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STATE ABORTION RATES: THE IMPACT OF POLICIES, PROVIDERS, POLITICS, DEMOGRAPHICS, AND ECONOMIC ENVIRONMENT

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ABSTRACT

This paper uses data on abortion rates, by state and year from 1974-88, to estimate two-stage least squares models with fixed state and year effects. The results indicate that implementing restrictions on Medicaid funding for abortion results in lower aggregate abortion rates in-state and higher abortion rates among nearby states, suggesting one of the main effects of these policies is to induce cross-state migration for abortion services. The effect of these restrictions on actual abortions among state residents is much smaller; a maximal estimate suggests that 22 percent of the abortions among low-income women that are publicly funded do not take place after funding is eliminated. We also have substantial evidence that a larger number of abortion providers in a state increases the abortion rate within the state, primarily through inducing cross-state migration, with nonhospital providers being particularly important. Political affiliation variables have mixed effects and are difficult to interpret. Controlling for state fixed effects, the effect of changes in demographic and economic variables over time is typically small, although a rise in unemployment has consistently positive effects on abortion rates.

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I

Introduction

Abortion rates rose rapidly in this country after the 1973 Supreme Court ruled in *Row v. Wade* that the constitutional right to privacy includes the right of pregnant women to have an abortion. Abortion rates peaked in 1981, and have fallen somewhat in the years since then. At least part of this decline has been attributed to concerted efforts to limit the availability of abortion through public policies, such as restrictions on public funding of abortion or parental consent laws. Others have attributed the decline to the decreasing availability of abortion providers in many areas, often linked to public protests aimed at abortion providers in many cities. Others point to changing demographic factors. Despite very heated public discussion, however, the research on the determinants of abortion rates is limited.

This paper investigates the impact of public policy, provider availability, the political environment, and demographic and economic factors on the determinants of state abortion rates between 1974 and 1988. As noted below, most previous work has focused on cross-sectional estimates of state abortion rates. In contrast, we have 13 years of data for 51 states.[1] This data set allows us to look at the impact on abortion rates of changes in explanatory variables over time within a state, controlling for underlying state-specific fixed effects. Panel data analysis provides much more accurate estimates of the impact of changes over time in policy or in environmental factors on abortion usage.

Our primary results are summarized here:

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[1]The District of Columbia is included along with the 50 states.

(1) The implementation of restrictions on medicaid funding are correlated with a 14 percent decline in in-state abortion rates. Actual abortion rates among state residents decline only 5 percent, indicating that the implementation of these laws leads to substantial cross-state migration for abortions. There appear to be strong correlations with the passage of medicaid funding restrictions and changes in behavior and attitudes within states among all women. This is most clearly apparent in the fact that even enacted but unenforced laws are correlated with lower in-state abortion rates. A maximal estimate of the impact of these laws on abortions among medicaid-eligible women is that 22 percent of the abortions that would otherwise occur do not take place when public funding is limited.

(2) There is clear evidence in this study of the cross-migration of women between states for an abortion, consistent with Tiebout-type theories about movements across competing jurisdictions. This cross-migration is predominantly correlated with changes in medicaid funding laws, including both own-state and border-state legislation.

(3) The availability of abortion providers within a state increases abortion rates, even after controlling for the simultaneity between abortion supply and demand. Nonhospital providers are particularly important in abortion availability, and appear to be the marginal provider. The availability of providers appears to predominantly affect cross-state migration for abortion, not the actual propensity to have an abortion.

(4) Patterns of party control in a state and voting patterns among representatives from a state do not appear related to abortions in any easily explained pattern.

(5) Economic and demographic variables, strongly correlated with cross-sectional abortion rates, have smaller effects in panel data with state fixed effects. Increases in unemployment and state per capita income show a

strong positive correlation with abortion, while increases in marriage rates and in the black population share show a negative correlation with abortion rates.

(6) In contrast to the strong effects of medicaid funding restrictions, parental consent requirements for teen abortions appear to have few effects on aggregate abortion rates. There are few differences in the determinants of teen versus nonteen abortion rates or white versus nonwhite abortion rates, although this conclusion is limited by the fact that we have information on these subgroup abortion rates only for a nonrandom sample of states and years.

II
Existing Research on Abortion Determinants

A standard approach to analyzing abortion rates involves cross-sectional regression of state abortion rates against a variety of demographic, social and policy-related variables.[2] Such regressions indicate that state characteristics, such as metropolitan population share, marriage rates, religious affiliation, median income levels, and average education levels, are significantly correlated with abortion rates across states. Variables measuring abortion availability, either by price or number of abortion providers, are also significant. In addition, this research often includes controls for abortion-related policies, usually the availability of public funds for abortions among medicaid-eligible women, and finds these policies highly significant.

Unfortunately, it is difficult to control for the full range of state-specific differences in these sort of cross-sectional regressions. As a result, many of the estimated coefficients could be biased, reflecting correlations between the included independent variables and a variety of omitted variables. One might believe that this is particularly true of the policy variables; states that provide

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[2]Examples of this include Singh, 1986; Medoff, 1988; and Garbacz, 1990; Borders and Cutright, 1979, use cross-sectional SMSA data.

funding for medicaid abortions may vary in a number of ways not measured through the independent variables, biasing the policy coefficients upward. In addition, several of these analyses also fail to recognize that there are serious endogeneity problems with including a measure of abortion providers (supply of abortions) when estimating abortion demand. Since the two are simultaneously determined, regressions that do not take this simultaneity into account will produce a biased estimate of the abortion provider coefficient.[3]

This paper improves on past analyses in three ways. First, we use a panel data set of state abortion rates over time. Including state fixed effects to control for unmeasured heterogeneity between the states that is not captured in the independent variables, we can estimate the effect of changes in demographic, economic, and policy variables over time within states on abortion rates. This is a much better approach to understanding the determinants of abortion than relying upon cross-sectional state variation.[4] Second, we instrument the abortion provider variable. Third, we have put a great deal of time and effort into coding a wide variety of independent variables across states and years, in order to estimate more complete policy and political climate effects.

In contrast to those studies investigating aggregate state abortion rates, a limited number of studies have used individual micro-data to analyze

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[3]Exceptions to this are Medoff (1988), who estimates the effect of prices on abortion with a two-stage least squares procedure, and Haas-Wilson (1993a) who instruments the number of abortion providers.

[4]A recent working paper by Haas-Wilson (1993b) uses state panel data to estimate 5 years of abortion rates in the 1980s. She cannot use state fixed effects, however, because several of her independent variables do not vary over time within the state; this loses much of the advantage of panel data.

abortion decisions.[5] These studies provide a better analysis of individual decision-making than any estimate based on aggregate state abortion rates, and they indicate some of the key variables (such as labor force participation, marital status, income levels, and metropolitan location) that one would like to control for in estimating state aggregate abortion rates. But we lack micro-data that track the abortion decisions of sequential samples of women over time.

A number of studies have focused particularly on the enactment of public policies related to abortion. Perhaps the major public policy debate has revolved around whether public funding for abortions should be available through medicaid, the public health insurance program available to low income women.[6] In 1976 Congress cut off federal funding of abortion for medicaid clients through legislation known as the Hyde Amendment. This restriction was initially blocked by a court restraining order, but went into effect in August 1977 and has remained in effect ever since, except for a 7 month period in 1980 when it was temporarily blocked by another restraining order.[7] As discussed below in more detail, a number of states have chosen to continue to fund medicaid abortions using state funds.

A variety of studies investigated the immediate effects of the cut-off of federal funding for medicaid abortions in the late 1970s by studying abortion behavior in selected locations before and after the Hyde amendment went into

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[5]Micro-data estimates of abortion determinants among adolescents are done by Lundberg and Plotnick (1990), Joyce (1988), and Cooksey (1990). Torres and Forrest (1988) survey women's reasons for choosing abortion.

[6]Access to medicaid has historically been primarily available to participants in the Aid to Families with Dependent Children (AFDC) program.

[7]The exceptions to the Hyde Amendment have also tightened. Since June 1981, the only case in which the federal government will pay for an abortion through medicaid is when the pregnancy endangers the woman's life.

effect.[8] In general, these studies indicate that 20 to 25 percent of the women who would have received publicly funded abortions instead gave birth when that funding became unavailable. In the cross-sectional analyses of abortion rates cited above (typically based on a selected year in the 1980s) state public funding for medicaid abortions always has a significant positive effect on abortion rates. Similarly, simple comparisons of states with and without public funding indicate abortion rates are higher in these states (Haas-Wilson, 1993a). But, as noted above, in these latter studies this effect may reflect other unmeasured state-specific differences between states that do and do not fund medicaid abortions.

The other most contentious state policy debate has been over state parental notification and consent laws for minors seeking abortions. The legal history of these laws' evolution is complex; a substantial number of states have laws on the books that are or were enjoined at particular times by the courts. In addition, the Supreme Court itself has issued a series of evolving decisions, including a requirement that any such law have some form of judicial bypass available for minors. A number of studies have looked at the implementation of parental consent and notification laws in particular states,[9] and indicated that immediately after the implementation of these laws, the number of teen abortions within the state falls. Cartoof and Klerman (1986), investigating changes in the Massachusetts law, find that few teens affected by the law did not get abortions, but a substantial fraction traveled out of state for them. Haas-Wilson (1993a) indicates that states without parental notification have higher teen abortion rates on average.

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[8]Rubin, et.al., 1979; Gold, 1980; Trussell, et.al. 1980; Cates, 1981; Henshaw and Wallisch, 1984.

[9]Cartoof and Klerman, 1986; Rogers, et. al., 1991.

In short, the existing literature on the determinants of abortion indicates that a substantial number of economic and demographic variables appear to be correlated with state abortions rates at a point in time. Similarly, restrictions on medicaid funding and the presence of parental notification appear to decrease abortion rates within a state. Most of these studies are focused on cross-sectional estimates from a single year, or study the implementation of various policies in a specific location at a particular point in time. This paper is the first research to use all available data on abortion rates across states and years to measure how abortion rates change as changes occur in policy, political climate, economic and demographic variables, and provider availability.

III
Data on Abortion and its Related Determinants

This section summarizes the data we use in this paper, with particular attention to the abortion data and policy variables. We describe this data in some detail, in part because the value of this paper depends heavily upon the careful collection of state-year data relating to abortion. Appendix 1 provides detailed information on sources and coding for all the variables used in the paper, while appendix tables 1 and 2 provide summary statistics.

A. Abortion Data

There are two primary sources of abortion data available in this country. The Center for Disease Control (CDC) publishes annual numbers on reported legal abortions from state central health agencies.[10] These data are available from 1974 through 1990, but not all states report these data in every year.

[10] In some cases, they supplement this data from additional sources.

These data are also incomplete in many states, without information from all providers. In addition to total abortions, CDC also publishes abortion numbers by race and by age for those states that collect this information. These are the only available data on abortion among subgroups of the population, albeit from a nonrandom sample of states.

