

# The Impact of an Increase in Family Planning Services on the Teenage Population of Philadelphia

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*In an assessment conducted 30 months after a Philadelphia-area project increased the resources that community family planning agencies devoted to teenage services, teenagers in targeted communities showed no generalized improvement in rates of pregnancy and childbearing, in knowledge or use of clinic services, or in attitudes toward contraception compared with those of teenagers in the entire city. Samples of adolescents aged 14–18 from the clinics' catchment areas and from the entire city were interviewed in mid-1988, when the project's activities began, and 2.5 years later. The results suggest that while community family planning clinics may provide effective services to the teenagers who seek them out, they may not be the most effective strategy for decreasing rates of pregnancy and childbearing in the overall teenage population.*

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Since teenage pregnancy and childbearing became public concerns in the United States in the early 1970s, public and private institutions have established countless interventions to help adolescents avoid pregnancy. Preventive interventions are attractive, for unlike programs aimed at teenage parents, they seek to reduce the incidence of teenage pregnancy, rather than merely ameliorate its often costly and sometimes intractable consequences. Motivated by the recognition that facilitating consistent contraceptive use is key to preventing teenage pregnancies, the provision of teenage-oriented family planning services has been a common preventive intervention.<sup>1</sup>

Based in part on the experience of other developed nations—where rates of pregnancies, abortions and births among teenagers are markedly lower, even when levels of teenage sexual activity are relatively high—it is widely believed that U. S. adolescents are capable of engaging in the responsible sexual decision-making that results in relatively few unplanned pregnancies and births.<sup>2</sup> Programs designed to achieve this end typically sup-

port teenagers' contraceptive use through education and counseling, in addition to providing supplies. While such services are increasingly provided by school-linked health centers, community agencies remain an important source of teenage-directed contraceptive services.

Although community family planning services have proliferated over the past two decades, relatively little is known about their impact on teenage reproductive behaviors. Despite recent advances in evaluation research, clinic services remain undervalued.<sup>3</sup> Understanding the impact of clinic services is critical, because rates of teenage childbearing have been persistently high. The growing risk that adolescents face of becoming infected with a sexually transmitted disease has increased the urgency of designing reliable strategies to encourage protected intercourse among sexually active teenagers. Systematic evaluation research is important not only to demonstrate which types of programs will work, it is also key to clarifying which programs are most cost-effective in the face of limited resources.

Analyses of the population impact of contraceptive provision—its effects on the behavior of the entire population, not just among those who actually use clinic services—are particularly important. This concept is critical to evaluation research, since the overall policy goal is to bring down rates of pregnancy and childbearing among the teenage population, not just among the self-selected clients of family planning clinics. We emphasize the point because it is often obscured in the existing empirical literature; furthermore,

it has important ramifications for study design. While patient-based analyses are useful for clarifying issues such as the effects of alternative service protocols, results based on client data cannot be used to draw conclusions about population-level issues, as they are contaminated by selectivity bias. To assess the population impact of a program, data representing the entire target population must be collected and analyzed.

Most existing evaluations of community family planning services are clinic-based.<sup>4</sup> The limited research on the population impact of such programs has produced conflicting evidence—a few analyses found that a greater density of services was related to lower rates of teenage pregnancy or childbearing;<sup>5</sup> several others found no relationship or a mixed relationship between the availability of services and fertility rates among adolescents;<sup>6</sup> and still others found the opposite relationship, in which greater availability was associated with higher rates.<sup>7</sup> Making sense of these discrepant findings is difficult, as the studies employed dissimilar designs, examined data for disparate time periods and utilized different dependent variables.

