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THE EFFECTS OF SHORT-TERM VARIATION IN ABORTION FUNDING ON PREGNANCY OUTCOMES

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ABSTRACT

In 1978 North Carolina created a special fund to pay for abortions for indigent women. The appropriations for that fund have proven inadequate during five of the years in which it has been in operation, with the result in each case that no state funding was available for several months. This on-again, off-again funding pattern provides a natural experiment for estimating the short-run effect of changes in the cost of abortions on the number of abortions (and births) to indigent women. We utilize a unique dataset obtained from the State, which includes individual records for all pregnancies terminated in the State since 1978. We estimate the effects of funding termination on the abortion rate per month, the birth rate per month (adjusted to take account of variations in gestation periods), and the probability that a pregnancy will end in abortion, for various demographic groups. The results suggest that the decisions of poor black women aged 18-29 are particularly sensitive to the availability of abortion funding. Overall, approximately 3 in every 10 pregnancies that would have resulted in an abortion, had state funds been available, are instead carried to term.

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North Carolina is one of a number of states that has funded abortions for indigent women since 1977, when the use of federal Medicaid funds for this purpose was sharply curtailed by the Hyde Amendment. Unlike the other states, which used state Medicaid funds for this purpose, North Carolina created a separate abortion fund, the amount of which is established through the annual legislative-appropriations process. In five instances between 1978 and 1993 this fund was depleted before the end of the fiscal year and public abortion funding was suspended. These interruptions in the funding of abortions for poor women provide a natural experiment to determine the importance of such funding on pregnancy outcomes. In this paper, we examine the effects of these interruptions on the number of abortions and births per month, and on the probability of abortion given pregnancy for various demographic groups.

We estimate a set of funding effects on abortion rates,[5] birth rates, and abortion probability for each of ten groups defined by age, race, and education. We find that the availability of funding has greatest proportional effect on black women aged 18-29, with negligible effect on pregnancy outcomes for women aged less than 18. The overall pattern of results is compatible with the supposition that the effects are "short run," in the sense that the fund terminations do not cause any change in the pregnancy rate (due to changes in sexual and contraceptive practice). These estimates provide a baseline from which to interpret various published estimates of the longer-run effects of funding termination.

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[5]In this paper we use the term "rate" to refer to a count per unit of time -- the number of abortions per month, for example.

The expiration of funding is associated with a reduction in the overall abortion count of about 100 per month, which is approximately one-fourth of those who are ordinarily eligible. The other women are presumably able to find some other way to fund their abortions. The cost to the state of averting an unwanted birth in this short-run context was about $680 in 1989; that is, for every $680 saved by inadequate appropriation to the abortion fund, there was one additional birth that the mother would have aborted if she had been able to arrange state funding.

In the next section, recent research on the effects of restricting public funds for abortions is reviewed, followed by a brief history of the North Carolina State Abortion Fund. Subsequent sections present the research design for the analysis, a description of the data, and a discussion of results.

Previous Research

Theory

Pregnancy is a probabilistic outcome of choices made by a woman and her partner regarding sexual intercourse and contraceptive practice. Following conception the woman (and possibly her partner) face a choice of whether to abort or carry to term. The cost of obtaining an abortion may influence this choice for women who are disinclined to have a baby. Hence the probability of abortion given pregnancy will fall as the cost increases. The "cost" of an abortion includes not only the out-of-pocket charges but also the expense and time required to travel to a suitable provider, the time required to get a doctor's signature or get past any other gatekeepers required by law, the perceived hazards of the medical procedure, and so forth.

To the extent that it is known in advance, the cost of obtaining an abortion may also influence the initial decisions regarding sex. The vast increase in abortions following legalization in the early 1970s was associated with a far-smaller reduction in births, indicating (together with direct evidence on sexual practice) that there was a considerable "moral hazard" effect from legalization (Levine et al., 1996; Akerlof, Yellen and Katz, 1996). For women who did not want a baby but were willing to abort if pregnant, legalization reduced the expected cost of taking a chance of becoming pregnant. The result was a large increase in unwanted pregnancies.[6]

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[6]It may also be true that the reduction in abortion costs ultimately had the effect of increasing premarital sexual involvement by women who were unwilling to obtain an abortion. In the contest for mates, female bystanders in the sexual revolution will tend to lose out (Akerlof, Yellen, and Katz, 1996).

A number of authors have pointed out a possible paradoxical effect on birth rates. While reducing the cost of abortion reduces the probability of birth given pregnancy, the pregnancy rate may increase by enough to more than compensate (Posner 1992; Kane and Staiger 1996). Indeed, this paradox may emerge even if women are internally consistent in the sequence of decisions involving sex and pregnancy resolution. For example, there may be uncertainty regarding the consequences of child birth that can only be resolved by becoming pregnant, as in the case where the woman is unsure about how committed her partner is to the relationship. In that case, the possibility of abortion increases the option value of becoming pregnant for women who are willing to abort, even if in the event they choose not to. Hence the effect of abortion costs on the birth rate is indeterminant.

Evidence

Since the nationwide legalization of abortion in 1973 (as a result of *Roe v. Wade*) the U.S. Congress, state legislatures, and the courts have all been active in tinkering with the terms on which a woman may obtain an abortion. These changes have provided a sort of on-going natural experiment from which to estimate the relationship between abortion cost and various outcome measures. A number of economists and other analysts have taken advantage of these changes to estimate the effects of parental-notification requirements for minors, the propinquity of abortion providers, and the availability of public funds to pay for abortions performed on indigent women.[7] We focus here on the last issue, that of indigent funding.

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[7]As a result of the *Casey* decision in 1990, states are free to regulate abortion as long as the regulation does not impose an "undue burden" on the woman. Empirical results on the effects of these regulations are thus relevant evidence in a judicial review of their constitutionality (Merz, Kolerman, and Jackson 1996).