The second source of abortion data is the Alan Guttmacher Institute (AGI), which conducts a periodic survey of all identified abortion providers in the United States. This provides data on the number of abortions performed in all states from 1973-92, with the exception of 1983, 1986, 1989, 1990, when surveys were not conducted.[11] The AGI data are more complete, both because they cover all states in all available years but also because AGI works hard to compile a complete list of all abortion providers, thereby collecting information from many smaller clinics that are missing from the CDC data.

Figure 1 shows the trend in abortion usage over time. The solid line shows the total number of abortions reported by AGI data for all states from 1973-92. The dotted line plots the AGI data for the subset of 35 states for which CDC data is available from 1974-90 and the dashed line plots the CDC data for these states. While the AGI data consistently report more abortions than the CDC data, the trends are very similar. The correlation between the two series in the restricted sample of states and years for which both are available is 0.988. Figure 2 plots the average annual number of abortions in all states for AGI data and in the 35 states which have CDC data from 1974-88 and indicates that the similarity between these two data sources is visible

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[11]Henshaw and Van Vort (1992) provide detailed information on the AGI survey and its methodology. The 1991 and 1992 AGI abortion data have just been released; unfortunately, many of our dependent variables are not yet available for these years. Thus, although we show the 1991 and 1992 data in the graphs in this section, in the estimation section we use only the 13 years of data from 1974 to 1988, excluding the missing years of 1983 and 1986.

not just in aggregate, but state-by-state as well.[12] Given these similarities and the more complete reporting for the AGI data, we will use AGI data in our analysis of aggregate abortion rates.

The abortion variable most often cited is the abortion rate, the number of abortions per 1000 women between the ages of 15-44 (which we refer to as the female fertile population) for each state and year.[13] This number indicates the abortion rate among the population at risk of conception. Changes in this rate will reflect both changes in conception rates, as well as changes in abortion rates, conditional upon conception.[14] The solid line in figure 3 plots the abortion rate over time, showing a slow decline since 1981.

The abortion data collected by both AGI and CDC provide information on the number of abortions that occur within a state, which creates a potential inconsistency problem in the abortion rate: The numerator, number of abortions, is reported in the state where they occur, but the denominator, female fertile population, is based on state of residence. To the extent that women travel across state lines for abortions, some jurisdictions may report very high abortion rates. This is most noticeable in the District of Columbia, which has an abortion rate 4 times higher than any other jurisdiction (165 abortions per 1000 fertile women), reflecting the number of women from the

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[12]The state numbers in figure 2 correspond to an alphabetical ordering of the states. A key is provided in Appendix Table 2, which shows average state abortion data from 1974-88 using AGI and (where available) CDC data.

[13]Calling this age group of women the "female fertile population" is not entirely accurate, since not all of these women are fertile, but this is the best available approximation to the fertile population.

[14]One can calculate the abortion ratio, abortions per pregnancy, but the data on pregnancies are less accurate. This paper investigates the total effect of our variables on abortion rates. It is difficult to separate this into the indirect effect (through changes in conception) and the direct effect (on abortions post-conception); we leave this to future research.

surrounding region who go to D.C. for abortions. This is not necessarily a problem. If we want to measure the effects of differences in state characteristics and policy on in-state abortion rates, the effect of changes in these variables on the number of women who enter or leave the state for abortions is as important as their effect on the resident population.

If, however, we are interested in the effects of state characteristics and policy on the actual number of state residents who have an abortion (whether in-state or out-of-state), then we need alternative abortion data. AGI estimates the number of abortions among state residents, based on their abortion data by state of occurrence.[15] The dashed line in figure 3 shows abortion rates by state of residence.[16] Figure 4 shows 1988 abortion rates by state of occurrence versus abortion rates by state of residence. As should be clear, there is substantial cross-state migration in some cases. While the resident abortion data has two problems (it is available over a shorter period and it is estimated less accurately than the occurrence abortion data), we will investigate the differences in the determinants of these two series below.

While AGI collects only aggregate abortion numbers, CDC also reports state-specific information on abortions by age and race in states whose public health agencies collect such data. The absence of national information on abortions by age and by race means that the generalizability of any results for these subgroups may be less than when we look at aggregate abortion rates.

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[15] AGI uses a relatively complex algorithm for this calculation, described in Henshaw and Van Vort (1992). The data are available in a consistent form from 1978-88 (omitting 1983 and 1986). Earlier estimates using a different calculation procedure for 1974-77 are available, but they appear to be quite different from the later data, and we do not use them.

[16] The difference between abortion rates by residence and occurrence reflects both potential inaccuracies in the estimates of residence abortions, as well as abortions performed outside the country.

Information on differences in abortion rates between teens and nonteens is available from the CDC for 24 states from 1974-90.[17] This is less complete data for a nonrandom sample of states than the AGI aggregate abortion numbers provide, but it is the only available information on age-specific abortion rates. Figure 5 plots teen abortion rates per 1000 fertile teens and nonteen abortion rates per 1000 fertile nonteens.[18] For comparison, figure 5 also plots the average abortion rate for the entire population in all states. While the majority of abortions are to nonteens, the teen abortion rate is approximately 1.4 times higher than the nonteen abortion rate. The teen abortion rate also peaks later and falls less over the 1980s; the overall correlation between the teen and nonteen abortion rate series is 0.934. The AGI data on aggregate abortion rates in all states tracks the nonteen abortion rate relatively closely (its higher level reflects the greater number of abortions in the AGI versus the CDC data.)

Figure 6 plots abortion levels and abortion rates for the white and nonwhite population, based on the 18 states that report this information from 1974-90.[19] Although the vast majority of abortions are to white women, nonwhite women have dramatically higher abortion rates over this time period.

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[17]Most other states either do not report this data at all, or report it only for a very small number of years. These 24 states account for 42.2 percent of all abortions on average over these years.

[18]The denominator for the teen abortion rate is the number of women between the ages of 15 and 20 in the state. The denominator for the nonteen abortion rate is the number of women between the ages of 21 and 44 in the state.

[19]Aggregate abortions in these 18 states represent 30.3 percent of all abortions over these years. The definition of "nonwhite" varies depending on how state health agencies collect this information. For each year and state, we calculate the white fertile population as the percent white in the state, multiplied by the female fertile population. We calculate the nonwhite fertile population as the percent black in the state, multiplied by the female fertile population. To the extent that CDC data includes persons who are not black in the nonwhite count, this will overstate the nonwhite abortion rate.

The trends in the two data series are also quite different, as evinced by their correlation of -0.134.

B. Abortion Provider Data

The AGI reports on the total number of abortion providers by state from 1973-88, in all years except 1983 and 1986, and also separates this total into the number of hospital and nonhospital abortion providers. Figure 7 plots the total number of abortion providers between 1974 and 1988 per 1000 fertile women, as well as the number of hospital and nonhospital providers per 1000 fertile women. The relative number of providers rises until around 1978, is essentially flat through 1982, and then falls steadily through the rest of the 1980s. The relative number of hospital providers falls throughout much of this period, while the number of nonhospital providers rises.[20] Dividing the total number of abortions by the total number of providers, this ratio rises from 497 in 1975 to 742 by 1988.

If the number of abortions in each state and year reflect a supply/demand equilibrium, it is not clear why we would be interested in controlling for the number of abortion providers. There are two reasons to include this variable as one of the determinants of abortion, however. First, some claim that the protests against abortion providers have constrained their numbers, in which case we would want to take this constraint into account. Second, we lack price information on abortions by state and year. One can view the number of providers in a state as a proxy for prices. Travel distance may also be a proxy for price and constraint. We pick up distance effects, however, in the state fixed effect since state size is unchanged over time; in part, we also control for distance by controlling for the share of the nonmetropolitan

[20]This change is not unique to abortions. A variety of minor surgical procedures moved from hospital to out-patient clinics over this time period.

population in a state in each year. Henshaw (1991) discusses the full range of possible constraints on access to abortion.

C. Policy Variables

Public funding laws. As discussed above, a number of states have used state funds to pay for medicaid abortions for low-income women since the passage of the Hyde Amendment prohibited federal funding. We code a variable between 0 and 1, equal to the share of the year in which a medicaid-eligible woman in that state has no access to public funding for an abortion (either federal or state).[21]

The solid line in figure 8 plots this variable over time, weighted by the share of the female fertile population in each state; the result is the share of the population in states without public funding of medicaid abortions in each year. The share starts at under .10 percent in 1974, jumps in 1977 with the implementation of federal restrictions, drops briefly during the 1980 embargo on the federal law, and then gradually increases through the 1980s. In 1990, over 60 percent of women live in states where publicly funded abortions are not available.

In addition to the indicator variable for state funding of abortions, plotted in figure 8, we also experiment with two measures of the quantity of women eligible for publicly funded abortions. First, we have some data on the number of publicly funded abortions in a state. Combining information from several sources (see Appendix 1), we created data on the number of publicly funded abortions by state for the years 1978-83, 1985, and 1987. We have

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[21]We spent a great deal of time collecting accurate information on this variable. A lengthy appendix describing our data sources and coding state-by-state is available from the authors on request. Some states allow only very limited state funding for medicaid abortions, such as in situations of rape or incest. We group these states with those that provide no state funding.

hesitations about this data, however. It is available for only a limited number of years and, given it comes from a variety of sources for each state and year, we suspect that this series is not highly accurate.

Second, we also use information on AFDC caseloads for single parents. Over our time period, all AFDC recipients are "categorically eligible" for medicaid. A few states have a few alternative eligibility options for low-income women, but these compose a very small share of the medicaid caseload. Thus, the AFDC caseload is the best estimate of the number of women eligible for publicly funded abortions, in the states that make such funding available. Because AFDC eligibility rules differ substantially across states, the share of the female population on AFDC varies across states; as AFDC caseloads rise, one might expect abortions to rise in states that provide public funding to this population.

Parental consent laws. As discussed above, over the 1980s a growing number of states enacted various parental consent or notification laws for teenagers seeking abortions. While we have experimented with coding a more disaggregated variable that distinguishes between no law, and requirements for parental notification, parental consent, or adult counselling, we end up using a variable that simply equals 1 if either notification or consent restrictions on teens are in place in any state and year. The dashed line in figure 8 plots the share of the teenage population (ages 15-20) that are in states covered by such legislation in each year. This share grows from less than 5 percent to over 20 percent from 1979 to 1990. Compared to medicaid funding restrictions, however, these laws are much less common and impact only younger women. Given this, we would expect teen restrictions to have weaker affects on aggregate abortion rates.

Border state policies. If there is migration across state boundaries for abortion, abortions in a state should be affected not only by the state's own

laws, but also by the laws of surrounding states. Thus, we also create two border state policy variables, measuring the policies of surrounding states with regard to medicaid funding and teen restrictions. These variables are based on policies in all physically contiguous states. The closer these states, the more likely that their policies will induce migration of women across state lines for abortion. Thus, we create a variable which is the weighted average of the policy variable in all border states, using the (inverse) distance between the capital of the given state and the capital of each border state as weights.[22] If all surrounding states have restricted policies, this variable equals 1; if none have restrictive policies, the variable equals 0.

