206	434	406					- 24	67	214	- 26	67	216			
Insurance	194	441	602					21	101	328	7	92	330			
Gifts	40	204	378					- 19	42	210	- 6	59	220			
Savings	-120	-249	17					196	228	273	178	239	385			
Other	205	594	1026					10	100	510	2	96	516			
TOTAL	2091	5026	7679	88776					574	1656	4603	40998	487	1643	4771	41406
College Education			7664				7664				7664					
Opportunity Costs of Raising the Child:			\$99067				\$50589				\$50997					
TOTAL DIRECT and OPPORTUNITY COSTS			\$176719				\$125241				\$125649					

* Figures in this table need to be understood in terms of the descriptions in the text. Total costs come from multiplication of columnar figures by the six year span of each column. Monetary figures come from average annual expenditures from USDA budget reports. Negative figures are amounts by which families reduced their budgets while having young children.

Table IVb

CIE-U: MODERATE INCOME LEVEL
Total Costs of Having a Child (through 4 years of college) in Chicago 1978

Item	Order of Child	First Child				Second Child				Third Child				
	Type of Cost	Average Annual			Total	Average Annual			Total	Average Annual			Total	
	Age Range	0-5	6-11	12-17		0-5	6-11	12-17		0-5	6-11	12-17		
<u>Direct Costs of:</u> *	\$					\$				\$				
Childbirth					2627									1927
Raising the Child														
Food	692	1384	2236			359	496	1467		321	466	1260		
Housing	685	1429	1302			5	423	886		7	438	914		
Clothing	286	759	1404			87	164	705		67	149	710		
Transportation	17	144	418			35	129	319		7	110	319		
Medical	216	444	413			- 17	74	221		- 22	72	223		
Insurance	208	455	616			31	113	340		17	101	342		
Gifts	52	218	393			- 8	55	223		0	62	235		
Savings	- 2	- 9	368			249	338	518		224	350	666		
Other	349	614	1045			25	115	529		13	109	535		
TOTAL	2503	5438	8195	96816		766	1907	5208	47286	634	1857	5204	46170	
College Education				7664					7664				7664	
				<u>\$107107</u>					<u>\$56877</u>				<u>\$55761</u>	
<u>Opportunity Costs of Raising the Child:</u>	7422	4069	3555	90276 *		7422	4069	3555	90276*	7422	4069	3555	90276 *	
<u>TOTAL DIRECT and OPPORTUNITY COSTS</u>				<u>\$197383.</u>					<u>\$147153</u>				<u>\$146137</u>	

* Figures in this table need to be understood in terms of the descriptions in the text. Total costs come from multiplication of columnar figures by the six year span of each column. Monetary figures come from average annual expenditures from USDA budget reports. Negative figures are amounts by which families reduced their budgets while having young children.

reason that several other divisions have been made in the data presented in Table II: namely, breakdown by order of child and then further breakdown by age ranges. When these divisions are considered in reverse order, the time span factor, which allows income level changes to be taken into account, takes the form of presenting costs to the parents by age range in 6-year intervals. This permits the weighing of expected cost against expected income in the same budget period. Total costs for all age ranges are, of course, not only very significant in child planning but also essential for presenting the once-and-for-all terms of childbirth and college education. Therefore a column is devoted to total costs for each order of child.

While the time span factor is important to the order of the child in terms of child-spacing decisions, a more important aspect of child costs with regard to order is the variation in costs associated with each child. Studies have shown that the order of the child is a better gauge of what having a particular child costs than total family size. (Spacing decisions, we might interject, have a considerable effect on opportunity costs.)

Cost items in Table IV are broken down for each category of income levels into direct and opportunity costs. Direct costs are listed chronologically. Childbirth cost is followed by costs of raising the

child to age 18, with the cost of a four-year college education considered terminal for the parents. Opportunity costs cover just the years 0 to 18 because it is assumed that the spouse who cared for the child (the mother as far as our statistics are concerned) is free to participate fully in the labor market after the child has reached the age of 18. A grand total for direct and opportunity costs is given.

Cost Components in Model CIE/U

The figures for costs given on Table IV, parts (a) and (b), which we will now discuss, are all in current (1978) dollars.* All items are total amounts except for the three-column categories of age ranges, which are average annual figures.