Much of the variation in such funding is the result of the Hyde Amendment and the subsequent state-level responses. Congress enacted the Hyde Amendment in 1976, severely restricting the use of federal Medicaid matching funds to pay for abortions. The law was implemented in 1977, but then enjoined for much of 1980 by court order. In September of that year the order was lifted, and the Amendment has been continuously in effect since then. As a result, federal Medicaid money has only been available to pay for abortions performed to save the life of the woman (Merz, Klerman, and Jackson 1996).[8]

As a result of court order or state legislation, as many as 17 states have provided abortion funding for indigent women. The "control group" for these states are all the others, which discontinued funding following the Hyde Amendment. Table 1 provides a summary of nine studies which include estimates of the effect of state Medicaid funding. Most of these studies include a variety of estimates based on different specifications. For the sake of simplicity and comparability, we only report those results derived from regressions on panel data for which the effects of geography and time are accounted for by a fixed-effects estimation strategy.

The first six articles reported in Table 1 employ data on multi-year panels of states or counties, while the remaining three utilize data on individuals. In all these studies except one the estimates are generated from comparing states with and without Medicaid funding; the exception (Joyce and Kaestner 1996) analyzes the effect of broadening the eligibility for Medicaid to women with higher incomes in states where Medicaid is used to fund abortions.

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[8]On October 1, 1993 the Hyde standard was amended to provide reimbursement for abortions performed in cases of rape or incest.

The results are somewhat supportive of the (unambiguous) theoretical prediction that reducing the costs of abortion will increase the abortion rate, other things equal. This prediction receives strong confirmation in two studies based on state-level data and weak support in two others. It should be noted that none of these studies are based on data that permit the Medicaid-eligible population to be clearly identified, so to an extent the actual effect may be somewhat submerged. Nonetheless, the results are generally as expected.

More interesting are the results for birth rates. Here we see three studies that find Medicaid funding increases births, at least for some groups of women. The lone exception is Currie et al. (1996), which finds, based on individual data from the National Longitudinal Survey of Youth (NLSY), that Medicaid funding reduces the probability of a young woman giving birth in any one year. In sum, the empirical findings are not entirely clear, but suggest that funding indigent abortions increases both abortions and births.

Motivation

The studies reported in Table 1 are seeking to estimate the overall effect of curtailing funding for abortions. This effect may be decomposed into two factors: the effect on the pregnancy rate, and the effect on the likelihood of abortion given pregnancy.[9] It is of interest to develop separate estimates of these two effects. Arguably the short-term fluctuations in the availability of abortion funding in North Carolina allow us to isolate the latter effect, since it appears unlikely that people would adapt their sexual practices over the course of the year to the varying probability that the fund might run out.

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[9]The abortion rate for the additional pregnancies may well be different than the abortion rate for the pregnancies that would occur even without funding.

More precisely, suppose that the cost of abortion falls between time 0 and time 1. Then the abortion rate A before the change (time 0) may be expressed:

(1) $A_0 = a_0 P_0$

where P is the pregnancy rate. The abortion rate at time 1 will increase in response to the reduction in cost for two reasons. First, some of the pregnancies that would have been carried to term at the old price will now be aborted. And second, there may be "moral hazard" in use of contraception, resulting in an increase in the pregnancy rate and hence the abortion rate:

(2) $A_1 = a_1^* P_0 + a_1' (P_1 - P_0)$.

The change in abortions may then be written as the sum of two positive (or at least nonnegative) terms:

(3) $A_1 - A_0 = (a_1^* - a_0) P_0 + a_1' (P_1 - P_0)$.

The implied change in the birth rate is

(4) $B_1 - B_0 = -(a_1^* - a_0) P_0 + (1 - a_0')(P_1 - P_0)$,

which has ambiguous sign. Notice that in the "short run" when the pregnancy rate does not change,

(5) $A_1 - A_0 = -(B_1 - B_0) = (a_1^* - a_0) P_0$.

It is this change that we seek to estimate.

North Carolina State Abortion Fund

On February 1, 1978, the North Carolina State Abortion Fund was established to fill the gap created by the Hyde Amendment. When the fund was created, the only criteria for eligibility were in-state residency and low income -- family income could not exceed 50

percent of the official poverty level. The eligibility requirements for obtaining a state-funded abortion were tightened for adults in 1985; since then women aged 18 and over not only must meet the income test, but also must be able to justify the abortion by one of the following circumstances: The pregnancy is a result of rape or incest; the fetus is deformed; the woman is mentally retarded; or a physician stipulates that the woman's physical, mental, or emotional health would be impaired as a result of carrying to term.

In 1990 the maximum gestation at which a woman could obtain a state-funded abortion was lowered from 135 days to 112 days. In addition, the legislature limited the number of abortions because of health impairment to one per lifetime for women 18 and older.

The number of abortions paid for from this fund has varied from year to year, reflecting the changes in eligibility requirements and other factors. The most important factor for our study is the variation in the legislative appropriation caused by the vagaries of North Carolina politics. Five times the appropriation has been insufficient to meet the demand, in each case leaving a period at the end of the fiscal year in which no funds were available to reimburse providers. Table 2 chronicles this history.[10]

Figure 1 allows comparison of the total number of abortions performed in North Carolina to residents and the number of abortions paid for by the state abortion fund, for fiscal years 1980 through 1993. In the early 1980s, the state abortion fund was paying for about 1 out of every 5 abortions to North Carolina residents. This proportion dropped sharply after restrictions were added in 1985, but rebounded somewhat in 1986 and thereafter as social

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[10]In 1993 pro-choice Governor Jim Hunt was able to arrange an increase in the appropriation to $1.2 million.

workers and abortion providers learned to work within the new rules. It dropped again during the four consecutive years beginning in 1989/90 (under an anti-abortion governor) when the fund ran out of money.[11]

Even when funding is available, qualifying women may face obstacles to obtaining a state-funded abortion. Payment is made to the doctors, not the patient, and the amount remained the same from the inception of the fund through fiscal year 1992/1993 -- just $150 for an abortion performed before the twelfth week, and somewhat more for later-term abortions. (Providers are not allowed to accept any supplementary payment from the patient.) Unsurprisingly the number of willing providers has dwindled over the years, and only four counties in the state have had providers who accepted state abortion funds in recent years.