AFDC benefit levels. Finally, we also control for the maximum AFDC benefits available to a single woman with 3 children in each state and year. Some have claimed that higher AFDC benefits create an incentive for unmarried women to have children, by providing them financial support as single parents.

D. Political Climate Variables

Enjoined laws. In addition to policy variables based on actively enforced laws, there are a number of states that passed restrictions on medicaid funding, but had these laws enjoined by the courts for a period of time due to their explicit formulation. Such enjoined laws may be viewed as indicating that the climate of a state is more hostile than in states with no enjoined restrictions. This may affect the behavior of abortion providers, the likelihood that women leave or enter the state for abortion, and the ease with which low income women are able to receive medicaid funding for abortions. To measure the

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[22] As it turns out, weighting by distance has little effect. The results reported below are virtually identical if an unweighted average of border state policies is used instead. We also experimented with population weights.

impact of this on abortion, we code a 0/1 variable that identifies years in which specific states have passed laws restricting public funding of medicaid abortions and where these laws have been ruled unconstitutional by the state courts. We identify this as a political climate variable, because we believe that it is a proxy for state opposition to abortion, but we realize that this could also be considered a direct policy variable.

Party affiliation. We have coded information on party affiliation in each state. For each year, we have coded whether the state governor is Republican, whether the state House is controlled by Republicans, and whether the state Senate is controlled by Republicans. The effects of these variables, entered separately or used in various combinations or lags, are discussed below.

COPE rankings. Party affiliation is often considered a weak positional indicator on the abortion issue. Its meaning also varies across regions, so that southern Democrats in some states may be more conservative on social issues than northern Republicans in other states. As an alternative coding for the state social policy climate, we coded the rankings from the AFL-CIO Committee on Political Education (COPE), based on the roll call voting behavior of a state's federal Senators on domestic policy issues.[23]

E. Other Demographic and Economic Variables

In addition to those variables directly related to abortion, we have collected state-by-year data on a wide variety of other state indicators. These include demographic information on marriage rates, birth rates, the share of teenagers among all fertile women, the share of older women (ages 35-44)

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[23]The evidence indicates that measures of political ideology based on roll call votes are reliable. A variety of these rankings are available, but are all highly correlated with each other. We use the COPE rankings because they focus on domestic policy issues, which we expect to be more correlated with abortion ideology. See Holbrook-Provow and Poe (1987).

among all fertile women, the black share of the population, and the share of the population living in nonmetropolitan regions. We also include economic information on unemployment rates, per capita income, and labor force participation among women. In general, we tried to select aggregate state variables that were consistent with micro-level evidence on the determinants of pregnancy and abortion, as discussed above.

IV
Estimation Methodology

We are primarily interested in the determinants of abortion rates. For any state s and year t, we specify this in the following way:

$$(1)\quad \text{AbortionRate}_{st} = \alpha_1 P_{st} + \alpha_2 C_{st} + \alpha_3 Y_{st} + \alpha_4 X_{st} + \delta_s + \omega_t + \epsilon_{st} \ ,$$

where P is a vector of policy variables, C is a vector of political climate variables, Y is the number of abortion providers in each year and state, X is a vector of state and year specific economic and demographic variables, δ is a vector of state-specific fixed effects, ω is a vector of year-specific fixed effects, and ϵ is a random error term that varies by state and year. The state fixed effects capture any permanent differences in abortion rates across states, such as differences due to religious or ethnic composition. The year fixed effects capture any components in abortion rates that are common across all states in year t, such as the effect of national economic trends. Note that in standard cross-sectional estimates of abortion rates, the inability to control for the unmeasured differences that are captured in these fixed effects means that the coefficients on other variables can become contaminated by omitted variables that are state and year specific.

One fundamental problem with equation (1) is that the variable Y is endogenous, since the availability of abortion providers is at least partially

determined by the demand for abortion. Without attention to this problem, the estimated coefficient on provider availability is biased. The classical solution to this problem is to find instruments for Y, variables that are correlated with the number of abortion providers but which are independent from the demand for abortion. We utilize two instruments, the total number of physicians and the total number of hospitals in each state and year (see appendix 1 for sources). While both of these variables may be related to the overall demand for medical services in a state, there is little reason to believe that they are significantly impacted by the demand for abortion.[24] Yet, areas with more physicians per person or hospitals per person, are also likely to have more abortion providers. Using these instruments, we can estimate the effect of providers using a standard two stage least squares (TSLS) procedure, whereby the availability of abortion providers is estimated in a first stage equation:

$$(2)\quad Y_{st} = \beta_1 Phy_{s,t} + \beta_2 Hosp_{s,t} + \beta_3 P_{st} + \beta_4 C_{st} + \beta_5 X_{st} + \theta_s + \lambda_t + \mu_{st},$$

where Phy and Hosp are the number of physicians and the number of hospitals in each state and year, P, C, and X are the vectors of policy, political climate, demographic and economic variables included in equation (1), and θ and λ are state and year effects for abortion providers. The estimated result from this equation, $\hat{Y}_{st}$, is then used in place of the actual variable, Y_{st}, in estimating equation (1).

V
The Determinants of Abortion

We start by estimating the log of abortion rates between 1974 and 1988 for all states, for the 13 years in which AGI data is available. We drop 1973

[24] In fact, Tatalovich and Daynes (1989) indicate that only 35 percent of hospitals offered abortion services in 1986.

because it is clearly a transition year; abortion is not generally available throughout this country until 1974.[25] The resulting sample contains 650 observations, with 50 states and 13 years of data in each state.[26]

A. Abortion Rates by State of Occurrence

Table 1 presents our standard specification.[27] Column 1 presents the estimates for the determinants of abortion rates, by state of occurrence, with a complete set of state and year fixed effects. Column 2 presents the same estimates without any fixed effects; in this case, the data is essentially treated as a large cross section. The inclusion of fixed effects—particularly state effects—significantly changes the estimated coefficients. Many variables that are correlated across states and significant in column 2 have little effect in column 1. For instance, while log per capital income is highly significant in column 2, much of this effect is due to the fact that states with higher incomes throughout this time period are also states which have consistently higher abortion rates throughout the time period. Over time within a state, the effect of changes in per capita income on the abortion rate is much smaller. This is consistent with the belief that there are omitted variables that vary across states

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[25] As noted above, although we have 1991 and 1992 data on abortion rates, we lack data on these years for a number of our independent variables.

[26] Nebraska is excluded from the regression analysis, bringing us from 51 to 50 states. This is because Nebraska has a unicameral and nonpartisan state legislature, which cannot be coded for party affiliation.

[27] In addition to those specifications presented below, we investigated a number of other alternatives, including using lagged policy variables; letting the first year of a policy change have a different effect than subsequent years; interacting the policy changes with demographic variables; and using the log of the number of abortions as the dependent variable, with the log of the population on the right hand side of the equation. None of these alternatives produced substantially different results.

and that are correlated with the included variables and abortion rates, which bias the results from cross-sectional regressions.[28]

The first coefficient in column 1 indicates that a state that moves from funding to not funding medicaid abortions will experience a large and significant decrease in the abortion rate. Column 1 of table 2 translates the coefficients on a few of the key policy variables into their estimated impact on abortion rates. Table 2 indicates that a state at the mean of all other variables will experience a 13.4 percent drop in its abortion rate when it restricts funding for abortion, a decline of 3.5 abortions per 1000 women. This is surprisingly large, and suggests that this variable may be measuring more than the direct effect of the state law on abortions among low-income women. If state restrictions on medicaid-funded abortions are enacted at the same time as the general climate toward abortion is becoming more conservative, then this variable would pick up both the direct effects of the restrictions on low-income women and the related effects of attitudinal change in the state, which could lead to either a decrease in the number of higher-income women who obtain abortions or an increase in the number of women who leave the state for abortions. We return to this below.

The impact of teenage restrictions in table 1 is essentially zero, with a perverse sign. Table 2 indicates that imposing teen restrictions appears to lead to a 4.7 percent increase in in-state abortion rates. Given the small share of teenage abortions among all abortions, it is perhaps not surprising that

[28]Among the possible omitted variables are religious affiliation (not available by state for each year, but varies little within states over time) and laws regarding contraceptive availability (mostly passed in the 1950s and 60s, so do not vary much over time). These and other variables which differ across states but not over time are subsumed in state fixed effects. One variable which will vary over time within states is pro-life political activity. We have no measure of this by state and year. The highly organized and targeted protests did not start until after 1988, the end of our data.

aggregate abortion rates are not significantly affected by this variable. Border state restrictions on teen abortions also have no effect.

Bordering state restrictions on medicaid funding for abortion have a significant effect on in-state abortion rates in table 1. If 1 of 4 equidistant bordering states initiates abortion restrictions, the in-state abortion rate increases by 5.2 percent (see table 2.) This cross-state effect on the location of abortion is consistent with the Tiebout hypothesis about people's response to competing opportunities in different political jurisdictions. The correlation between changes in border state medicaid funding policy and changes in the number of women receiving a within-state abortion is also further evidence for the proposition that there are other changes in behavior and attitudes occurring at the same time that restrictions on abortion funding for low-income women are implemented in a state. Medicaid-eligible residents in a state with restrictions cannot qualify for medicaid-paid abortions in another state. Given this, there is little reason for low-income women to go to another state and expend travel costs. Thus, the in-state increases in abortion due to changes in nearby state laws must almost entirely reflect behavioral changes that affect women other than low-income women and that occur at the same time as the medicaid funding changes.

Changes in AFDC benefits have no affect on abortion rates over time in these states. At least in part, this is because AFDC benefits change little over time in these states, therefore the inclusion of state fixed effects absorbs most of the variation in public assistance in the data.

Changes in the political climate variables have interesting effects. A state that passes restrictions on medicaid funding, but has that law enjoined by the courts, experiences a 6.7 percent drop in abortion rates (see table 2.) An enjoined law should have no direct effects on abortion, since no restrictions have been imposed on the funding of abortions for low-income women. The significance of this variable again suggests that the passage of funding

restriction laws are correlated with other changes in abortion availability and women's willingness to seek abortions.

Party affiliation within the state has no significant effect on abortion rates. Extensive Republican or Democratic control in a state is uncorrelated with abortion rates. We explore alternative specifications for party affiliation below.

The availability of abortion providers is highly significant in column 1 of table 1, even after instrumenting this variable to eliminate any potential endogeneity through the two stage least squares procedures described above.[29] The magnitude of the coefficient indicates that a 10 percent increase in the number of abortion providers at the mean leads to a 5.7 percent increase in the abortion rate (table 2). Column 3 of table 1 presents the results from simple OLS procedure that does not account for endogeneity between the demand for and supply of abortions. The coefficient from the TSLS estimation is similar to the coefficient from the OLS procedure, but estimated with less precision. A Hausman test indicates that the TSLS and OLS coefficients are not significantly different. While we continue to use the TSLS procedure in all further estimates presented below, these results indicate that the effect of provider availability on the rate of abortion that occurs within a state is not the result of endogeneity bias.