Further research is needed to determine the extent to which availability of services can be relied on as a strategy to reduce unplanned pregnancy and childbearing among teenagers. If the availability of teenage-specific family planning resources has a strong negative effect on community fertility rates, then the prospects of success for the relatively straightforward strategy of increasing availability are good. However, if availability is unrelated, or has only a weak negative relationship to teenage fertility, then the problem is clearly greater than the supply of services. Attention would then need to be shifted to more subtle population-based questions, such as patterns of selectivity in service use or the social context of teenage sexual experience. Finally, it is important to assess whether, as some critics have argued, availability unintentionally increases rates of teenage pregnancy and childbearing by condoning, if not encouraging, teenage sexual activity.<sup>8</sup>

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## The RESPECT Project

In this article, we assess the population impact of an expansion of teenage-directed family planning services in the Philadelphia area. The service-expansion project was funded by the William Penn Foundation with the expectation that increasing contraceptive services for sexually active teenagers would raise the proportion of the at-risk population served and lower fertility rates. The project, known by the acronym RESPECT (Responsible Education on Sexuality and Pregnancy for Every Community's Teens), was implemented by a consortium of nine health care agencies. Between January and August of 1988, nine existing clinics either increased services for teenagers or began serving teenagers for the first time, while three new clinics offering services to teenagers opened in communities where there had previously been no clinic. Each of the clinics expected to draw teenage clients from a well-defined geographic area surrounding the clinic.

While the details of the programs the various RESPECT agencies proposed to the Foundation varied, the clinics had in common two fundamental goals—to increase the number of teenage clients served and to initiate educational outreach programs. Among the specific strategies used by the existing clinics were initiating or expanding after-school or evening hours, beginning teenage walk-in hours, decreasing the average waiting time for appointments, and increasing the hours reserved for teenagers only. Most of the clinics' outreach efforts were focused on sponsoring group educational sessions at community institutions for teenagers and their parents; many clinics also participated in events such as community health fairs. Several clinics included peer education as a component of their outreach.

The efforts of the independent clinics in the RESPECT network were coordinated in several ways. First, the clinics were accountable to the standards of one funding agency for assessing their progress; the Foundation's oversight included quarterly reports and site visits. Second, the Family Planning Council of Southeastern Pennsylvania arranged bimonthly meetings of the directors of the RESPECT clinics. In this way, clinic staff were able to keep informed of each other's activities, discuss potential strategies, and learn of opportunities for training.

Finally, the clinics' outreach efforts were bolstered by a media campaign also funded by the William Penn Foundation and developed by the Family Planning Council of Southeastern Pennsylvania. The aim of the

publicity campaign was to increase awareness of teenage pregnancy and encourage responsible sexual decision-making. The theme of the campaign was "Pregnancy: It's Not for Me." It was officially launched in November 1989, and over the next two years posters and public transit cards containing the slogan and featuring local teenagers were distributed. The campaign attracted the attention of the mass media, and as a result, was the subject of many radio programs and several newspaper articles.<sup>9</sup>

Available evidence suggests that, for the most part, the clinics were successful in attaining the goals they had set in their proposals. In final reports submitted to the Foundation, all of the clinics reported increases in the number of teenagers served, and all but one met or exceeded their target number of new teenage clients. An analysis of patient data indicated that the RESPECT clinics served approximately 10,000 new patients over the three years of the project. The clinics were similarly active in their outreach efforts: The RESPECT agencies conducted hundreds of school and community programs over the three-year period.

The RESPECT project provides a unique opportunity to assess the impact of an increase in family planning resources on the teenage population. Given the Foundation's \$2.5 million investment, was there a detectable impact on the population of teenagers to whom services were directed? Specifically, did the proportion of teenagers served within the RESPECT clinics' catchment areas increase over time? How did teenagers' reproductive attitudes, knowledge and behavior change in the targeted areas compared with the city as a whole?

## Data and Methods

Our analysis uses data collected in Waves I and II of the Philadelphia Teen Survey, which was designed specifically to evaluate the effects of the RESPECT clinics. Random samples of teenagers in areas targeted by clinics offering RESPECT services were interviewed at two points in time—prior to implementation of the services and 2.5 years later. Similarly drawn samples of teenagers from the entire city were also interviewed at both points in time for control purposes. We are thus able to compare the responses of teenagers before and after the service expansion within the target populations of the RESPECT clinics and in the city as a whole. The relative trends will indicate the direction and magnitude of the impact of the RESPECT project.

For Wave I, fielded in mid-1988 as the project was just beginning, the nine RE-

SPECT agencies provided geographic boundaries for the areas targeted by their clinics. Using these boundaries, five catchment areas were defined in terms of census tracts; four of the areas contained more than one clinic. One catchment area was in a suburb contiguous to Philadelphia, while the remaining four were within the city limits.