Direct Costs: Childbirth. These expenditures include all hospital and physician's charges during the mother's stay, which in Chicago is three days on the average for all order children combined. (This information was obtained from a survey reported in the January 1978 issue of Good Housekeeping magazine. The survey

*At the present time we consider assigning any inflation rate to long-term figures next to meaningless. Several years ago it seemed that particular rates could be projected for well into the future. But with interest rates, exchange rates, and many other economic indicators in a state of flux, it would seem that any rate of inflation figure would be more politically motivated than economically based. Furthermore, we are dealing with a large variety of components, whose prices will fluctuate at different rates and at different times, and even in opposing directions perhaps.

was made by direct contact with hospitals in selected cities throughout the United States.) The figure for second and third order children for both income levels is \$1,927. For the first child, allowance was made for nursery equipment and a maternity wardrobe for the mother; the combined amount brings the childbirth cost of the first child up another \$700 to \$2,627.

No distinction was made between income levels because we have no way to compute an average figure for different levels. Hospital and physician's charges (in the hospital) are for the most part standard amounts and, unless the parents take the initiative, can be assumed identical for all levels of annual income between \$9,000 and \$22,000. The expenditures on nursery equipment and a maternity wardrobe are either determined very subjectively by individual tastes or by various situations any household may be in, such as ability to borrow items or to depend on the generosity of, say, prospective grandparents. Our estimate of \$700, while based on actual statistics for average expenditures (Reed and McIntosh, 1972, pp. 339 and 340), is intended mainly as a figure which individual parents can consider. They can make their own adjustments, taking into account the factors previously mentioned, as well as others that apply to their own case. Despite the "flat" nature of hospital-stay costs, we may point out that parents have some leeway in altering those costs, which can be a necessity if medical insurance coverage is

not quite generous. They might do well financially by considering "birthing in," using midwife services, or even having the child in an outlying or smaller town, where survey figures show the costs to be lower by hundreds of dollars.

Direct Costs: Raising the Child. Turning to the cost of raising a child, we shall first state that the basis upon which these estimates were made is a national study by Espenshade (1973), we converted his figures from national urban to Chicago average costs by a ratio derived from cost-of-living comparisons computed by the Bureau of Labor Statistics (BLS), U.S. Department of Labor,* whose figures he also used. The cost categories.

*The following figures are used to make the above described conversions:

CC^C_{78} = cost of Chicago child in 1978

P^C_{60} = prices in Chicago in 1960

P^n_{60} = prices nationally in 1960

CPI^N_{78} = CPI nationally in 1978) 1967 = 100

CPI^N_{60} = CPI nationally in 1960)

CC^n_{60} = actual cost of child nationally in 1960

The following formula is used: $CC^C_{78} = CC^n_{60} \cdot \frac{P^C_{60}}{P^n_{60}} \cdot \frac{CPI^N_{78}}{CPI^N_{60}}$

Following is one example: The cost of food for the first child

$$\begin{aligned} & \text{(0-5 Low)} \\ CC^C_{78} &= \frac{1524}{1310} \cdot \frac{191.4}{88.7} \cdot \frac{267}{267} \\ &= 1.16 \cdot 2.15 \cdot 267 = 664.83 \end{aligned}$$

(food, clothing, etc.) follow those used by BLS, which enabled us to establish ratios separately for each category. Thus we did not have to make the false assumption that Chicago varied from urban United States as a whole in the same proportion in every category. Because Espenshade's figures were in 1960-61 terms, we brought them up to date by means of the BLS Consumer Price Index, again separately for each cost category.

We believe that by using the base provided by Espenshade (whose work is held in high repute among experts in population study) for income level, child order and age range and by following the same source which he used (BLS) for the various categories, both our geographical ratio and our price indexing techniques make the costs figures for raising a child in Chicago as reliable as averages can be.

To discuss each statistic in the child-raising category separately would be not only meaningless but also counterproductive. What is of most value is, we believe, (1) some of the salient totals and (2) how they compare and contrast with others. Single, particular components are of no value to the general reader except insofar as she or he chooses to apply them to individual cases. As far as parents interested in this discussion are concerned, they, of course, will select those categories and finer statistics which are most pertinent to their own case.