Once state and year fixed effects are included, changes in economic or demographic variables over time within a state appear to have relatively small effects on state abortion rates. The strongest remaining effect is the positive relationship between unemployment and abortion rates. As the economy moves into recession, a 1-point rise in the unemployment rate leads to about a 3 percent increase in abortion rates. Estimated with slightly less precision but still significant at the 5 percent level, decreases in marriage rates and

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[29]Appendix table 3 reports the first stage regression results.

increases in per capita income lead to an increase in the abortion rate. More surprisingly, increases in the percent of the black population in a state are correlated with reductions in abortion rates, controlling for all other variables in the regression and for fixed differences across states. . Given the high nonwhite abortion rates noted above, this is surprising. Since changes in the percent of the black population in the state are almost entirely due to changes black state residency over this time period, this potentially suggests that black in-migrants are self-selected to be less likely to utilize abortion.

The general conclusions from the regressions in columns 1 to 3 of table 1 on the determinants of abortion rates by state of occurrence are that restrictions on medicaid funding for abortion have strong effects over time on the abortion rate within states and on the movement of women across states, while restrictions on teenagers have little effect on aggregate rates. Political climate appears to be important, particularly as proxied by the presence of enjoined laws. Party affiliation in the state matters less. The availability of abortion providers has strong effects on abortion rates, even after adjusting for endogeneity. State demographic characteristics are less important once state fixed effects are included, although changes in the unemployment rate, the marriage rate, per capita income and the black population share do affect abortion rates over time within a state.

The year effects estimated in column 1 provide a measure of the unexplained variation across years that remains in the data after controlling for all the variables in the model. Figure 9 plots the 13 year effects estimated from the regression in column 1. (By definition, all of these are measured relative to the omitted (1988) effect, which is zero.) This plot indicates that there is some unexplained increase in abortion rates over the 1970s, an effect we suspect is related to increasing acceptance of abortion as a viable medical option by many women. An unexplained decline in abortion rates occurs between 1980 and 1982, for which we have no good explanation. After 1982,

there is no remaining unexplained trend in the data, indicating that our model fully captures movements in abortion rates during the 1980s.

B. Abortion Rates by State of Residence

The results in columns 1-3 of table 1 suggest a substantial amount of cross-state migration is induced by policy changes in nearby states. They also indicate surprisingly large effects of policy (even unenforced policy) on the number of abortions performed within a state.

An alternative question is to investigate the impact of these variables on the abortion rate of women who live within the state, regardless of where the abortion actually occurred. Such estimates provide a measure of the effect of policy on women's likelihood of having an abortion, while the previous estimates looked at the effect of policy on in-state abortion rates. Columns 4 and 5 of table 1 provide TSLS and OLS estimates of the determinants of abortion by state of residence, using the same specification as before. As discussed above, these estimates are limited to the 9 years between 1978-88 when AGI published consistent estimates of abortions by state of residence.

The most striking result in column 4 is that the impact of medicaid policy on abortions by state of residence is less than half of its effect on abortion by state of occurrence. Table 2 indicates that the imposition of medicaid restrictions reduces abortions among residents by 4.8 percent, compared to a 13.4 percent reduction of in-state abortions. This suggests that a large share of the measured policy effect in column 1 occurs because women go across state boundaries for an abortion, which changes the location of their abortion, but does not change the fact that they have an abortion. Consistent with this result, border state medicaid policies have almost no effect on abortion rates by state of residence.

As with abortion rates by state of occurrence, teen restrictions and AFDC benefit levels have little effect on aggregate abortion rates by state of

residence. The effect of enjoined restrictions on abortion rates among residents is insignificant and has a positive coefficient. The political affiliation variables are somewhat puzzling, showing a significant negative effect on abortions when a state is under strong Democratic control, and no effect to Republican control. The demographic variables have generally similar effects in column 4 as in column 1, although their standard errors are larger as the sample size shrinks.

The impact of provider availability on abortions by state of residence is poorly determined, with an unexpected negative sign. Column 5 shows the equivalent OLS regression, in which the provider variable is not instrumented. While instrumentation had little effect on the measured impact of providers on abortion rates by state of occurrence, it has a strong effect on the impact of providers on abortion rates by state of residence. Specifically, once the variable is purged of any simultaneity with the dependent variable, it has no correlation with abortion rates by state of residence. This suggests that provider availability induces women to change the location of their abortions (as the number of providers shrinks, more women go out-of-state for an abortion), but it has little affect on whether women have an abortion or not.

Further evidence on the extent of movement across states is given in column 6 of table 1. This column uses the difference in the log abortion rate by state of occurrence and the log abortion rate by state of residence as the dependent variable. This a measure of net abortion migration in or out of a state.[30] These results indicate that three policy variables drive net abortion migration: more women tend to go out-state for an abortion when the state

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[30]Ideally, one would like to take the log of the difference between the abortion rates by state of occurrence and state of residence as the dependent variable, but this involves taking the log of a negative number in some instances. We have tried a variety of other forms for the dependent variable in column 6 (such as the unlogged difference in abortion rates, or the log of the raw numerical differences). While the numbers differ somewhat, the general conclusions are identical with these other specifications.

implements restrictions on medicaid funding (whether enforced or not), while more women come in-state for an abortion when neighboring states put on funding restrictions.

Overall, what do these results indicate about the impact of abortion policy on abortion rates? Teen restrictions appear to have no significant affects on aggregate abortion rates, no matter how measured. (They may have a significant affect on *teen* abortion rates, but it is not so large an effect as to impact total abortion rates.) In contrast, medicaid funding policy is highly related to abortion rates. Our results indicate that medicaid restrictions seem to be correlated with other changes in the perceived or actual availability of abortion within a state, and induce a substantial number of women to go out-state for an abortion. Since there is no advantage to low-income women for following this strategy (in fact, it only increases the cost of abortion to them), this suggests that other things are changing in the state at the same time as these laws change and driving women of all income levels to change their abortion-seeking behavior. Call this the "indirect effect" of medicaid funding laws, as opposed to their direct effect on low income women.

The best evidence of this indirect effect is the significant drop in in-state abortions that occur at the time that laws are enacted, even when the actual implementation of these laws is enjoined by the courts. We can only speculate about what might be causing this indirect effect. The publicity given to the legislative fight over medicaid funding restrictions might be a signal to all women that there is more hostility to abortion in the state; the enactment of these laws might indicate that anti-abortion groups have been actively conducting information and publicity campaigns in the state, changing some women's behavior; these legislative fights might also make abortion providers more cautious about the number of abortions they perform, and lead them to discourage potential clients.

It is difficult from this data to estimate the direct impact of medicaid funding restrictions on low-income women only, since we have no information on abortion rates among women by income category. We do, however, have several potential estimates of this effect. The differences in the coefficients on medicaid policy between columns 1 and 2 of table 2 indicate that about 8.6 percent (13.4-4.8) of women in a state have out-state abortions when medicaid funding restrictions are enacted (a potential measure of the "indirect effect"), while only 4.8 percent forego an abortion. If this latter coefficient is entirely a measure of the direct effect (i.e., all of the women actually discouraged from having an abortion are medicaid-eligible women) and if we utilize the fact that 22 percent of all abortions are publicly funded (in the states that fund abortions), this means that about 22 percent of all previously publicly-funded abortions are being prevented.[31] This is surely a maximal estimate. If the "indirect effect" of changes in the state environment for abortion are strong enough to induce 8.6 percent of the (probably nonmedicaid eligible) women seeking abortions to go out of state, it is not unreasonable to expect that it might lead to an actual reduction in abortion among these women as well.

A similar estimate is arrived at by comparing the effects of enforced and unenforced restrictions on medicaid from column 1 in table 2. Assume that the indirect effects of medicaid laws are measured by the impact of enjoined laws (which should affect few low income women). If we subtract -6.7 percent from -13.4 percent, this suggests that the direct impact on abortion rates among low-income women due to the enactment of the law is a -6.7 percent decline in abortions, only slightly higher than the 4.8 percent estimate based on abortion among residents.

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[31]This is surprisingly close to the 20-25 percent estimates from studies cited above, that look at the implementation of laws in particular states.

C. Robustness of the Policy Effects

Table 3 investigates the robustness of our results on medicaid funding restrictions to changes in specification. The results in this table (and all subsequent tables) are for abortion rates by state of occurrence. Results on abortion by state of residence show generally similar patterns to those discussed here, unless otherwise noted. Column 1 repeats the results from column 1 in table 1, showing only the coefficients on medicaid funding restrictions, on border state medicaid funding restrictions, and on enacted but unenforced medicaid restrictions. Column 2 estimates the same regression, but omits both the border state policy variables and the unenforced restrictions variable. The results indicate that the significant negative effect of medicaid restrictions on aggregate abortion rates is relatively robust to these specification changes, although its magnitude drops by half when these other variables are omitted. This suggests that the inclusion of these other variables is important. For instance, if states are more likely to disallow medicaid funding for abortions when neighboring states also have this policy, failing to control for border state policies results in a coefficient estimate on in-state medicaid restrictions that is less negative than otherwise, as it combines both the in-state effect of medicaid restrictions on abortion rates (which is negative) and the positive effect of more restrictive border state policies, with which it is correlated.

Columns 3 to 6 test the effect of medicaid restrictions using alternative measures of the willingness of a state to fund medicaid abortions. As noted in section 3, for a selected sample of states and years we have data on the number of publicly funded abortions. This data is available for only 6 years in selected states, providing 306 observations. Column 3 of table 3 shows the coefficient on medicaid funding restrictions within this more limited sample, while column 4 shows the estimates when the medicaid funding policy variable is replaced with the log of the number of publicly funded abortions within a

state. Surprisingly, the number of publicly funded abortions have no significant effect on abortion rates.[32] Investigation indicates that this is primarily the result of the more restricted sample and the nature of this data, which is not very reliable. Over these limited sample years, most states either fund or do not fund medicaid abortions in all years; in those states that do fund medicaid abortions, the number funded is largely constant. Thus, the variation in publicly funded abortions is largely invariant within states over time, meaning that it is highly collinear with the state fixed effects and has no additional explanatory power.

An alternative measure is to use the AFDC caseload in a state. As explained above, this is a good proxy for the number of women eligible for publicly funded abortions. Columns 5 and 6 present two specifications using AFDC caseloads. Column 5 includes both the variable indicating when a state does not fund public abortions as well as the interaction of the inverse of this variable with the AFDC caseload as a share of the female fertile population. This latter variable measures the effect of caseload changes over time in states that fund public abortions. If increases in caseload stimulate increases in abortion in these states, then the second variable should show a significant coefficient, but it does not. Column 6 includes the AFDC caseload as a share of the female fertile population, with separate coefficients for those years when states fund abortions and when they do not. The coefficients indicate that abortion rates are higher in times when public funding of abortion occurs, and there is a small not-quite-significant effect of increases in caseloads during these periods.