To obtain the catchment area sample, we first randomly sampled tracts within each catchment area, then drew a random sample of blocks within these tracts. Using a reverse telephone directory (which indexes phone numbers by addresses rather than name), we then compiled a list of phone numbers corresponding to all non-commercial addresses in the selected blocks. To obtain the city-wide sample, we randomly selected columns from the reverse-listing directory, excluding those columns that had already been used to create the catchment area sample. Again, all residential phone numbers from each column were listed.

The households from both lists—catchment areas and city-wide—were screened by telephone to determine the presence of 14–18-year-olds. If teenagers in this age group were present in the household, interviewers followed detailed selection guidelines to recruit four times as many females as males and a maximum of two teenagers from each household. If the eligible respondent was younger than 18, a parent (usually the mother) was interviewed first and permission to interview the teenager was obtained at the close of the interview. All together, Wave I yielded a total of 1,256 teenage interviews and 966 parent interviews; 18% of the teenagers were the second teenager in a household.

Wave II, fielded in early 1991, consisted of another cross-sectional sample drawn in the same manner. The proportion of males in the sample was increased slightly, as was the number of cases in the city-wide sample. In addition, the number of cases in the suburban catchment area was reduced. For the purposes of a separate longitudinal analysis, approximately 20% of the teenagers interviewed in the first wave were reinterviewed in the second wave. Wave II produced 1,181 respondent interviews and 1,007 parent interviews; as in Wave I, one-fifth (20%) of the teenagers were the second teenager in a household.

Both survey waves used essentially the same questionnaires, although some items that did not work well in the first wave were dropped from the second. The only major procedural difference between the two waves was in the timing of the interview: In Wave I, respondents were inter-

viewed immediately after they were deemed eligible, while in Wave II, the full sample was recruited before the interview phase was initiated, so an average of seven months elapsed between recruitment and the actual interview.

The response rates for the first and second waves were 84% and 76%, respectively. These are the ratios of the number of households in which at least one person was interviewed to the number of eligible households in the initial screening. As such, they slightly overestimate the true response rates, since approximately 6% of households refused screening in both waves and, in several instances, only some of the eligible household members were interviewed. The somewhat lower response rate for the second wave is most likely due to the longer period of time between the initial screening and the interview. Only a small minority of interviewed parents refused to permit their teenager to be interviewed (5.5% in Wave I and 6.1% in Wave II).

We were concerned about possible bias resulting from using a phone-based sample, since excluding households without phones removed the most disadvantaged portion of the population from the sample and using a reverse directory eliminated households with unlisted telephone numbers. Therefore, we compared characteristics of mothers interviewed in our city-wide samples with those of Philadelphia County mothers of 14–17-year-olds in the 1990 Census 5% Public Use Microdata Sample. The comparison showed no systematic differences between the survey sample and the census sample.

In this evaluation, teenagers are the unit of analysis; we appended information from the parents' interviews to the teenagers' data records. Our analysis is restricted to black and white adolescents, due to the limited number of teenagers of other races (204). The 272 teenagers in the longitudinal panel were assigned randomly to a single survey round; that is, one-half were counted as respondents to Wave I and the other half were counted as Wave II respondents. Extensive exploration produced no evidence that the inclusion of reinterviewed cases introduced any bias into the analysis. The total sample for analysis equals 1,961 teenagers.

Table 1 presents selected demographic and socioeconomic characteristics of the teenagers included in the four subsamples used for analysis. The family background

data in the lower portion of the table refer only to 14–17-year-olds whose mother was interviewed. (For 17% of 14–17-year-olds, we interviewed another parent or a surrogate parent.) Statistically significant ( $p < .05$ ) differences within area over time are indicated by an asterisk.

As the table shows, the changes in design between the two waves yielded significant differences in the samples by age, race and gender. The differences over time are less pronounced for the family background measures; only differences by mother's age at first birth in the city sample, and by mother's marital status in the catchment sample, are statistically significant ( $p < .05$ ).

Because we were interested not only in the impact of the RESPECT project on clinic use and rates of pregnancy and birth, but on the consequences for all dimensions of teenagers' reproductive experience, we selected a large set of outcome measures from the interviews, including teenagers' knowledge, attitudes and behaviors regarding sexuality, fertility, contraception and use of family planning clinics.\* For the purposes of our analysis, all of the measures were dichotomized.