Data

The data consist of individual records of all pregnancies that ended in North Carolina by live birth, fetal death or abortion. These data are collected by the North Carolina Center for Health Statistics. The birth and fetal-death files are public vital-statistics records, but the individual-level abortion files are restricted because of the sensitivity of some of the items, especially the county of occurrence.

Abortion providers in North Carolina have reported detailed characteristics of their

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[11] North Carolina officials have recognized the possible effects of these funding changes, and report that "in considering recent changes in abortion and fertility measures, especially those for nonwhites, one should be aware of changes in the number of state-funded abortions... Changes in the statewide number and rate of abortions almost certainly reflect these changes in accessibility for low-income women. Abortion opportunities and utilization, of course, also impact on fertility and probably fetal death as well" (NCSCHES 1993: p.2-2).

clients since 1978. The state estimates that it collects information on 97% of the abortions performed within North Carolina (NCSCHES 1993). As a way of testing the completeness of state coverage, we compared the reported numbers with the abortion statistics collected by the Alan Guttmacher Institute (AGI) and found that North Carolina has information on 94-96% of the abortions counted by AGI.

This data set is of high quality and virtually unique in having individual-level abortion data collected over more than a decade. Items include several characteristics of the woman (age, race, education, marital status, parity), date of last menstrual period, and county of residence.

The dates of conception are based on the attending physician's estimate of gestational age using the woman's report of her last menstrual period. Recall of last menstrual period is usually accurate within several weeks. (Day of the month is reported, but there is considerable clustering on the first, fifteenth and twentieth of each month.) In addition, pregnancy files are created by combining live birth files from the vital registration system with the abortion files. These birth files also contain characteristics of the women and estimated dates of conception.

There are problems with these data. We threw out the first two years of data because during that period the items on the woman's characteristics were unreliable. For subsequent years the data are reliable, but there are some gaps: most notably, the item on education is missing in 15.8 percent of cases.

Figure 2 depicts characteristics of recipients of state-funded abortions in FY1989. About 75% of these women were black and about 80% were unmarried; an additional 16

percent were separated from their husbands or divorced. The majority (60%) of women receiving a state-funded abortion were between the ages of 18 and 25.

Table 3 provides demographic breakdowns on pregnancies, abortions, and state-funded abortions for fiscal year 1989. These statistics demonstrate the relative importance of state funding for black women, particularly those in their teens and early 20s. Note that while 7.1 percent of black pregnancies were terminated by a state-funded abortion, only 1.1 percent of white pregnancies terminated in this fashion. Using abortions rather than pregnancies as the comparison group, we see that nearly one-in-four black abortions was state funded, compared with only 1-in-20 white abortions. With respect to age, the percentage of pregnancies terminating in a state-funded abortion declines from 6.1 percent for those under 18, to just 1.2 percent for those age 30 and over.

Terminations of state funding will only affect the abortion rate for women whose pregnancies would qualify for state funding. Unfortunately our data do not identify those pregnancies directly. But we are able to categorize women on the basis of characteristics that are strongly associated with eligibility, including age, race, marital status, and education. Whether a 20-year-old unmarried dropout will terminate her pregnancy may well be affected by the availability of state funds, while the status of the state fund would be irrelevant to most 30-year-old married women with a college education.

We first analyze the intertemporal patterns of abortion and birth rates to see if these rates are affected during months when funding is lacking. The subsequent section investigates this possibility using data on individuals.

Analysis: Aggregate Data

As noted pre The data set includes useable data for 168 months, from January 1980 through December 1993. viously, there were five periods during which state funding was cut off, and it is the on-again, off-again character of funding that provides the experiment that we wish to analyze. We begin by analyzing variation in the monthly count of abortions. If the availability of state funding affects some women's decision of whether to abort a pregnancy, then the overall rate of abortion will tend to be higher during times when funding is available than when it is not.

To estimate the effect of funding availability, it is necessary to account for other sources of variation. Month-to-month variation in abortion counts may be influenced by seasonality, trends (resulting from growth in the relevant population, or changes in the propensity of that population to conceive or to abort), and random variation. We employ an analysis of covariance (ANCOVA) procedure that accounts for variation and trends through the inclusion of indicator variables.

The model to be estimated is:

(6) $\ln A_{m,y} = a + b_m + c_y + dF_{m,y} + e_{m,y}$

where

$A_{m,y}$ = The number of abortions in month *m* of year *y*;

b_m = The seasonal effect on number of abortions associated with month *m;*

c_y = The overall trend in the abortion rate associated with year *y*;

$F_{m,y}$ = The fraction of month *m* of year *y* in which state funding is available. Hence F = 1 for most months, and 0 when funding is cut off for the entire month.

$e_{m,y}$ = Residual

Assuming that the residuals are independent, normally distributed random variables with constant variance, ordinary-least-squares-regression estimates of the parameters are unbiased, efficient and normally distributed.[12]

The month and year effects are estimated by inclusion of sets of indicator variables in the regression equation. Note that this device allows a completely free form for seasonality and trend. In particular, the annual indicators will reflect not only underlying trends in the relevant population, but also the effect of year-to-year changes in the eligibility rules for the state fund.

Table 4 provides results for two samples: black or white women aged 18-29. The key estimates are for "funding," the F-variable defined above. For blacks, there are 12 percent more abortions per month when funding is available than otherwise -- approximately 60 per month. For whites, on the other hand, the effect of funding is negligible.

The results for the month effects indicate that abortions for both races follow the seasonal abortion pattern found by Parnell and Rodgers (1995), with the highest numbers in winter months and fewest in the summer and autumn. The annual "trend" effects are not reported in this table, although they are included in the regressions.

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[12]Since the outcome measures to be used in this study are based on counts, it could be argued that Poisson regression is a more appropriate method. However, when the average count is sufficiently large, then standard regression procedures, based on an assumption of normally distributed error terms, are entirely acceptable. Johnson and Kotz (1969) suggest that if the average count exceeds 5, the normal approximation is adequate. Our counts are typically far higher than that. Further, regression analysis provides well-developed methods for correcting for serial correlation and other structure in the error term. Poisson regression methods do not permit such corrections.