The conclusion from these results is that the primary effect of public funding on abortion occurs because of the implementation or

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[32]Similar results occur if we use the log of the public abortion rate, or the log of medicaid dollars spent on abortion.

nonimplementation of restrictions. The availability of medicaid within the state, as proxied by either the number of publicly funded abortions in a state, or the AFDC caseload in the state, has much less effect on the abortion rate. States that fund medicaid abortions appear to fund about the same number over this period, with little variation over time.

D. Robustness of the Provider Availability Effects

We are also concerned with the robustness of the estimated effect of the number of abortion providers on abortion rates. Table 4 provides several alternative estimates. The first column repeats the coefficient on abortion providers from column 1 of table 1, using number of physicians and number of hospitals as instruments. The second column estimates the impact of hospital providers only on abortion rates, while the third column estimates the impact of nonhospital providers (in both of these columns, hospital and nonhospital providers are instrumented with the same variables used to instrument total providers.) Column 2 indicates that the availability of nonhospital providers has the same significant positive effect on abortion rates as do total providers. In contrast, the estimated coefficient in column 3 for hospital providers is insignificant. This suggests that it is primarily the availability of nonhospital providers that affects abortion rates. This is perhaps not surprising, since these are the more "marginal" providers who will enter or leave the market more readily as the climate for abortion changes.[33]

Finally, the last column of table 4 assumes that the division between hospital and nonhospital providers is not endogenous to the demand for

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[33]Further evidence that hospital and nonhospital providers do not play the same role in the abortion market is provided by their relative price structure. In 1989, a 10-week abortion cost $245 at the average clinic; in 1991, the average hospital abortion cost $1757. In part, this reflects the fact that women who use hospitals tend to have more health complications related to abortion (Henshaw, 1991).

abortion and enters the share of hospital providers together with the instrumented total provider variable. The results confirm that an increase in nonhospital providers is associated with an increase in abortion rates in a state, even after controlling for total providers.

E. Robustness of Political Climate Effects

We have experimented with a wide variety of specifications regarding political climate. Table 5 presents some of these results. The first column of table 5 repeats the coefficients from column 1 of table 1. As noted above, these results indicate there is no effect of substantial party control within the state on abortion rates. Column 2 of table 5 enters the political composition of each of the three state branches of government separately. The results indicate that a move to a Republican-controlled house is correlated with an increase in abortion rates, while a move to a Republican-controlled senate appears to have significant negative effects on abortion. Republican governors have no significant effect. We have no ready explanation for these results, but they are quite robust to specification changes in other variables.

The third and fourth columns enter the same two specifications, but use the moving average of these variables over the last 4 years, assuming that it takes time for political changes to impact legislation. It could be that high abortion rates are one of the factors causing dissatisfaction among some of the electorate and leading to the election of Republicans; in this case the contemporaneous correlation between party affiliation and abortion rates is spurious. The coefficients on lagged party affiliation are similar, however, although they are estimated with less precision.

As discussed in section 3, we also have a variable that codes political climate in a state based on the votes of its federal congressional delegation on domestic policy issues, the COPE rankings. We enter this variable in column

5 and 6 (with party affiliation and alone). In neither case do these rankings show any significant effects on abortion rates.[34]

Our overall conclusion is that party affiliation and federal voting patterns interact in a complex way with the political climate for abortion and the results are not readily explainable.[35] As recent elections in a number of states have shown, support for abortion does not divide up neatly across party lines. In addition, the courts have played a key role in a number of states in determining abortion policy, and we have no easy way of coding court composition or how courts and legislatures interact.

F. Robustness of Results to the Data Sample

Given our earlier discussion about AGI versus CDC data, it seems useful in table 6 to show the robustness of our findings to the data that we use. Column 1 repeats column 1 from table 1, which uses the AGI data on abortion rates for all years and states in which it is available. Columns 2 and 3 divide this data into two samples, with column 2 showing results over the first half of the sample (1974-80) and column 3 showing results over the second half (1981-88, excluding 1983 and 1986). Columns 4 and 5 compare AGI and CDC data. Column 4 uses AGI data on abortion rates, but is based only on the restricted sample for which CDC data is also available. Column 5 provides comparative estimates using CDC data on abortion rates.

We were pleased (and somewhat surprised) at how similar the results are across these different data samples. The smaller samples over the 1970s and

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[34]When estimated with abortion rates by state of residence, the COPE ratings appear to have a significant positive effect on abortions, i.e., in states with a more liberal federal representatives, abortion rates are higher.

[35]Research investigating the determinants of state abortion laws discusses the complexity of finding appropriate political climate variables for abortion policy (Meier and McFarlane, 1992 and 1993.)

1980s produce larger standard errors and the coefficients on some of the demographic variables are somewhat unstable, but the point estimates from the two samples are very close on most policy, climate, and provider variables.

Estimated on the restricted sample for which CDC data is also available, the AGI abortion rate estimates in column 4 show results that are generally similar to those from the full data sample. The most striking difference is that in the restricted sample the medicaid funding restrictions and the unenforced medicaid restrictions have a smaller and less significant effect on abortion rates, while AFDC benefit maximums have a positive and significant effect and Democratic control of the state has a significant negative effect. Column 5 shows the equivalent estimates using CDC data. While signs and magnitudes of most coefficients are generally similar, there are differences. Most striking, within the CDC sample the effects of medicaid funding restrictions and of unenforced medicaid restrictions on abortion rates have become insignificant and positive. This may be due to the incompleteness of the CDC data in reporting abortions among smaller clinics. To the extent that it is the smaller nonhospital providers which are most responsive to political climate and policy changes, then data that undercounts the abortion use at these clinics may show less responsiveness to policy.

Overall, we are reassured by the results in tables 3 to 6, indicating that differences in variable definition and specification tend not to have large effects on the results. There is substantial evidence that implementing restrictions on medicaid funding for abortion results in lower aggregate abortion rates. The fact that border states' restrictions impact where women have abortions and that even enjoined restrictions impact abortion rates suggests that such restrictions are correlated with the general attitude toward abortion in a state and measure both general climate effects as well as the direct effects of the law. The effect of these restrictions on actual abortions among state residents is much smaller, suggesting one of the main effects of

these policies is to induce cross-state migration for abortion services. We also have substantial evidence that a greater number of abortion providers in a state increases the abortion rate within the state, primarily through inducing cross-state migration, with nonhospital providers being particularly important. Party control in the state has mixed effects and is difficult to interpret. The abortion rate is also directly correlated with the unemployment rate and per capita income, and negatively correlated with the black population share and the marriage rate.

VI
The Determinants of Abortion by Age and Race

A. Teen versus Nonteen Abortion Rates

The CDC reports abortions for teens and nonteens for a selected sample of states, as discussed in section 3 above. In this section we look at differences in teen and nonteen abortion determinants. Because this data is from a different source and is available only for a smaller sample, we want to warn against drawing strong conclusions from these results.

Columns 1 and 2 of table 7 present estimates of teen and nonteen abortion rates, using our standard specification, and based on the 555 observations from the 45 states that ever report abortion numbers by age. Using the CDC data, column 1 presents teen abortion determinants and column 2 presents nonteen abortion determinants.

The determinants of teen and nonteen abortion rates are generally similar in columns 1 and 2. Most puzzling, while restrictions on teen abortions significantly reduce the teen abortion rate within these states, they appear to

reduce the nonteen abortion rate by almost as much.[36] This suggests that the passage of teen restrictions in these states is correlated with a growing climate of hostility (or at least reluctance) toward abortion, in ways that is not picked up by other variables in the model. It is important to remember that this variable does not necessarily indicate a decrease in the number of women who have abortions, but only indicates that the number of women who have abortions in this state *declines* when teenage restrictions are implemented. Unfortunately, we have no information on teen abortions by state of residence.

Teen abortion rates appear as responsive to provider availability and other climate variables as nonteen abortion rates. Both nonteens and teens show declines in the abortion rate when the black population share grows. Teen abortion rates are less responsive to unemployment rates than are nonteen abortion rates. As with the aggregate CDC data in table 6, AFDC benefit levels again appear important in these estimates.

We want to emphasize the problem of interpreting any of these teen/nonteen comparisons, given the selected nature of the data. Only those states that collect information on abortion by age are included in the sample; one might believe that this is a group of states that is particularly aware of problems and concerns regarding abortion among teenagers. The fact that legal restrictions on teen abortions are significant in this group of states but not in the full sample is evidence of this. Thus, it is difficult to generalize these results to the aggregate U.S. population. A similar caveat applies to the results on nonwhite and white abortion rates.

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[36]Estimating the AGI data on the same sample of states and years also results in a negative and significant coefficient on teen restrictions, unlike the results for the entire sample of states and years.

B. Nonwhite versus White Abortion Rates

For a selected group of states and years, CDC data is also available on white and nonwhite abortions. Columns 3 and 4 of table 7 presents this data in the same form as we presented the teen/nonteen data, for the 479 observations from 41 states that ever report abortion numbers by race.

The estimated determinants of abortion among white and nonwhite women are generally similar in columns 3 and 4. Perhaps reflecting the problems with CDC data, the impact of medicaid funding restrictions is insignificant for both groups, and even appears positive for nonwhite women. Although the sample selection results in different estimates than we find in a full sample of the population, there is no evidence here of substantial differences in the determination of state abortion rates among black and white women.

VII
Final Comments

There are several limits to the data used in this paper that constrain out analysis. In particular, we can look only at the impact of laws on aggregate abortion rates. Since we have no information on the availability and use of abortion by income level, we cannot investigate the effects of public funding restrictions on abortion decisions across the income distribution, and separate out these direct effects from larger climate changes that are correlated with legal changes.

The largest caveat on these results is that our regressions only be estimated on data through 1988, as a variety of our explanatory variables are not available yet for later years. Since 1988, the political and policy landscape for abortion has changed substantially. In particular, the rise of anti-abortion protests, organized nationally and targeted at presumably vulnerable states and

cities, may have substantially increased the role of "climate" in affecting both provider availability and the willingness of women to seek abortions. In 1992, the Supreme Court ruled that states could regulate the abortion process, as long as they did not impose an undue burden on women seeking abortions. Since then, a number of states have enacted or are discussing such provisions as waiting periods. Empirical evidence of the impact of these actions and laws, however, must await future data analysis.

References

Borders, Jeff A. and Phillips Cutright. "Community Determinants of U.S. Legal Abortion Rates." *Family Planning Perspectives.* Vol 11:4, July/August 1979. p227-33.

Cartoof, Virginia G. and Lorraine V. Klerman. "Parental Consent for Abortion: Impact of the Massachusetts Law." *American Journal of Public Health.* Vol 76:4, April 1986. p397-400.