Our analysis gauges the effectiveness of the RESPECT project by examining the pattern of change over time among these variables in the catchment areas compared with that observed in the entire city. Although the simplest way to do this would be to compare the within-area time trends, the differences in the samples' composition (see Table 1) would distort the comparison. Thus, we used multivariate logistic regression to standardize the samples. We pooled the cases from the four subsamples into one dataset and created indicator variables for wave and area. For each outcome, we then estimated a logistic regression that included a set of control variables, the wave and area indicators, and an interaction term for wave and area as covariates. The coefficient and standard error for the wave indicator show the magnitude and significance of the change over time, controlling for compositional differences among the samples. The corresponding figures for the inter-

**Table 1. Percentage of respondents to the Philadelphia Teen Survey, by characteristic, according to area sampled and year of survey**

Characteristic	Catchment areas		Entire city	
	Wave I 1988	Wave II 1991	Wave I 1988	Wave II 1991
<b>All Ages</b>	(N=907)	(N=680)	(N=117)	(N=257)
14	14	18*	9	18*
15	15	17	21	16
16	21	24	18	29
17	26	22	26	22
18	23	19	27	16
Black	46	52*	41	34
Female	82	79	81	60*
<b>Ages 14–17</b>	(N=576)	(N=398)	(N=70)	(N=156)
Family receives welfare	8	10	7	5
Mother was <20 at first birth	34	36	41	22*
Mother's education				
High school graduate	47	46	56	48
Beyond high school	39	42	34	42
Mother currently employed	77	78	70	68
Mother's marital status				
Currently married	65	60*	57	65
Never married	5	8	7	7

\*Difference across wave within area significant at  $p < .05$ .

action term show whether the change over time was, in fact, different by area.

Because of cost constraints early in the project, the first wave city sample was quite small compared with the other subsamples. Power analysis indicated that this small sample size limited our ability to discern differences between the samples in changes over time. That is, coefficients on the wave-area interaction term that are different from zero may not appear to be statistically significant unless they are large, corresponding to a time difference in the catchment areas twice as large as that in the entire city. Because of this limitation, we discuss the magnitude and direction of our results as well as their statistical significance.

Nevertheless, our study has at least three advantages over previous studies of the effects of family planning service resources on the teenage population. First, it is prospective. We interviewed cross-sections of teenagers in catchment areas and in the city as a whole, both before and after the implementation of the RESPECT project. In contrast, previous studies relied upon cross-sectional areal data at one point in time, which limits the extent to which causal connections may be drawn. Second, since the catchment areas of the clinics were carefully defined by the clinics themselves, we can expect a correspondence between the services and the population; this was not the case with prior studies that used state or county data. Finally, because of the detailed information collected in our interview, we can examine a much broader range of outcomes than studies that inter-

\*The specific items used in the questionnaire are available from the authors upon request.

lied on vital statistics or census data; furthermore, we are able to control for individual-level characteristics.

## Results

The results of our analyses are displayed in Table 2. The numbers in the table express the sample-specific proportion responding in the affirmative to each item (either yes, agree or true). The proportions were calculated using the logistic regression equation estimated for each outcome variable, and so are in effect standardized for differences among the subsamples in age, race and gender composition.\* Statistically significant differences ( $p < .05$ ) in time trend between the catchment and city-wide samples are indicated by an asterisk.

Did the project achieve the Foundation's goal of increasing the proportion of adolescents using clinics? As the first panel of Table 2 shows, teenagers in both areas were more likely to have heard of a family planning clinic in Wave II than in Wave I; however, the increase was much smaller in the catchment area than in the city-wide sample (3 percentage points vs. 11 percentage points), although the difference between the two was not statistically significant. More importantly, the proportion of teenagers who had ever been to a clinic declined in the catchment area sample (from 25% to 18%), while the proportion remained the same in the city-wide sample (17–18%); however, the difference between the trends again misses statistical significance. Finally, there was no change over time in teenagers' frequency of visits, their satisfaction with the clinics, or their plans to return to a clinic in either area. Thus, over the study period we did not detect the desired influence of the RESPECT project on clinic use in the target population; if anything, the results suggest just the opposite.