The costs of raising a child to age 18 -- that is, the day-in, day-out maintenance expenses that persistently challenge the budget -- are by far the largest component of total direct costs, ranging from 80 to 90%. It follows, also, that they are the largest component of all costs of having a child whether the mother is already working or places market work outside the realm of possibility at any point in the family planning process.

What the figures in the category actually say should be clearly understood for this reason alone, and certainly for general purposes also. We will use a concrete example:

The first figure in Table IV (budget section) after the word "food," \$665, means that if a family in the lower income category has a child, \$665 more per year will have to be allowed in the food budget, on the average, as long as the child is between ages 0 and 5.*

*How to compute the total additional expenditure for food (or any other costs of raising the child) over the first 18 years of the child's life is probably best explained in terms of what not to do. Do not add together the figures in the three columns horizontally preceding the total column. Such a number has no meaning. What to do is follow our procedure for arriving at the "Raising the Child" total. We multiplied each age category by six (the number of years in each age span) and then summed these products. Remember the estimates in the three age range categories are average annual costs, not total costs for the age span. One can, however, add vertically the age span for any desired number of categories, as we have done to derive the total (top column figures), if one keeps in mind that the resultant figures refer to average annual costs.

The figures are based on a two-year spacing of children and would be higher or lower in most categories if the spacing were different. For instance, if an interval of six years separated one child from another, the economies from the use of hand-me-down clothing would drop seriously and thus the cost of an additional child would rise significantly. The sex of an additional child would be as important as spacing in this respect also. Unfortunately the data upon which Espenshade drew up the basic figures did not specify the sex of children, so this factor could in no way be incorporated. For family planning purposes it is a serious economic consideration at all stages beyond the first child. (However, in the present state of medical practice it has to be a "what if" consideration.)

As might be expected, the largest costs of raising a child, for nearly all categories of income, order, and age range, are food, clothing, and housing. Where prominent exceptions occur, as for housing and clothing in the case of second and third order children, the drop probably results from what are technically referred

to as "economies of scale.* In households these take the form of sharing bedrooms and re-use of clothing. They are important especially in our estimation structure where it is assumed the children follow in close order.

It might be well to pause before discussing additional categories of maintenance costs and to pursue the topic of the effect of child order. Two of the most outstanding aspects of these costs are their precipitous drop after the first child and their almost continuous level for the second and third child. Even the slight rise in costs for the third child may reflect statistical methods rather than actual expenditures (see

*Not all decreases in costs reflect real factors, even minus figures. We will preface our explanation of this phenomenon by advising the reader to look upon negative figures as very low amounts; in other words, they occur after the point zero on a decreasing continuum of numbers.

Both rises and declines in the estimates, unfortunately, may be attributable to the nature of the original data Espenshade(1973) worked from, as well as to real cost changes. The USDA raw figures from which his data were taken consisted of household records of expenditures or allocations that took place as the number of children increased. Standard of living was held constant, measured in terms of food expenditures, for a given size family. For the most part these allocations for different categories, such as clothing, represent costs. But in some categories, such as savings, a family's standard of living could remain constant in terms of food, while an increase in income occurs that may be allocated to savings, higher quality medical care, or more luxury spending that appears only in the "all other" category. In short, how much is spent (or saved) at the point in time a child is added to the family does not always mean the child costs more or less. It is one of the woes of economists that they are not consulted as to their research needs before the government or other institutions gather statistics. There is, however, progress being made in this direction.

footnote on page 135). Maintenance costs for the second and third child are less than 50% of those for the first child in both income categories.

This dramatic difference, however, may lead to unsound family planning as far as economic input is concerned unless another factor, which could be termed the "pile-up effect," is considered. For unless a couple plans to space children 18 years apart (we are using a very unrealistic assumption to make a point), the total cost to the previously one-child household that results from having another child is the sum of the maintenance costs for the first, given his or her age range, plus the cost of the new child (excluding by definition even childbirth and college costs). The same pile-up effect occurs with each additional child.