The Durbin-Watson statistic provides no evidence of serial correlation.

The exogenity of F, the funding indicator, is of some concern. This indicator would not be exogenous in the context of our model if the abortion rate during the early part of each fiscal year affected *both* the abortion rate at the end of the year, *and* the likelihood of the fund expiring that year. The lack of first-order serial correlation in the residuals makes the first possibility unlikely.

Table 5 summarizes the key estimates from 10 regressions, including the two in Table 4. Note that the funding variable has a positive estimated effect in every case, as expected. For blacks the largest proportional effects are for women aged 18-29. When the sample of women age 20 and over is divided by schooling, we find that those women with fewer than 12 years of schooling have over twice the proportional response to funding as women with 12 or more years. For whites, all estimated effects are small, and in no case discernibly different from zero in a statistical sense. However, all the signs for these coefficient estimates are positive, as expected.

Are there any surprises here? Given what we know about the demographics of state-funded abortions, the results make sense, but we expected a larger effect for women aged 17 or younger. Although state-funded abortions are available to all such women who qualify with respect to family income, and in fact figure more prominently for this age group than others (see Table 3 above), it does not appear that cutoffs in state funding have much effect on the probability that these younger teens have an abortion. Perhaps for this age group, unlike for older women, there are alternative sources of funding available if needed. Parents and members of the extended family may be willing to help a 16-year-old obtain an abortion, but

not be so willing to help a 20-year-old.

Birth Rates

If the funding cutoffs are truly unanticipated, we expect that interruptions in funding would have no effect in the short term on the conception rate. Therefore the effect of funding interruption on the birth rate would be close to the mirror image of the effect on abortion rate.

We analyze monthly patterns in births using the same specification as for abortions, for the period 1980-1992. The measurement of monthly birth rates requires some comment. The difficulty is one of timing. Instead of measuring birth rates by the actual month in which the births occurred, we instead measured the month-by-month birth rates by month of conception. That is, all pregnancies that began in June 1980 and resulted in a live birth are assigned to June 1980, regardless of when the delivery occurred. The advantage of this method is that it clusters into the same month pregnancies that had the same exposure to abortion funding.

Table 6 reports the results for the 10 samples that are analogous to those reported for abortion in Table 5. We see that all estimated effects are negative, as expected, and that the pattern of the magnitudes of the effects is similar in some respects to the magnitudes of the effects on abortion rates. Of course if there is a one-for-one displacement of abortion to birth, then it is not the proportional effects that will be the same, but rather the absolute effects.

A second set of results, not reported here, demonstrates that the proportional effects on birth rates to *unmarried* women is in every case larger than the effects reported for the 10 samples in Table 6.

Analysis: Individual Data

The regression results reported above suggest that, at least for young black women, the abortion fund has a considerable influence on the number of abortions and births. The obvious conclusion is that the likelihood that a pregnancy will be terminated by abortion is influenced by the availability of state funding. We now test this hypothesis directly by analyzing data on outcomes of individual pregnancies.

Figure 3 provides an illustration of the possible effect of state funding. It depicts the survival curves based on estimated gestational age at abortion for conceptions initiated during winter[13] by blacks aged 18 and 19, in two consecutive years, 1982 and 1983. In 1982 state funding ended during the month of February with no additional funds through June, whereas it was available throughout FY1983. We expect that the survival probabilities will be higher in 1982, and so they are, beginning 8 weeks after conception. By the 16th week, when most of the abortions have been performed, there is a difference of 5 percentage points between the two years.

Of course, survival rates vary from year to year for a number of reasons and just by chance. A more persuasive demonstration that the abortion fund affects the probability that a pregnancy of a woman eligible for state funding is aborted requires estimates based on a number of years. In what follows, we employ the same period as above (1980 through 1992) and an estimation strategy that is similar in spirit.

In particular, we estimate the following model:

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[13]The period January 25 to March 7 was chosen with an eye to ensuring that none of the conceptions in 1982 were eligible for a state-funded abortion during the usual period in which abortions are performed (7 weeks to 16 weeks following conception).

(7) $\text{Logit}\,(A_{m,y,i} = 1) = \alpha + \beta_m + \gamma_y + \delta W_{m,y,i} + \epsilon_{m,y,i}$

where all parameters are defined analogously to model (1). Two variables need explicit definitions:

$A_{m,y,i}$ = Whether pregnancy *i* conceived in month *m* of year *y* eventually is terminated by abortion (=1) or not (=0). (Pregnancies that resulted in a miscarriage before week 15 were dropped from the sample.)

$W_{m,y,i}$ = Fraction of the period in which abortions are normally performed (week 4 to week 16 of the pregnancy) in which abortion funding was available for pregnancy *i*.

The variable W requires some explanation. For most pregnancies funding will be available throughout the "window" from week 4 to week 16, in which case W=1. For pregnancies which were initiated around the time of a funding cutoff, W is less than 1. As an illustration, consider the following two cases, both of which have W = .33:

Case 1: Conception on January 5, 1982, with funding cutoff (February 29, 1982) after week 8.

Case 2: Conception on April 8, 1982, during funding-cutoff period, with funding resumed on July 1, 1982.

In the first case an indigent woman may have the chance to arrange state funding for an early abortion. In the second case, a woman may be able to arrange state funding for a relatively late abortion. But these possibilities are far more restrictive, and presumably less likely to be realized, than if funding had been available throughout the first 16 weeks of the pregnancies.

Our indicator W treats the two cases as equivalent, although that may not be the true. The psychology of the two cases may differ: For example, the woman in Case 2 who is deterred from getting an early abortion by lack of funds may change her mind by the time she reaches the fourth month and decide to carry to term. More concretely, the two cases may differ because the funding cutoff is preceded by a period of restricted availability of funds, which has no analog when funding is reinitiated. The N.C. State Abortion Fund operates through an encumbrance procedure. When the fund has only $50,000, county social-services offices must obtain permission from the state social- services office to commit funds. The funds are committed prior to the date that the last dollar is spent, so women are sometimes refused state-funded abortions prior to the depletion date.