Although the RESPECT project did not affect teenagers' use of clinics, it still might have influenced their awareness and opinions of clinics. However, as the table shows, the proportions of teenagers reporting negative attitudes about clinics were relatively stable over time and there were no significant differences between the catchment area and the city-wide samples. Interestingly, the change between waves in the proportion who believed that clinics should be located in schools was significantly greater in the catchment area than in the city as a whole. The proportion of teenagers who knew that clinics provide free contraception also increased greatly over time in both the catchment areas (from 73% to 86%) and the control areas (from 70% to 82%).

**Table 2. Percentage of 14–18-year-olds responding affirmatively to survey questions, by subject, according to area sampled and year of survey**

Subject and question	Catchment areas		Entire city	
	Wave I 1988	Wave II 1991	Wave I 1988	Wave II 1991
<b>Clinic use</b>				
Ever heard of any clinic	53	56	39	50
Ever been to any clinic	25	18	17	18
Ever been to clinic more than once†	68	65	51	53
Was satisfied with clinic‡	63	63	61	57
Plans to return to clinic‡	75	71	62	60
<b>Clinic knowledge and attitudes</b>				
Better care from private doctor than from clinic.	73	71	73	78
Too difficult to get an appointment at a clinic.	36	36	31	35
Would not go to clinic because someone might find out.	16	14	20	14
Have to wait too long for services at clinics.	44	38	44	43
Family planning clinics should be located in schools.	50	60	60	57*
Clinics provide free birth control, including pills.	73	86	70	82
Boys can get free condoms at family planning clinics.	78	89	74	85
A teenager can get abortion information from a clinic.	84	88	85	85
Must have a physical exam before getting birth control.	69	69	81	70*
Teenagers under 18 need parents' permission to get a method.	40	39	42	34
Clinics do not provide information and services about STDs.	17	20	15	20
There is no clinic in my neighborhood.	45	41	49	44
<b>Sexuality</b>				
Ever had sex	51	52	53	52
Had sex in last 4 weeks‡	50	43	53	45
Boy should have intercourse by 15 to prove manhood.	3	3	4	3
Would not want parents to know if having sex.	51	49	57	51
Easy to talk to parents about sex.	53	50	61	49
Teenagers would be better off if said no to sex.	81	75	86	74
Friends will make fun of teenagers not having sex.	34	23	38	26
<b>Contraception</b>				
Used method at first intercourse	40	63	48	58
Used method at last intercourse	67	73	76	68
Used method at each intercourse in last 4 weeks	61	60	83	61
Many harmful side effects from pill.	73	68	82	67*
Birth control often doesn't work even if you are careful.	56	48	48	52*
Modern methods (pill, condom, diaphragm) are most effective in preventing pregnancy.	93	90	92	88
Girl ready with birth control is asking for sex.	31	22	39	25
Girl should be responsible for birth control.	35	28	30	32
Would only have sex if using birth control.‡	74	72	87	68*
It costs too much to use birth control.	13	10	24	13
Girls don't take pills due to worry about weight gain.	49	42	47	49
Would be embarrassed to buy birth control in store.	37	31	35	36
Birth control keeps me or partner from enjoying sex.‡	14	17	19	13
When excited don't want to think about birth control.‡	26	23	23	22
Using birth control is too much of a hassle.‡	8	6	9	13
Can talk to friends about birth control.	85	90	85	88
Can talk to someone in family about birth control.	85	84	87	84
It's hard to talk to partner about birth control.‡	12	8	13	9
<b>Fertility§</b>				
Ever been pregnant	6	8	6	7
Ever had a live birth	3	3	2	4

\*Time difference between areas significant at  $p < .05$ . †Among respondents who have ever been to a clinic. ‡Among sexually active respondents only. §Among women only. Note: Percentages have been adjusted for subsample differences in age, gender and race composition.

A significant change occurred in the responses to only one of the items that assessed teenagers' knowledge of clinics—i.e., that a physical exam was required to obtain a contraceptive method. Knowledge about the exam requirement stayed the same over time in the catchment sample (at 69%) but declined between the two waves among the city-wide control sample (from 81% to 70%), so that there was a statistically significant difference in the trends. As with the measures of clinic use, no convincing evidence emerged of the project's influence on teenagers' knowledge of and perceptions about family planning clinics.