The cost categories of transportation, medical, and insurance, as might be expected, rise with age range and income level for the most part. (For exceptions see the discussion in footnote, page 135.) Under "gifts," expenditures tend to drop off after the first child rather drastically in the early age range, perhaps indicating that families operate on a fixed budget in this respect. For example, a set amount is put aside for Christmas or Hanukkah and divided up rather evenly. (Remember the figures refer to additions to total household costs owing to a child, not expenditures on a specific child.)

The "savings" and "other" figures unfortunately were not calculated in such a way as to fulfill the concept of our estimates. They are based, like all other maintenance terms, on family budget records, as explained in the footnote on page 135 and may reflect residuals (or leftovers) in family funds. In some cases, this residual can stem from a rise in income as years pass at the same time children grow older. Thus in certain categories figures do not indicate, for instance, how much more should be saved for emergencies because of the addition of a child to the family. All we can do is point out the nature of these "costs" and caution the reader to interpret them for what they are.

Direct Costs: College Education. The cost of \$7,664 to parents for providing a four-year college education for each child is based on Department of Health, Education and Welfare data. It represents an average of costs at private and public institutions and covers room and board as well as tuition and fees. Because private schools are more than twice as expensive as public institutions on the whole and only about 30% of college students attend private schools, the average was weighted accordingly. To take into account that students in the present era generally make substantial contributions to these basic costs and quite often provide their own clothing and other maintenance costs, a reduction of \$1,200 was made from the gross amounts

for basic college costs for each year of college attendance. The \$1,200 figure was arrived at by assuming that a student, on the average, works 10 hours a week during the school year and 40 hours a week during the summer months, at the minimum wage, and by assuming further that only half of her or his earnings actually defray basic college costs for the parents. No reduction was made for student aids, which are certainly available for many families. But as explained previously, aid programs are so individualized that no average estimates can be determined.

Our estimate in Table IV for college costs serves best, like the estimate for childbirth costs, as a point from which parents or counselors can make allowances for their own individual cases. Many of these considerations are implicit or explicit in the foregoing discussion. But the college costs are more complicated than childbirth costs because in the latter case dollar figures seem to be reasonably steady in the foreseeable future. If the decision to "send" the child to college is part of the decision to have a child, there intervenes a long span before college age. During that time not only will inflation and real costs (professors' salaries, for example) in all likelihood change the charges colleges make but also the political and social climate may grossly affect how these charges will be distributed between households and government and between child and parent. A case in point currently is the

middle-class revolt against the direct aid the federal government makes to students of low income level households and on a categorical basis (color and ethnic base, for example).

Opportunity Costs. To most readers of the study the magnitude of opportunity costs in having a child is probably the most astounding. They range from 37 to 60% of total costs. Yet as will become clear from discussion of the method used for computing them, these estimates are very conservative, particularly for couples who think in terms of either children or a career for the woman. (Our estimates are based on the assumption that it is the mother's labor force participation that will be reduced by the presence of the child.) For those adolescent mothers for whom the arrival of the child leads to discontinuation of schooling, a serious curtailment of labor force participation will be likely to occur.

Before we proceed further on the subject of how opportunity cost estimates were arrived at, we must point out that their interpretation on Table IV departs radically from other estimates: they are not additive as family size grows. More specifically, if parents with one child use the table to estimate by what dollar amount total direct costs will increase, it is valid to add the figure that applies to the first child to that for the second child. Not so with opportunity costs.

Their full amount is given for each child; put conversely, a third child in income bracket (a) would not mean total opportunity costs for the household would be \$223,956 a year ($3 \times \$74,652$) for any year. What exactly a third child costs in this context would depend on whether the mother was already working outside the home. If she were, then total opportunity costs for the household until the third child reached age 18 would be increased by an amount dependent on the spacing (and thus age brackets) of all children. The average annual figures by age bracket given for the first child are a guide for such calculations. One more point should be made with regard to the non-additive aspect of opportunity costs that is both demonstrative and pertinent to the philosophical aspect of family planning. This point is that Table IV is set up on the premise that the woman may at any point elect to apply her potential in the marketplace.