Nonetheless we proceed as if these two cases were equivalent, because we lack the statistical power to distinguish between them. Note our uniquely detailed data set allows us to organize the estimation around estimated conception dates.

Table 7 presents the estimates for pregnancies of women age 18 or 19 at the time of conception. These results are for all women, regardless of marital status. Results for legally unmarried women (never-married, widowed and divorced) are not shown here, but the results are similar.[14]

The estimated coefficients for the funding variable, W, indicate a positive effect for blacks and whites, with a much stronger effect for the blacks. There is also a dummy variable distinguishing between those aged 18 and 19 at the time of conception. Both white and black

[14] In fact, the results for all women were often larger than for unmarried. This was the case for black women aged 18-19 and black women aged 20-24.

women aged 19 are significantly less likely than women age 18 to abort. The "month" effects indicate that conceptions in December, January and February have a higher probability of ending in abortion than conceptions in other months.

To help interpret the logit results, it is useful to recall that small coefficients are approximately equal to the proportional change in the probability of abortion. Thus the probability that whites in this age group will abort a pregnancy is about 5 percent higher if state funding is available.

Table 8 presents the estimated effects of the funding variable for 10 demographic groups. All but one of these estimates are positive, as expected. The availability of state funding appears to have an important effect for blacks age 18 and over, but as before, little effect for whites.

Implications

Our results demonstrate quite clearly that in months when state funding is not available there are fewer abortions and ultimately more births. It seems appropriate to suggest that the "extra" births are of babies who are unwanted, in the sense that the mother would have obtained an abortion if the state had paid for it.

To estimate the magnitudes involved, we estimated equation (6) with all women included regardless of age and education. We find that there are 7.7 percent additional black abortions, and 0.9 percent white abortions in months when funding is available, other things equal.[15] As an example, in 1989 there were 2,700 abortions per month, about 100 more (86,

[15]The dependent variable is the natural log of the monthly count of abortions for black or white women. The OLS specification includes month and year effects, as well as the funding variable.

black, 14 white) than there would have been had the abortion fund expired. These 100 abortions may be compared with the 345 state-funded abortions per month that were performed in that year; the implication is that a shortfall in funding would have resulted in over 1 in 4 women (29 percent) who would have obtained an abortion if the state had paid for it, instead decided to carry the baby to term. The others presumably obtained a privately funded abortion, which in 1989 would have cost them about $250.[16] Considering the cost of having an additional child in the household, it is rather remarkable that a few hundred dollars would be sufficient to tip the balance for such a high percentage of the women.

From the point of view of the state taxpayers, the tradeoff between funding abortions and supporting additional children on the welfare roles can be calculated. During recent years we estimate that there has been an additional birth for each reduction of $680 in the abortion fund.[17] These additional births are to women who are in every case eligible for welfare, and who will typically receive many thousands of extra dollars in cash, food, housing, and medical assistance as a result of the having the extra child.

Conclusion

For blacks the coefficient estimate is .0766 with SE of .0258. For whites the coefficient estimate is .0089 with SE of .0234. In both cases the Durbin-Watson statistic is 2.0. The R^2 are 81% for blacks, and 65% for whites.

[16]Stanley Henshaw of Alan Gutmacher Institute provided this figure to us by private communication (November 1, 1996). An abortion at 10 weeks in a nonhospital facility cost about $244 in 1989, and $291 in 1993.

[17]For the period 1989-1992, state-funded abortions cost an average of $195. We estimate that about 71 percent of abortions that are not paid for due to funding shortfalls will be performed anyway. Thus there are about 29 additional babies born for 100 abortions that are not performed at state expense.

Our results support a conclusion that when the state abortion fund dries up, some pregnancies that otherwise would have been aborted are instead carried to term. This effect appears to be concentrated among black women age 18 and over, and women with less than a high-school education. It is rather remarkable that the necessity of paying a couple-of-hundred-dollar fee for an abortion is sufficient to persuade (or compel) some women to incur the much larger financial and personal costs of bearing an unwanted child.

We offer these results as estimates of the short-term effects of funding changes, when there is little possibility for sexual and contraceptive behavior to adapt. Our results are clear: A cutoff in funding reduces the overall abortion rate and increases the birth rate for indigent women, especially adults age 18 and over. This causal interpretation of our results receives support from the consistency of the findings. The fact that abortions fall *and* births increase in conjunction with funding cutoffs provides independent confirmation of this interpretation, as does the generally sensible patterns of effects for the different demographic groups.

Over the longer run it is possible that low-income people would respond to a regime of unsubsidized abortion by exercising greater care in contraception.

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Table 1 : Effect of Medicaid Funding on Births and Abortions
Selected findings of some recent studies

Source	Data	Estimation Method	Effect on Abortions	Effect on Births
Blank, George, London 1994	1974-88 State-level Rates	OLS State effects Year effects Other policies Controls	n.s. for state of residence	
Levine, Trainor, Zimmer-man 1995	1977-88 State-level rates/women	WLS State effects Year effects State trends Cross-border	Increase (in some specs) or n.s.	Increase
Matthews Ribar, Wilhelm 1995	1978-88 State-level rates	WLS State effects Year effects Other policies Covariates	+6% for state of residence	+2%
Haas-Wilson 1996	1978-90 State-level rates/women	WLS State effects Year effects Other policies Covariates	+9%	
Jackson, Klerman 1993	1975-84 County-level (Larger counties) Rates/women for those age 15 and 18	WLS County effects Year effects (several) Other policies Controls		Increase for 18-year-old whites. Others n.s.
Kane, Staiger 1996	1973-88 County-level rates/women minors	WLS County effects Year effects Covariates		+1% or +3% for whites: n.s. for blacks

Joyce, Kaestner 1996	1986-91 Individual pregnancies for SC, TN, VA (education <HS: 19-22, or 23-27)	OLS State effects Year effects Age effects Covariates	No clear pattern for either age group.	
Levine, Trainor, Zimmer-man 1995	NLSY annual data on individuals	Probit analysis Region effects Year effects Covariates		Prob of giving birth - n.s.
Currie, Nixon, Cole 1996	1980-89 NLSY annual data on individuals	Probit analysis Region effects Year effects Covariates		Prob of giving birth is reduced

n.s.: Not significantly different from 0 at the 5% level.