Did the RESPECT project have an impact

on other dimensions of teenagers' reproductive behavior? Regarding sexual activity, there was no change over time in the proportion of teenagers who said they had ever had sex in either sample (about 50%). Among those who were sexually active, the

\*The estimated logistic regression equation was:  $\ln(p / 1-p) = X\beta$ , where  $X\beta = \alpha + \beta_1 \times \text{Age} + \beta_2 \times \text{Black} + \beta_3 \times \text{Female} + \beta_4 \times \text{City} + \beta_5 \times \text{Wave II} + \beta_6 \times \text{City} \times \text{Wave II}$ , where  $p$  is the probability of a particular outcome. Solving for  $p$  yields the equation:  $p = 1 / (1 + e^{-X\beta})$ . To calculate the standardized proportion exhibiting the outcome in each subsample, we inserted the sample means for age, female and black into the above equation and set the indicator variables for city, Wave II, and city  $\times$  Wave II equal to the values for each subsample in turn.

proportion who reported having had sex in the four weeks prior to the interview declined in both areas, from 50% to 43% in the catchment area, and from 53% to 45% in the city-wide sample. Apparently, the RESPECT project efforts did not lead to an increase in sexual activity in the target populations.

Among the five measures of sexual attitudes, there were large declines over time in both samples in the proportions of respondents who said they agreed that teenagers would be better off abstaining from sex and that abstinent teenagers would be ridiculed by their peers; as the declines between the two waves were similar in both areas, there was no discernible project impact.

The time trends in the array of contraceptive variables display an inconsistent pattern of results. Most strikingly, the proportion of teenagers in both areas who reported that they used birth control the first time they had sex increased over time. The trend is stronger in the catchment areas, although this difference is not significant, perhaps because of the limited power of our analysis. The trends in the two mea-

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*“...no matter how effective clinics are at serving the teenagers who use them, if this self-selected group of users remains static, population fertility rates will not change...”*

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asures of contraceptive consistency are also more favorable in the catchment areas: The proportion of teenagers in the catchment areas who used a method the last time they had intercourse increased from 67% in Wave I to 73% in Wave II, while the proportion in the city sample decreased from 76% to 68%; moreover, teenagers in the catchment areas were equally likely at both time periods to have used a method at every sexual encounter in the previous four weeks, while those in the city-wide sample were less likely to do so over time. Again, neither of these differences in trends is statistically significant. While the somewhat mixed picture is difficult to interpret, it appears that the RESPECT project may have produced an increase in contraceptive use in the clinic catchment areas, but this conclusion is at best tentative.

Of the variables measuring adolescents' attitudes toward and understanding of contraception, only three showed significant differences in trends over time by area, and these were generally small and in contradictory directions. There was a

decline in teenagers' belief that the pill has many harmful side effects in both samples but a larger decline in the city-wide sample, a decrease in the catchment areas in the belief that methods can fail despite correct use but an increase in the city sample, and a decline in the city-wide sample but no change in the catchment sample among those who said that one shouldn't have sex unless a method were used.

Finally, concerning the ultimate aim of the RESPECT clinics—lowering teenage pregnancy and childbearing rates—the table shows data for females only, because the proportion of males who reported causing pregnancies and births was too small for reliable estimates to be made. The RESPECT clinics showed no discernible effect on teenagers' fertility: Over the 2.5 years between the two surveys, the likelihood of pregnancy increased slightly in both areas, a finding consistent with national trends. The proportion of teenage women who reported a live birth was stable in the catchment areas (3%) but increased in the city-wide sample (from 2% to 4%).

While the analysis reported in Table 2 controlled for age, race and gender, there were significant differences among subsamples in the proportion of the respondents' mothers who had given birth as teenagers or who were unmarried. The lack of overall significant findings of the project's impact might be due to these remaining compositional differences; in particular, the respondents' mother's age at first birth may be related to the reproductive outcomes we are assessing. We therefore reestimated the models above for the subsample of 14–17-year-olds for whose mothers we have data, controlling for mother's age at first birth and mother's marital status. The results were substantively the same (not shown). For variables assessing clinic attendance, sexual experience and birth control use, the additional controls further attenuated the differences between the catchment and city-wide samples. For pregnancy, the difference between the areas was greater, but in the wrong direction—there were more births to adolescents in the catchment area than in the city overall. Thus, the pattern of results shown in Table 2 does not appear to reflect socioeconomic differences in the samples, as measured by the marital and reproductive status of the respondents' mothers.