Cates, Willard, Jr. "The Hyde Amendment in Action." *Journal of the American Medical Association.* Vol 246:10. September 4, 1981. p1109-28.

Cooksey, Elizabeth C. "Factors in the Resolution of Adolescent Premarital Pregnancies." *Demography.* Vol 27:2, May 1990. p207-18.

Duan, Naihua. "Smearing Estimate: A Nonparametric Retransformation Method." *Journal of the American Statistical Association.* Vol 78:383, Sept 1983. p605-10.

Garbacz, Christopher. "Abortion Demand." *Population Research and Policy Review.* Vol 9, 1990. p151-60.

Gold, Rachel Benson. "After the Hyde Amendment: Public Funding for Abortion in FY 1978." *Family Planning Perspectives.* Vol 12:3, May/June 1980. p131-34.

Greenberger, Marcia D. and Katherine Connor. "Parental Notice and Consent for Abortion: Out of Step with Family Law Principles and Policies." *Family Planning Perspectives.* Vol 23:1, Jan/Feb 1991. p31-5.

Haas-Wilson, Deborah. "The Economic Impact of State Restrictions on Abortion: Parental Consent and Notification Laws and Medicaid Funding Restrictions." *Journal of Policy Analysis and Management.* Vol 12:3, Summer 1993a. p498-511.

Haas-Wilson, Deborah. "Endogenous Abortion Regulation: The Impact on the Demand and Availability of Abortion Services." Unpublished paper. November 1993b.

Henshaw, Stanley K. "The Accessibility of Abortion Services in the United States." *Family Planning Perspectives*. Vol 23:6, Nov/Dec 1991. p246-53.

Henshaw, Stanley K. and Jennifer Van Vort. *Abortion Factbook, 1992 Edition*. New York: The Alan Guttmacher Institute. April 1992.

Henshaw, Stanley K. and Jennifer Van Vort. "Abortion Services in the U.S. 1991-1992." *Family Planning Perspectives*. Vol 26:3, May/June 1994. p100-6.

Henshaw, Stanley K. and Lynn S. Wallisch. "The Medicaid Cutoff and Abortion Services for the Poor." *Family Planning Perspectives*. Vol 16:4, July/Aug 1984. p170-80.

Holbrook-Provow, Thomas M. and Steven C. Poe. "Measuring State Political Ideology." *American Politics Quarterly*. Vol 15:3, July 1987. p399-416.

Joyce, Theodore. "The Social and Economic Correlates of Pregnancy Resolution Among Adolescents in New York City, by Race and Ethnicity." *American Journal of Public Health*. Vol 78:6, June 1988. p626-31.

Lundberg, Shelly and Robert D. Plotnick. "Effects of State Welfare, Abortion and Family Planning Policies on Premarital Childbearing Among White Adolescents." *Family Planning Perspectives*. Vol 22:6, Nov/Dec 1990. p246-251, 275.

Medoff, Marshall H. "An Economic Analysis of the Demand for Abortions." *Economic Inquiry*. Vol 26, April 1988. p353-59.

Meier, Kenneth J. and Deborah R. McFarlane. "State Policies on Funding of Abortions: A Pooled Time Series Analysis." *Social Science Quarterly*. Vol 73:3, Sept 1992. p690-8.

Meier, Kenneth J. and Deborah R. McFarlane. "The Politics of Funding Abortion." *American Politics Quarterly.* Vol 21:1, January 1993. p81-101.

Miller, Michael K., C. Shannon Stokes and Rex H. Warland. "The Effects of Legalization and Public Funding of Abortion on Neonatal Mortality: An Intervention Analysis." *Population Research and Policy Review.* Vol 7, 1988. p79-92.

Rogers, James L., Robert F. Boruch, George B. Stoms, and Dorothy DeMoya. "Impact of the Minnesota Parental Notification Law on Abortion and Birth." *American Journal of Public Health.* Vol 81:3, March 1991. p294-8.

Rubin, George L., Julian Gold, and Willard Cates. "Response of Low Income Women and Abortion Facilities to Restriction of Public Funds for Abortion: A Study of a Large Metropolitan Area. *American Journal of Public Health.* Vol 69:9, September 1979. p948-50.

Singh, Susheela. "Adolescent Pregnancy in the United States: An Interstate Analysis." *Family Planning Perspectives.* Vol 18:5, Sept/Oct 1986. p210-20.

Tatalovich, Raymond and Byron W. Daynes. "The Geographic Distribution of U.S. Hospitals with Abortion Facilities." *Family Planning Perspectives.* Vol 21:2, Mar/Apr 1989. p81-4.

Torres, Aida and Jacqueline Darroch Forrest. "Why Do Women Have Abortions?" *Family Planning Perspectives.* Vol 20:4, July/Aug 1988. p169-76.

Trussell, James, Jane Menken, Barbara L. Lindheim, and Barbara Vaughan. "The Impact of Restricting Medicaid Financing for Abortion." *Family Planning Perspectives.* Vol 12:3, May/June 1980. p120-30.

Appendix 1
Data Sources

This appendix lists sources of data used in this paper, and indicates any adjustments to the data that were made.

I. Abortion Data

A. Alan Guttmacher Institute (AGI).

1. Total abortions by state and year. Available from 1973-1992, with no data for 1983, 1986, 1989 and 1990. The data come from regular surveys of abortion providers, conducted by AGI. Sources: 1973-1988 data from Henshaw and Van Vort (1992), Table 7; 1991-1992 data from Henshaw and Van Vort (1994).

2. Abortion providers by state and year. Available from 1973-1988, with no data for 1983 and 1986. Source: 1973-1988, Henshaw and Van Vort (1992), Table 11. Additional data on providers by type were provided by Stanley Henshaw at AGI.

3. Abortion rates for state residents only, by state and year. Available from 1978-1988, with no data for 1983 and 1986. These data are constructed by AGI from various sources, described in the source. Source: Henshaw and Van Vort (1992), Table 9.

B. Center for Disease Control (CDC).

1. Total abortions by state and year. Available for selected states from 1973-1987, and all states for 1988-1990. The data are predominantly based on reports by state health agencies to the CDC. Source: 1973-1981 come from various issues *Abortion Surveillance* and 1982-1990 data are from issues of *Morbidity and Mortality Weekly Report.*

2. Abortions rates by age and by race, by state and year. Available for selected states from 1973-1990, with substantial missing data. The data come from reports by state health agencies to the CDC. Same source as previous variable except 1982-1988 abortion by race data were obtained directly from the CDC.

II. Policy Data

1. Dummy variable on whether a state disallows medicaid funding for abortions. Coded by the authors from a variety of sources in different years. When information was not available, the authors called state agencies and organizations to identify whether restrictions were in place in particular years. In years in which restrictions occurred for only part of the year, the share of the year in which the restrictions were in place is coded. An extensive description of the data determination for each state is available upon request.

2. Numbers of abortions paid for by public funds. Coded by the authors from two primary sources of information. The Health Care Financing Agency (HCFA) reported data from 1976-1983 on abortions charged by the states to the federal government, not including state-funded abortions. AGI also publishes data, including both state and federal-funded medicaid abortions, for 1978, 1980, 1981, 1983, 1985, 1987, and 1990. We use the AGI data when available, and use the HCFA data for 1979 and 1982 to make an informed interpolation for these two years.

3. Dummy variable on whether a state imposes parental notification or consent requirements on teen abortions. Data on state laws available in Greenberger and Connor (1991). The variable is coded from these data. A more extensive description of the data is available upon request.

4. Dummy variable on whether physically bordering states disallow medicaid funding for abortions. Weighted average of the dummy variable indicating medicaid funding restrictions in each physically contiguous state, where weights are the inverse distances between the state capital of the own state and the state capital of each surrounding state.

5. Dummy variable on whether physically bordering states impose parental notification or consent requirements on teen abortions. Weighted average of the dummy variable indicating teen restrictions in each physically contiguous state, where weights are the inverse distances between the state capital of the own state and the state capital of each surrounding state.

6. **AFDC caseload numbers.** Available for 1973-1992. Data for 1973-1980 from various editions of *Public Assistance Statistics* and that for 1981-1992 from various editions of *The Green Book.*

7. **AFDC maximum benefit levels. Available for 1973-1992.** Data for 1973-1980 from *Characteristics of State AFDC Plans*, various years; 1981-1992 data from various editions of *The Green Book.*

III. Political Climate Data

1. **Dummy variable for whether state has enacted restrictions disallowing medicaid funding for abortions, which have been enjoined by the courts due to their formulation.** Coded by authors from a variety of sources in different years. Among all states which have no medicaid funding restrictions in operation, this variable distinguishes between those states which have passed legislation that limits medicaid funding, but which has been enjoined by the courts. In some cases, this has been intentional (i.e., at the time of passage, it was clear the law would not be enforced), in other cases it was not clear whether the courts would uphold the law or not. A more extensive description of the data is available upon request.

2. **Dummy variable for whether state governor is Republican.** Coded from information in various editions of *The Book of the States.* Where possible, we confirmed this information using *American Governors and Gubernatorial Elections, 1979-87.*

3. **Dummy variable for whether state senate is Republican-controlled.** Coded from information in various editions of *The Book of the States.* In years where there is an exact tie between the number of Republican and Democratic senators, we code the variable 0.5.

4. **Dummy variable for whether state house is Republican-controlled.** Same source as previous variable.

5. **COPE rankings (AFL-CIO Committee on Political Education).** Available from 1973-1992 for all states except Washington, D.C. Source: *Almanac of American Politics*, various years.

IV. Demographic and Economic Data

1. State population by year. Available for all years through the *Current Population Reports*, P25 series.

2. Female population, ages 15-44, ages 15-20 (teens), and ages 31-44 (older women). From 1973-1979, total population by state and age is available in *Current Population Reports*, P25 series. We calculate the female share by dividing the relevant age group in half. From 1980-1992, total population by state and age and sex is available in *Current Population Reports*, P25 series.

3. Marriage rates per 1000 women. Available from *Vital Statistics for years 1973-1990.*

4. Labor force participation of women. 1970 Census data available; 1974-75 data available for some states; all states and years available 1976-1992. We interpolate 1973 for all states, and 1974-75 for states where the data are missing, using the 1970 data. Data in U.S. Department of Labor, *Geographic Profile of Employment and Unemployment* various editions.

5. Nonmetropolitan population. Population not residing in a Standard Metropolitan Statistical Area, 1973-1979; population not residing in a Metropolitan Statistical Area, 1980-1990. Data are available for 1973-1978; 1980-1988; 1990. 1979 and 1989 are interpolated.

6. Unemployment rate by state and year. Available 1973-1992. Published in *Employment and Earnings*, various years.

7. Per capita income by state and year. Available 1973-1992. Published in the *Survey of Current Business*, various years.

8. Number of live births by state and year. Available 1973-1990. Published in *Vital Statistics*, various years.

9. Number of blacks by state and year. Available 1973, 1975, 1976, 1980-1985, and 1988-1990. Missing years interpolated. Data from the *Current Population Reports*, Series P23 (1973 and 1975), Series P20 (1976), and Series P25 (1980 and forward).