Opportunity costs were calculated on a basic framework developed by Cain (1971) of the University of Wisconsin (whose work on family income is widely acclaimed). He applied other statistics and techniques to basic data on women's work in the marketplace formulated by Bowen and Finnegan (1969). Cain on this basis created a series of data covering 14 years of a child's life, showing how many hours of market work were foregone by a woman as a result of having her first child. To this

number, which varies according to level of school completed, we applied BLS average hourly earnings for women, also in terms of level of schooling, and a dollar figure for foregone earnings was derived. We adapted his findings to the model of Table III by: (1) extending the years of the child's life to age 18 (his estimates were identical from ages 6 through 14); (2) averaging out the individual years into age range categories; (3) because his figures were for U.S. urban women, converting them to Chicago figures by a BLS index on average hourly earnings for women by individual cities; (4) bringing them up to date to 1978 (from Cain's 1969 estimates) by another compatible BLS index.

Despite what we believe to be a highly valid method of converting Cain's less contemporary and more general statistics to realistic current estimates for the Chicago area, they are only useful to family planning to the extent that their underlying assumptions are applicable to an individual case. Thus we must report that Cain assumed a married woman with children would work only half time. Also he assumed she would "work at a job" not pursue a career. That he did so is implicit in his choice of the data of Bowen and Finegan (1969) for married women rather than for single women, where "career income" might more likely be reflected. Thus from their very base, our estimates of opportunity costs are in all probability low.

Our flat opportunity cost figures for low and moderate income households, \$74,652 and \$90,276, respectively, were selected and differentiated by making the following assumption: In the low income categories the more probable educational level of the woman is completion of high school, whereas in the moderate income level it would more likely be completion of four years of college. Thus, holding hours worked on the market place constant, earnings foregone owing to the presence of a child would be higher for moderate income families because average hourly earnings rise with educational level. This is an operative assumption for average estimates only. It is, like all other influences on opportunity costs, highly simplistic and must be thought of as such when individual situations are under consideration.

Total Direct and Opportunity Costs: Despite our persistent warning about assigning general significance to the estimates in Table IV, the temptation is irresistible to pay some attention to gross costs. What is more, certain aspects of the composition and variation of these costs are exceedingly important to anyone concerned with family planning in urban areas of capital intensive economies.

That to have a first baby in Chicago costs from \$177,000 to \$197,000, just in current dollars, is probably an astounding piece of information to most

persons, whether they are or ever expect to be involved in family planning decisions. That the cost of a second child, or a third, ranges from 125,000 to 147,000 (even if the mother is already working or plans never to work) does little to allay the shock.

How can anyone afford to have children, one might ask? Although child spacing different from the two-year intervals used in Table IV would alter the estimates somewhat, direct costs alone for three children mean out-of-pocket expenditures of \$7,800 and \$8,500 a year over 26 years for the lower and moderate income families, respectively. We must point out that these figures are decidedly biased in a downward direction because they are based on living standards that prevailed nearly 20 years ago regarding number of cars per family, housing space (including number of bathrooms per person), and medical care, particularly corrective measures such as orthodontistry.

In short, it is quite clear from Table IV that "kids cost money," and the more emphasis one places on the emotional and social aspects of life, the more important it becomes to consider the trade off which the economic burden of children involves if rational decisions as to "Quality of Life" desired are to be made.

There are three features of having a child that stand out in the grand total estimates of Table IV

that are of special relevance to responsible family planning. One, opportunity costs represent such a large proportion of total costs. What makes opportunity costs more important is the consideration that they are grossly underestimated for certain categories of women and that opportunity costs of investment and job mobility, for example, are not even taken into account in the Chicago model. Their relative age places a great deal of individual and subjective decision making on any couple contemplating whether or not to add a child to their household.

Second, there is a relatively slight variation in direct costs, given the order of the child, between the two income groups. The phenomenon is consistent with the 1960-61 figures of Espenshade (1973) and holds true for an even higher income level for which he carried out the same estimating procedure. What we are saying is that level of income (or living standard based on expenditures) probably fails to provide parents or their counselors with as much objective data as they might hope for to arrive at decisions on number of children desirable.

Third, level of income is not an overriding element in the cost of having a baby, if one reads the bases previously described upon which total costs were determined. This can allow a couple a great deal of leeway in searching out and evaluating for themselves

at any point just how many children would be best for them, where they should have them, the importance to themselves of higher education for their offspring, and, as well, the multitude of opportunities that may have to be foregone if they have another child.

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