In the analyses above, we considered all of the clinics jointly. Because some areas

may have exhibited more change than others, we compared the time trend in the city as a whole with each of the catchment areas separately. This analysis demonstrated no clinic-specific pattern of change over time that departed from that observed in the full sample. While the magnitudes of the various effects, especially for the attitudinal measures, varied somewhat, the direction, statistical significance, and relationship of the wave and wave-area indicators to each other were similar. We thus found no evidence that there were any subtle area-specific effects obscured in our analysis of the full sample.

## Discussion

Taken as a whole, the results are unequivocal—there is no evidence of differential change by area, suggesting that Philadelphia's RESPECT project did not have a measurable impact on reproductive behavior, attitudes and knowledge among teenagers in its target population. Of the wide array of outcome measures, only five show statistically significant trend differences by area between 1988 and 1991 and they are in inconsistent directions, suggesting that the variation may be due to chance. Regardless of whether individual trends reached statistical significance, the overall pattern of results does not support any sustained impact from the project.

In fact, clinic use actually declined in the catchment areas relative to the entire city, although this trend differential was not statistically significant. There is some slight evidence, again not statistically significant, of a more favorable trend in contraceptive use in the catchment areas; however, without any concomitant change in clinic knowledge and use, it is difficult to attribute this increase to an effect of the RESPECT project. Finally, the most pronounced changes over time occurred not just in the catchment areas but throughout the city—notably, the increases in contraceptive use at first intercourse, in the proportion who believe clinics should be in schools and who know that clinics provide free contraception, and to a more limited degree, the decline in the proportion who had recently engaged in sexual activity.

Our findings do not imply that the RESPECT clinics were ineffective as providers of reproductive health services. They may have served the needs of their clients quite well. Rather, our results indicate that the increase in clinic resources did not measurably affect the experience of teenagers in the entire targeted population.

There are two limitations to our study that may qualify our results. First, al-

though the association between the project and its target population is closer in our design than in most previous population investigations, several factors may distort the differential dosage assumption fundamental to our geographic comparison. For instance, the RESPECT clinics may have served teenagers drawn from outside the defined catchment areas. This is especially likely if, to preserve anonymity, teenagers seek family planning services in areas of the city outside their residential neighborhoods. The clinics' outreach efforts may also have reached teenagers from many different areas of the city, for instance, if teenagers brought friends from other areas to the group sessions.

Furthermore, residential mobility may have diluted the effects of the project services, although it is unlikely that a large percentage of the catchment population moved into or out of the area over the relatively short duration of the study. Finally, the media campaign, with its aims of increasing public awareness of teenage pregnancy and promoting responsible sexual decision-making, was directed at the entire city. The campaign may thus have altered attitudes and behaviors in areas that had no RESPECT clinics. While we know of no increase in clinic services in the rest of the city over the study period, the campaign may have encouraged a greater use of existing clinics.

The second and most important limitation of our study is the relatively small size of the city-wide sample in the first wave of the survey, which reduces our ability to detect statistically significant differences in change over time between the two areas. The RESPECT clinics might have had a small impact on the teenage population that we simply were not able to detect due to insufficient statistical power. Although we remain concerned that we failed to capture any real changes in teenagers' reproductive experience, given the absence of consistent patterns in effects over time and between areas, it is unlikely that undetected changes were substantial.

## Conclusions

Since concern about teenage fertility is expressed in terms of the entire adolescent population, it is appropriate to gauge the effectiveness of preventive services at the population level. Our results suggest that devoting increased resources to teenage clinics to help them broaden and expand their services, the strategy followed by the RESPECT project, is ineffective in increasing clinic use or reducing pregnan-

cy rates in the teenage population.