10. Number of physicians and number of obstetricians and gynecologists, by state and year. Available 1974-1979, 1981-1984, 1986, 1989-1992. Data are the number of non-Federal physicians (or ob-gyn practitioners) in each state. Source: American Medical Association, *Physician Characteristics and Distribution in the U.S.*, various years.

11. Number of hospitals, by state and year. Available 1973-1992. Data are the total number of hospitals in each state. Source: American Hospital Association, *Hospital Statistics*, various years, table 10-B.

Appendix Table 1

State Abortions and Abortion Rates, AGI and CDC Data

AGI: Average annual data by state, 1974-88, except 1983 and 1986

CDC: Average annual data by state, 1974-88, for states with data in all years

State	AGI Data		CDC Data	
	Average Annual No. of Abortions	Average Annual Abortion Rate	Average Annual No. of Abortions	Average Annual Abortion Rate
1 Alabama	15,994	17.5		
2 Alaska	2,292	20.0	1,559	13.8
3 Arizona	15,688	23.7		
4 Arkansas	5,194	10.2	5,162	10.1
5 California	252,445	43.1	222,794	37.6
6 Colorado	20,397	27.3	14,355	19.3
7 Connecticut	19,157	26.3	15,764	21.7
8 Delaware	3,934	26.6		
9 D.C.	28,387	165.2	25,210	146.5
10 Florida	67,823	31.4	49,399	22.7
11 Georgia	34,563	25.4	32,022	23.6
12 Hawaii	8,715	37.1	5,693	24.5
13 Idaho	2,137	9.8		
14 Illinois	67,015	25.3	62,437	23.6
15 Indiana	14,155	11.1	12,938	10.1
16 Iowa	8,418	13.1		
17 Kansas	12,948	24.5	8,762	16.6
18 Kentucky	10,751	12.3	7,998	9.3
19 Louisiana	15,738	15.4	13,451	13.0
20 Maine	4,366	16.8		
21 Maryland	28,277	26.8	23,644	22.5
22 Massachusetts	39,766	29.1	36,958	27.0
23 Michigan	58,706	27.2		
24 Minnesota	17,262	18.1	16,294	17.0
25 Mississippi	4,287	7.3	3,863	6.6
26 Missouri	17,673	15.7	16,484	14.7
27 Montana	3,126	17.1		

(continued)

Appendix Table 1—Continued

State	AGI Data		CDC Data	
	Average Annual No. of Abortions	Average Annual Abortion Rate	Average Annual No. of Abortions	Average Annual Abortion Rate
28 Nebraska	5,698	16.8	5,123	14.4
29 Nevada	7,724	37.7	5,420	26.8
30 New Hampshire	4,543	19.8	3,186	3.8
31 New Jersey	53,838	31.2		
32 New Mexico	6,392	20.4		
33 New York	183,787	44.5	153,292	37.2
34 North Carolina	30,804	21.6	29,614	20.8
35 North Dakota	2,381	16.0	2,275	15.3
36 Ohio	55,591	22.3		
37 Oklahoma	10,705	15.2		
38 Oregon	15,213	25.3	12,637	21.0
39 Pennsylvania	58,266	22.0	55,524	21.0
40 Rhode Island	6,095	27.6	6,043	27.3
41 South Carolina	11,482	14.8	10,390	13.4
42 South Dakota	1,464	9.7	1,412	9.4
43 Tennessee	23,118	21.5	19,212	17.7
44 Texas	88,050	24.9		
45 Utah	3,730	10.7	3,554	10.2
46 Vermont	3,228	26.0	2,949	23.7
47 Virginia	30,494	22.8	28,932	21.6
48 Washington	30,354	31.1	27,275	28.0
49 West Virginia	2,811	6.5		
50 Wisconsin	17,623	16.4		
51 Wyoming	852	7.8		

Appendix Table 2
Means and Standard Deviations of Variables Across State-Year Observations

Variable	Number of Observations	Mean	Standard Deviation	Standard Deviation Across State Averages
1. Abortion Rates				
State of occurrence (AGI)	650	26.8	13.5	13.5
State of residence (AGI)	450	28.1	10.4	12.7
State of occurrence (CDC)	722	22.9	12.0	11.1
Teen (CDC)	555	28.2	14.0	13.2
Nonteen (CDC)	555	20.9	11.8	11.0
White (CDC)	474	17.9	13.5	12.7
Nonwhite (CDC)	474	69.3	86.5	74.4
2. Policy Variables				
Medicaid funding disallowed? (1=yes)	750	.428	.478	.344
Teen restrictions? (1=yes)	750	.088	.283	.189
Border states' policy: Medicaid disallowed?[a]	750	.549	.350	.196
Border states policy: Teen restrictions?[a]	750	.111	.184	.095
Numbers of publicly funded abortions	356	13,695	27,966	28,773
AFDC Caseload per 1000 women	750	6.6	2.3	1.9
Maximum AFDC benefits	750	373.5	160.7	140.4
3. Climate Variables				
Unenforced restrictions on medicaid? (1=yes)	750	.222	.416	.269
Governor/House/Senate all Republican? (1=yes)	750	.048	.213	.134
Governor/House/Senate all Democratic? (1=yes)	750	.433	.496	.328
Governor GOP? (1=yes)	750	.388	.487	.265
House GOP? (1=yes)	750	.129	.334	.250
Senate GOP? (1=yes)	750	.240	.425	.358
COPE rankings	735	56.1	25.4	21.3

(continued)

Appendix Table 2—Continued

Variable	Number of Observations	Mean	Standard Deviation	Standard Deviation Across State Averages
4. Provider Variables (in 1000s)				
Total providers	650	132	165	162
Hospital providers	650	74	100	100
Nonhospital providers	650	58	73	63
5. Demographic/Economic Variables				
Marriage rate/1000 women	750	10.3	7.9	7.3
Percentage teens (15-20)[b]	750	23.1	4.0	1.2
Percentage older (35-44)[b]	750	26.3	2.7	0.9
Percentage black[c]	750	11.9	8.2	8.3
Percentage in non-metropolitan areas[c]	750	24.2	17.5	17.6
Labor force participation rate among women	750	51.9	4.9	3.5
Per-capita income	750	15,276	2,509	1,898
Unemployment rate	750	7.3	2.1	1.2

All data is weighted by state female fertile population.

[a] Average policy in surrounding states, weighted by distance. See text.

[b] Among all fertile women.

[c] Within the total population.

Appendix Table 3
First Stage Regression for TSLS Specification
Dependent Variable: log(abortion providers)

1. Instruments for Provider Variable	
Log(number of hospitals)	.477**
	(.204)
Log(number of physicians)	.776**
	(.201)
2. Policy Variables	
Medicaid funding disallowed? (1=yes)	.036
	(.029)
Teen restrictions? (1=yes)	.081**
	(.031)
Border states' policy: Medicaid disallowed?	-.153**
	(.047)
Border states' policy: teen restrictions?	-.013
	(.053)
Log(AFDC maximum benefit levels)	.022
	(.067)
3. Climate Variables	
Unenforced restrictions on Medicaid? (1=yes)	.068**
	(.025)
Governor/House/Senate all Republican? (1=yes)	.055
	(.034)
Governor/House/Senate all Democratic? (1=yes)	.031*
	(.017)
4. Demographic/Economic Variables	
Marriage rate/1000 women	.001
	(.004)
Percentage teens	.008
	(.006)
Percentage older (ages 35-44)	-.010
	(.009)
Percentage black	.005
	(.018)
Percentage in nonmetropolitan areas	.003
	(.003)
Labor force participation rate among women	-.007
	(.005)
Log(per-capita income)	.495*
	(.235)
Unemployment rate	-.014*
	(.007)
R-squared	.987
Number of observations	650

Standard deviations in parentheses; *Significant at 5% level; **Significant at 1% level. Regression includes a full set of state and year effects and is run on an identical sample described for the results in column 1, table 1.

Table 1

Determinants of Abortions Rates 1974-88 within 50 States[a]

	Dependent Variable = Log Abortion Rate by State of Occurrence			Dependent Variable = Log Abortion Rate by State of Residence		Difference in Log Abortion Rates
	TSLS	TSLS	OLS	TSLS	OLS	TSLS
	(1)	(2)	(3)	(4)	(5)	(6)
1. Policy Variables						
Medicaid funding disallowed? (1=yes)	-.144** (.038)	-.047 (.039)	-.141** (.037)	-.049 (.035)	-.033 (.026)	-.064** (.020)
Teen restrictions? (1=yes)	.046 (.041)	-.155** (.049)	.049 (.039)	-.024 (.021)	-.025 (.018)	.008 (.012)
Border states' policy: Medicaid disallowed?	.203** (.058)	.082* (.049)	.199** (.056)	-.031 (.047)	-.017 (.039)	.084** (.027)
Border states' policy: Teen restrictions?	-.023 (.066)	-.170* (.084)	-.025 (.065)	-.017 (.034)	-.026 (.027)	.018 (.019)
Log(AFDC maximum benefit levels)	-.029 (.085)	.165** (.050)	-.027 (.085)	-.001 (.076)	-.048 (.050)	-.068 (.043)
2. Climate Variables						
Unenforced restrictions on medicaid? (1=yes)	-.069* (.034)	-.111** (.032)	-.066* (.031)	.051 (.037)	.021 (.020)	-.039* (.021)
Governor/House/Senate all Republican? (1=yes)	.013 (.046)	-.094* (.054)	.017 (.043)	-.021 (.034)	-.043* (.022)	.011 (.019)
Governor/House/Senate all Democratic?(1=yes)	-.018 (.022)	-.005 (.025)	-.016 (.021)	-.054** (.016)	-.042** (.010)	-.00002 (.009)
3. Provider Variable						
Log(total providers)[b]	.578** (.204)	.134** (.020)	.530** (.051)	-.285 (.417)	.158** (.033)	.172 (.237)

(continued)

Table 1—Continued

	Dependent Variable = Log Abortion Rate by State of Occurrence			Dependent Variable = Log Abortion Rate by State of Residence		Difference in Log Abortion Rates
	TSLS	TSLS	OLS	TSLS	OLS	TSLS
	(1)	(2)	(3)	(4)	(5)	(6)
4. Demographic/Economic Variables						
Marriage rate/ 1000 women	-.012*	.004**	-.012**	-.002	-.0004	.002
	(.005)	(.002)	(.005)	(.004)	(.003)	(.002)
Percentage teens	.006	.009	.006	.005	.007**	-.003
	(.007)	(.007)	(.007)	(.004)	(.003)	(.002)
Percentage older (ages 35-44)	.014	-.040**	.013	.010	.016**	.003
	(.011)	(.010)	(.011)	(.008)	(.005)	(.005)
Percentage black	-.058**	.009**	-.058**	.010	-.004	.007
	(.023)	(.002)	(.022)	(.021)	(.014)	(.012)
Percentage in non-metropolitan areas	-.0001	-.009**	-.0002	.004	.001	.002
	(.004)	(.001)	(.004)	(.004)	(.003)	(.002)
Labor force participation rate among women	-.010	.017**	-.011	-.003	-.001	-.001
	(.007)	(.004)	(.007)	(.005)	(.004)	(.003)
Log(per-capita income)	.684*	.876**	.725**	.456**	.416**	-.004
	(.332)	(.221)	(.289)	(.175)	(.141)	(.100)
Unemployment rate	.035**	.014*	.034**	-.003	.004	.009*
	(.009)	(.007)	(.008)	(.009)	(.005)	(.005)
State effects	Yes	No	Yes	Yes	Yes	Yes
Year effects	Yes	No	Yes	Yes	Yes	Yes
R-squared	.899	.708	.899	.960	.973	.896
Number of observations	650	650	650	450	450	450

Standard deviations in parentheses;

*Significant at 5% level; **Significantat 1% level.