Table 2. Number of State Funded Abortions by Fiscal Year

Fiscal Year	#Abortions	Date Fund Expired	Funding level
77/78[x]	1123	___	$1,000,000
78/79	6125	___	$1,302,801
79/80*	6343	___	$1,366,921
80/81	5730	___	$1,233,301
81/82	4295	2/29	$984,446
82/83	6149	___	$1,253,697
83/84	6645	___	$1,357,371
84/85	6564	___	$1,316,770
85/86*	2662	___	$557,129
86/87	4181	___	$895,741
87/88	3600	___	$802,778
88/89	4137	___	$904,479
89/90	1921	12/19	$407,563
90/91*	2330	3/20	$410,846
91/92	2156	1/27	$421,346
92/93	2132	2/12	$414,218

x. Funding did not commence until February 1, 1978

*Eligibility rules changed

Source: NC Department of Social Services

Table 3. Proportion of Pregnancies with State-Funded Abortion, FY1989

Race and Age	(1) Pregnancies[a]	(2) Abortions	(3) State-Funded Abortions[b]	(3)/(1) %	(3)/(2) %
ALL WOMEN	135,977	33,620	4,137	3.0	12.3
BLACKS, ALL AGES	43,356	13,014	3,090	7.1	23.7
WHITES, ALL AGES	88,624	19,113	989	1.1	5.2
AGE <18	10,746	4,184	654	6.1	15.6
AGE 18-19	15,927	5,516	645	4.0	11.7
AGE 20-24	41,927	11,211	1,841	4.4	16.4
AGE 25-29	36,754	6,610	629	1.7	9.5
AGE 30+	30,149	5,731	368	1.2	6.4

[a]Pregnancies conceived between May 1, 1988 and April 30, 1989

[b]All entries except the first ("ALL WOMEN") are estimates based on nine months of State Abortion Fund reports.

Table 4. Effect of Abortion Funding on Log of Abortion Count

Monthly Data for North Carolina 1980-1993
OLS Regression Results
coefficients and standard errors

VARIABLE	BLACKS AGE 18-29	WHITES AGE 18-29
FUNDING	.111[c] (.027)	.009 (.023)
FEBRUARY*	.029	-.073[c]
MARCH	.108[c]	-.018
APRIL	.021	-.086[c]
MAY	-.063[b]	-.125[c]
JUNE	-.128[c]	-.138[c]
JULY	-.166[c]	-.143[c]
AUGUST	-.134[c]	-.132[c]
SEPTEMBER	-.244[c]	-.223[c]
OCTOBER	-.157[c]	-.153[c]
NOVEMBER	-.238[c]	-.239[c]
DECEMBER	-.148[c]	-.215[c]
INTERCEPT	6.485[c]	7.112[c]
N	168	168
R-SQUARED (ADJ.)	.75	.65
DURBIN-WATSON	2.0	2.0

*January omitted

Note: Both regressions also include a complete set of dummy variables indicating the years.

[a] = significantly different from 0, $p < .10$, 2-tailed

[b] = significantly different from 0, $p < .05$, 2-tailed

[c] = significantly different from 0, $p < .01$, 2-tailed

Table 5. Effect of Abortion Funding on Log of Abortion Count

Monthly Data for North Carolina 1980-1993

OLS Regression Results for Specified Demographic Groups

coefficients and standard errors

	COEFFICIENT ON FUNDING VARIABLE	
	BLACKS	WHITES
AGE < 18	.057 (.038)	.042 (.034)
AGE 18-29	.111[c] (.027)	.009 (.023)
AGE 30+	.083[b] (.037)	.013 (.034)
< 12 YEARS SCHOOL[a] AGE 20+	.228[c] (.074)	.031 (.047)
>= 12 YEARS SCHOOL[a] AGE 20+	.099[c] (.027)	.013 (.026)

a. In approximately 16 percent of abortion records, the item on education attainment is missing. (Blacks, 16.0%; Whites, 16.5%)

Note: Each coefficient is taken from a different regression, which also includes complete sets of dummy variables indicating the year (14 variables) and month (11 variables). All D.W. statistics are within the range of 1.8 to 2.2.

[a] = significantly different from 0, $p < .10$, 2-tailed

[b] = significantly different from 0, $p < .05$, 2-tailed

[c] = significantly different from 0, $p < .01$, 2-tailed

Table 6. **Effect of Abortion Funding on Log of Birth Count**
Monthly Data for North Carolina 1980-1993
OLS Regression Results for Specified Demographic Groups
coefficients and standard errors

	COEFFICIENT ON	FUNDING VARIABLE
	BLACKS	WHITES
AGE < 18	-.042 (.027)	-.031 (.027)
AGE 18-29	-.053[c] (.015)	-.022[a] (.011)
AGE 30+	-.026 (.024)	.004 (.014)
< 12 YEARS SCHOOL AGE 20+	-.047[b] (.023)	-.052[c] (.018)
>= 12 YEARS SCHOOL AGE 20+	-.043[c] (.016)	-.006 (.011)

a. In approximately 16 percent of abortion records, the item on education attainment is missing. (Blacks, 16.0%; Whites, 16.5%)

Note: Each coefficient is taken from a different regression, which also includes complete sets of dummy variables indicating the year (14 variables) and month (11 variables). All D.W. statistics are within the range of 1.8 to 2.2.