Why didn't the RESPECT project have a greater impact on clinic use and fertility? One explanation might be the process by which RESPECT funds were translated into services. Our review showed no evidence that the clinic services and outreach were of poor quality. However, a different configuration of services may have yielded more of a population impact. Also, the level of service and outreach provided by the clinics may simply have been too modest to produce a change at the population level. Finally, the effects of the RESPECT clinics may not have materialized by the time the survey was undertaken (two years into the project). While these concerns are legitimate, our objective was to determine the overall impact of the RESPECT project as it was implemented. Thus, at their level of funding and specific time frame, these services apparently were unable to affect the communities they targeted in the manner in which they had aimed.

An alternative explanation is that no matter how effective clinics are at serving the teenagers who use them, if this self-selected group of users remains static, population fertility rates will not change; that is, the problem may be an issue of demand for contraception rather than its availability. Merely increasing the availability of services—at least in the form of traditional clinics and outreach—did not create a larger demand in the population of teenagers living near the clinics.

This perspective indicates a need to explore patterns of selectivity in clinic use. An important factor in this issue may be the nature of teenage sexual experience in the United States. Unsurprisingly, teenagers, who lack cognitive and emotional maturity, not to mention resources, appear to have at least as much difficulty practicing contraception as older persons do. The situation is further complicated by the transitional nature of teenagers' sexual lives, which makes sex more difficult to anticipate and manage. Furthermore, this transition occurs in a social context that glamorizes sex yet counsels teenagers to "say no".<sup>10</sup> Amidst these conflicting and confusing messages, barriers to clinic use such as location, inconvenient hours and lack of information may prove insurmountable for all but the most motivated teenagers.

If these speculations are correct, what type of programs might be most effective at bringing down U.S. teenage fertility rates? One strategy, consistent with our data, is to focus on changing what is considered normal behavior for teenagers through intensive public health campaigns

akin to those focusing on smoking. Although our analysis found no evidence of change within the target areas, we did find evidence of more widespread change over time. During the study period, there was a barrage of information from various sources about responsible sexual behavior; the fact that we detected change over time suggests that the sheer proliferation of messages may be slowly changing teenagers' ideas. Although the changes in attitudes toward sex and contraception were in general stronger than changes in behavior, such normative shifts should not be underplayed. Even if teenagers are only parroting socially acceptable answers, the fact that they increasingly care about giving a "correct" answer is an indication that behavioral norms may be shifting toward abstinence and safer sex.

A second potentially useful approach to increasing program impact may be school-linked health centers. Recent evidence indicates that under certain conditions, these programs can be effective at delaying sexual initiation and promoting contraceptive use among those who are already sexually active.<sup>11</sup> School-linked services have the advantage of targeting smaller, more circumscribed populations, thereby focusing the dosage of the program and enabling more concentrated efforts. If a clinic is in or near a school, it represents less of an alien environment to teenagers and increases clinic visibility and access. Because schools are communities in which social norms are formed, social contagion may increase the number of young persons who are indirectly affected by the programs. Changes in the behavior of just a few adolescents may alter norms sufficiently to influence the behaviors of non-program users.

Our results may be discouraging to the RESPECT providers and, perhaps, to other providers as well. We would like to emphasize again that our findings do not imply that clinics do not affect the lives of their clients or that they should close their doors. Although investigating population impact is relevant, it is a very stringent test of clinic effectiveness. Furthermore, our results are predicated on a certain level of services already being in place; they imply only that changing services in the way the RESPECT project did would not affect the entire teenage population. If existing services were cut, teenage fertility rates would likely increase unless program participants were provided with alternative resources. Finally, while our study showed none of the expected impacts of the

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RESPECT clinics, neither did it show any adverse effects, such as an increase in sexual activity in the target areas.

While our results may be provocative, to be validated they must be replicated, especially in light of the shortcomings of our data. Thus, one message to be drawn from our study might be the need for increasing the number of serious population-level evaluations of social programs directed at teenage pregnancy. Although this type of analysis tends to be more costly in the short run than some of the more traditional approaches to program evaluation, these costs should be offset by the long-term gains in achieving far more realistic assessments of program effectiveness. This is particularly important when resources are scarce, and it is in the interest of everyone concerned—policymakers, program clients and taxpayers—to determine the most cost-effective strategies for addressing social problems.

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