[a] = significantly different from 0, $p < .10$, 2-tailed
[b] = significantly different from 0, $p < .05$, 2-tailed
[c] = significantly different from 0, $p < .01$, 2-tailed

Table 7. Effect of Abortion Funding on Likelihood that Pregnancy ends in Abortion
Logit Regression Results
Individual Data for North Carolina 1980-1993
coefficients and asymptotic standard errors

VARIABLE	BLACKS AGE 18-19	WHITES AGE 18-19
FUNDING	.158[c] (.043)	.046 (.034)
FEBRUARY*	-.092[b]	-.052[a]
MARCH	-.136[c]	-.058[a]
APRIL	-.153[c]	-.049
MAY	-.152[c]	-.040
JUNE	-.133[c]	-.073[b]
JULY	-.126[c]	-.041
AUGUST	-.184[c]	-.073[b]
SEPTEMBER	-.098[b]	-.110[c]
OCTOBER	-.189[c]	-.159[c]
NOVEMBER	-.102[b]	-.084[c]
DECEMBER	-.049	-.034
INTERCEPT	-.523[c]	-.306[c]
N	70,648	110,856

*January omitted

Note: Both regressions also include a complete set of dummy variables indicating the fiscal years, and a dummy variable for age 19.

[a] = significantly different from 0, $p < .10$, 2-tailed
[b] = significantly different from 0, $p < .05$, 2-tailed
[c] = significantly different from 0, $p < .01$, 2-tailed

Table 8. Effect of Abortion Funding on Likelihood that Pregnancy ends in Abortion

Logit Regression Results for Specified Demographic Groups
Individual Data for North Carolina 1980-1993
coefficients and asymptotic standard errors

	COEFFICIENT ON FUNDING VARIABLE	
	BLACKS	WHITES
AGE <18	.044 (.047)	.046 (.043)
AGE 18-19	.158[c] (.043)	.046 (.034)
AGE 20-24	.056[b] (.027)	.003 (.021)
AGE 25-29	.012 (.036)	.003 (.027)
AGE 30+	.089[b] (.041)	-.042 (.029)
AGE 20+, ED<12	.166[b] (.068)	.012 (.049)
AGE 20+, ED>=12	.047[b] (.021)	-.019 (.016)

Note: Each coefficient is taken from a different regression, which also includes complete sets of dummy variables indicating the fiscal year (14 variables), month (11 variables). The specifications for all groups under age 30 also include indicators for age (in single years).

[a] = significantly different from 0, $p<.10$, 2-tailed
[b] = significantly different from 0, $p<.05$, 2-tailed
[c] = significantly different from 0, $p<.01$, 2-tailed

Appendix
Table A1.

Effect of Abortion Funding on Abortion and Birth Counts
Monthly Data for North Carolina 1980-1992
OLS Regression Results for Blacks and Whites
coefficients and standard errors

	Blacks	Whites
Abortions	62.3[b]	18.2
	(25.9)	(37.1)
	d.w. = 1.9	d.w. = 2.0
Births	-127.1[c]	-82.5
	(31.5)	(54.0)
	d.w. = 1.6	d.w. = 1.5

Note: Each coefficient is taken from a different regression, which also includes complete sets of dummy variables indicating the fiscal year (13 variables), and month (11 variables).

[a] = significantly different from 0, $p < .10$, 2-tailed
[b] = significantly different from 0, $p < .05$, 2-tailed
[c] = significantly different from 0, $p < .01$, 2-tailed

Appendix
Table A2.

Effect of Abortion Funding on Log of Abortion and Birth Counts
Monthly Data for North Carolina 1980-1992
OLS Regression Results for Blacks and Whites
coefficients and standard errors

	Blacks	Whites
Abortions	.0766[c]	.0089
	(.0258)	(.0234)
	d.w. = 2.0 R^2 = 81	d.w. = 2.0 R^2 = 65
Births	-.0472[c]	-.0149
	(.0140)	(.0103)
	d.w. = 1.6 R^2 = 92	d.w. = 1.5 R^2 = 94

Note: Each coefficient is taken from a different regression, which also includes complete sets of dummy variables indicating the fiscal year (13 variables), and month (11 variables).

[a] = significantly different from 0, $p < .10$, 2-tailed
[b] = significantly different from 0, $p < .05$, 2-tailed
[c] = significantly different from 0, $p < .01$, 2-tailed

Figure 1:

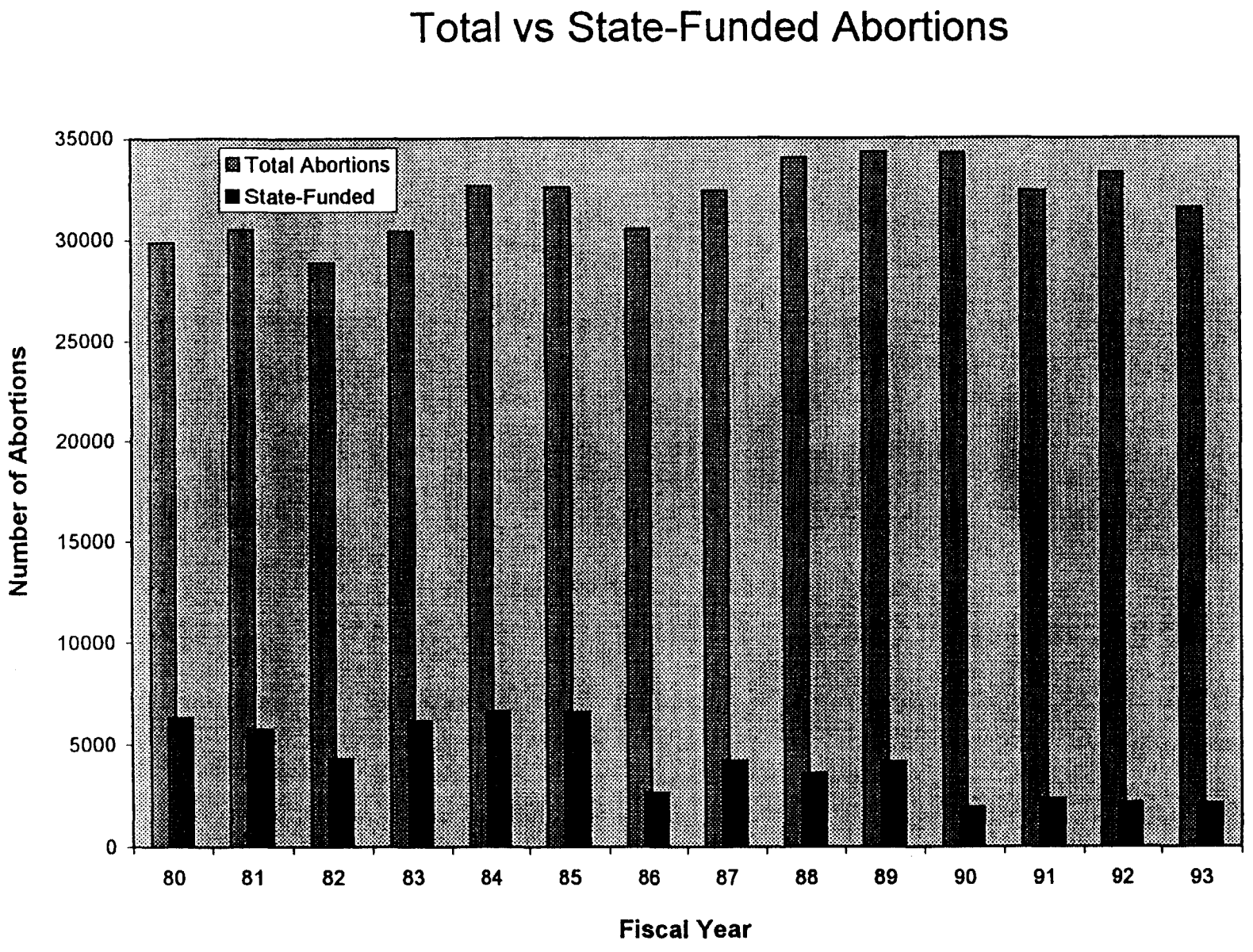
Total vs State-Funded Abortions
Total Abortions
State-Funded
Number of Abortions
35000
30000
25000
20000
15000
10000
5000
0
80
81
82
83
84
85
86
87
88
89
90
91
92
93
Fiscal Year

Figure 2

Characteristics of Women Receiving State-Funded Abortions, 1989

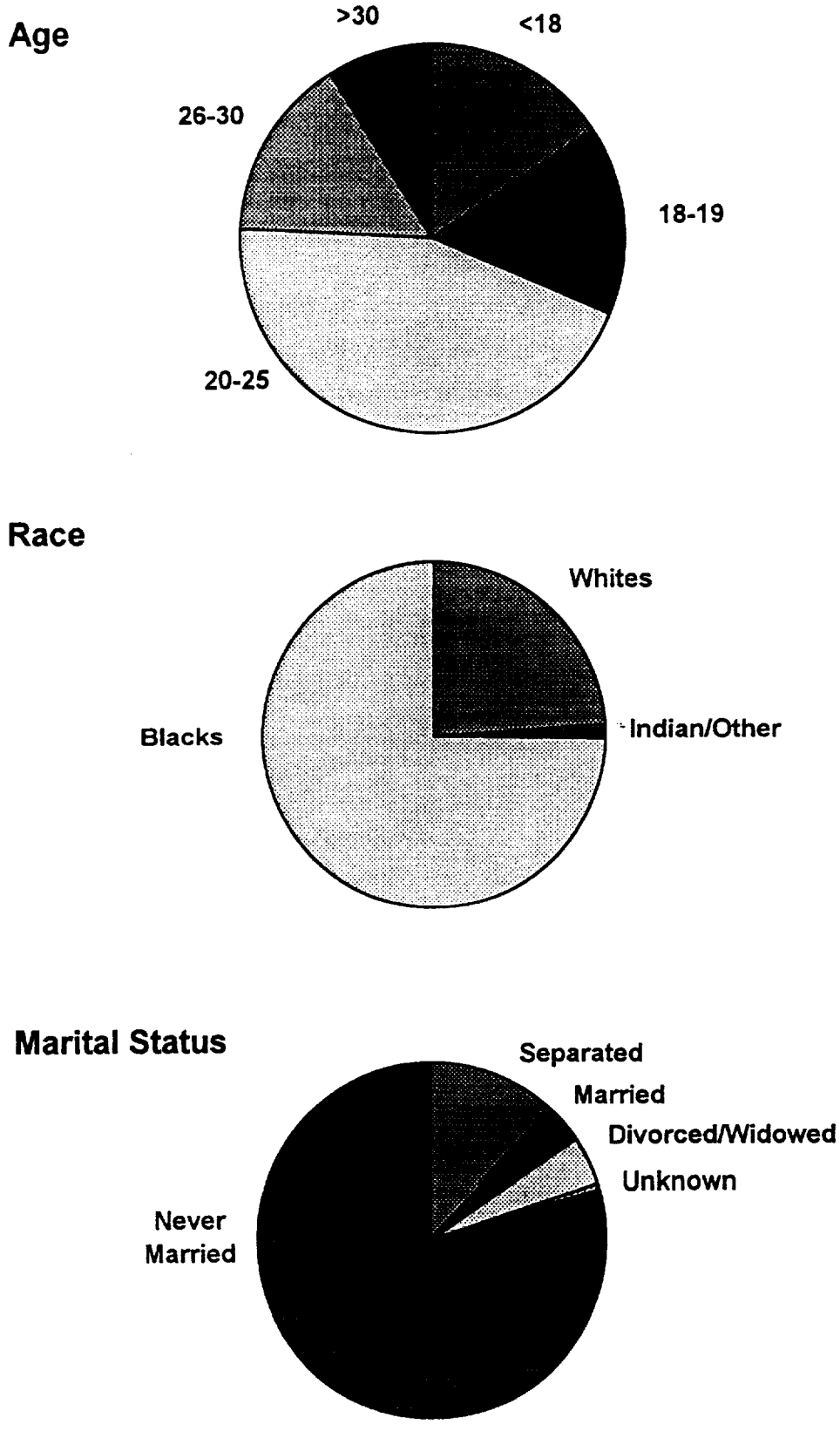

Figure 3:

Survival Curves
Black 18 and 19 Year Olds
Conceptions Between Jan 25 and Mar 7