[a]Nebraska is omitted from all models (see text); D.C. is included.

[b]Columns 1, 2, 4 and 6 instrument this variable, as discussed in the text.

Table 2
Estimated Effects of Policy Changes on Abortion Rates

	Abortion Rates Within States	Abortion Rates Among Residents of States
	(1)	(2)
Base calculation: Abortion rate for a state without restrictions[a]	26.13	26.92
Own state imposes medicaid restrictions only	22.63	25.64
(Percentage change from base)	(-13.4)	(-4.8)
Own state imposes teen restrictions only	27.37	26.29
(Percentage change from base)	(4.7)	(-2.3)
No own-state restrictions, one additional border state imposes restrictions	27.49	26.71
(Percentage change from base)	(5.2)	(-.78)
Own state enacts medicaid restrictions that are enjoined by the courts	24.38	28.34
(Percentage change from base)	(-6.7)	(5.3)
No own-state restrictions, provider numbers increase by 10 percent within the state	27.61	26.20
(Percentage change from base)	(5.7)	(-2.7)

[a]Calculated at means of all variables, except setting medicaid restrictions = 0; teen restrictions = 0; and unenforced restrictions on medicaid = 0. Column 1 estimates based on coefficients from regression shown in column 1, table 1; Column 2 estimates based on coefficients from regression shown in column 4, table 1.

All estimates use the smearing technique to transform estimated log abortion rates into actual abortion rates (Duan, 1983).

Table 3

The Effect of Medicaid Restrictions on Abortion Rates, Various Specifications, 1974-88

Dependent variable = log(abortion rate by state of occurrence)

	Full Sample		Restricted Sample		Full Sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Medicaid funding disallowed? (1=yes)	-.144** (.038)	-.086** (.032)	-.102** (.037)	—	-.173** (.054)	—
Border states' policy: Medicaid disallowed?	.203** (.058)	—	.048 (.048)	.050 (.051)	.204** (.058)	.161** (.057)
Unenforced restrictions on Medicaid? (1=yes)	-.069* (.034)	—	-.002 (.040)	.036 (.037)	-.068* (.034)	-.034 (.033)
Log(number of publicly funded abortions)	—	—	—	.001 (.005)	—	—
Medicaid funding allowed* (AFDC caseloads/female population)	—	—	—	—	-.004 (.006)	.009 (.006)
Medicaid funding not allowed* (AFDC caseloads/female population)	—	—	—	—	—	-.0001 (.008)
R-squared	.899	.892	.975	.972	.899	.897
Number of observations	650	650	306	306	650	650

Standard errors in parentheses;
*Significant at 5% level; **Significantat 1% level.

All regressions are based on TSLS estimates, including state and year effects, as well as the entire set of independent variables shown in table 1: teen restrictions, border states' teen restrictions, log(AFDC benefits), Gov/House/Sen all Republican, Gov/House/Sen all Democratic, log(total providers), marriage rate/1000 women, percentage teen, percentage older, percentage black, percentage in nonmetropolitan areas, labor force participation rates among women, log(per-capita income), and unemployment rates.

Table 4

The Effect of Provider Availability on Abortion Rates, Various Specifications, 1974-88

Dependent variable = log(abortion rate by state of occurrence)

	(1)	(2)	(3)	(4)
Log(total providers)	.578**	—	—	.496**
	(.204)			(.188)
Log(nonhospital providers)	—	.563**	—	—
		(.156)		
Log(hospital providers)	—	—	-.011	—
			(.384)	
Percentage of total providers that are hospital providers	—	—	—	-1.021**
				(.109)
R-squared	.899	.894	.880	.913
Number of observations	650	650	650	650

Standard errors in parentheses;
*Significant at 5% level; **Significant at 1% level.

All regressions are based on TSLS estimates, including state and year effects, as well as the entire set of independent variables listed in table 1: medicaid funding disallowed, teen restrictions, border states' medicaid funding limits, border states' teen restrictions, log(AFDC benefits), unenforced restrictions on medicaid, Gov/House/Sen all Republican, Gov/House/Sen all Democratic, marriage rate/1000 women, percentage teen, percentage older, percentage black, percentage in nonmetropolitan areas, labor force participation rates among women, log(per-capita income), and unemployment rates.

Table 5

The Effect of State Party Affiliation on Abortion Rates, Various Specifications, 1974-88

Dependent variable = log(abortion rate by state of occurrence)

	Using Current Values		Using Average Values Over the Past Four Years		Using Current Values	
	(1)	(2)	(3)	(4)	(5)	(6)
Governor/House/Senate all Republican? (1=yes)	.013 (.046)	—	-.027 (.056)	—	.021 (.048)	—
Governor/House/Senate all Democratic? (1=yes)	-.018 (.022)	—	-.033 (.030)	—	-.014 (.023)	—
Governor GOP? (1=yes)	—	.022 (.020)	—	.022 (.026)	—	—
House GOP? (1=yes)	—	.058* (.034)		.100 (.082)	—	—
Senate GOP? (1=yes)	—	-.067* (.033)	—	-.057 (.042)	—	—
COPE rankings	—	—	—	—	.0003 (.001)	.0002 (.001)
R-squared	.899	.900	.899	.900	.896	.896
Number of observations	650	650	650	647[a]	637[b]	637[b]

Standard errors in parentheses;
*Significant at 5% level; **Significant at 1% level.

[a]We lose three observations from Minnesota in the four-year lag, since prior to 1973 Minnesota's legislature was nonpartisan.

[b]COPE ratings do not include D.C.

All regressions are based on TSLS estimates, including state and year effects, as well as the entire set of independent variables listed in table 1: Medicaid funding disallowed, teen restrictions, border states' Medicaid funding limits, border states' teen restrictions, log(AFDC benefits), unenforced restrictions on Medicaid, log(total providers), marriage rate/1000 women, percentage teen, percentage older, percentage black, percentage in nonmetropolitan areas, labor force participation rates among women, log(per-capita income), and unemployment rates.

Table 6

Determinants of Abortions Rates, Various Data Samples

Dependent Variable = log(abortion rate by state of occurrence)

	AGI Data				
	Full Sample				
	All Years	1974-1980	1981-1988	On CDC Data Sample	CDC Data
	(1)	(2)	(3)	(4)	(5)
1. Policy Variables					
Medicaid funding disallowed? (1=yes)	-.144** (.038)	-.131* (.068)	-.193** (.077)	-.060* (.034)	.014 (.050)
Teen restrictions? (1=yes)	.046 (.041)	-.134 (.139)	.017 (.111)	.031 (.034)	.013 (.050)
Border states' policy: Medicaid disallowed?	.203** (.058)	.164 (.101)	-.029 (.129)	.228** (.050)	.309** (.074)
Border states' policy: Teen restrictions?	-.023 (.066)	-.313 (.316)	-.042 (.070)	-.003 (.054)	-.091 (.079)
Log(AFDC maximum benefit levels)	-.029 (.085)	-.018 (.165)	-.169 (.136)	.145* (.073)	.298** (.107)
2. Climate Variables					
Unenforced restrictions on Medicaid? (1=yes)	-.069* (.034)	-.108* (.054)	-.075 (.062)	-.035 (.030)	.013 (.044)
Governor/House/Senate all Republican? (1=yes)	.013 (.046)	.090 (.075)	-.052 (.088)	.031 (.039)	.014 (.057)
Governor/House/Senate all Democratic? (1=yes)	-.018 (.022)	-.004 (.054)	-.017 (.057)	-.033* (.018)	-.093** (.026)
3. Provider Variable					
Log(total providers)[b]	.578** (.204)	.715** (.303)	.722 (1.101)	.544** (.166)	1.077** (.244)

(continued)

Table 6—Continued

	AGI Data				
	Full Sample				
	All Years	1974-1980	1981-1988	On CDC Data Sample	CDC Data
	(1)	(2)	(3)	(4)	(5)
4. Demographic/Economic Variables					
Marriage rate/1000 women	-.012*	-.029**	.001	-.011**	-.006
	(.005)	(.012)	(.025)	(.004)	(.006)
Percentage teens	.006	.009	-.008	.005	.005
	(.007)	(.012)	(.052)	(.006)	(.008)
Percentage older (ages 35-44)	.014	.035*	.003	.022*	.029*
	(.011)	(.019)	(.017)	(.010)	(.015)
Percentage black	-.058**	-.202**	-.031	-.030	-.086**
	(.023)	(.061)	(.051)	(.019)	(.028)
Percentage in nonmetropolitan areas	-.0001	-.007	-.019	-.003	-.002
	(.004)	(.008)	(.045)	(.004)	(.005)
Labor force participation rate among women	-.010	.003	-.003	-.012*	-.022**
	(.007)	(.013)	(.006)	(.006)	(.009)
Log(per-capita income)	.684*	.400	.117	.491*	.121
	(.332)	(.815)	(.408)	(.268)	(.394)
Unemployment rate	.035**	.031*	.010	.026**	.022*
	(.009)	(.016)	(.014)	(.007)	(.011)
R-squared	.899	.909	.968	.923	.849
Number of observations	650	350	300	622	622

Standard deviations in parentheses;
*Significant at 5% level; **Significant at 1% level.
All regressions include a full set of state and year effects.

Table 7
Determinants of Abortion Rates by Age and Race
(On restricted samples for which abortions by age and race are available from CDC)

	CDC data			
	Teens	Nonteens	Nonwhites	Whites
	(1)	(2)	(3)	(4)
1. Policy Variables				
Medicaid funding disallowed? (1=yes)	-.031	-.053	-.006	.028
	(.061)	(.062)	(.084)	(.074)
Teen restrictions? (1=yes)	-.182**	-.160*	-.007	-.112
	(.073)	(.075)	(.103)	(.091)
Border states' policy: Medicaid disallowed?	.370**	.333**	.458**	.403**
	(.081)	(.083)	(.137)	(.120)
Border states' policy: Teen restrictions?	.098	.226*	.057	.428*
	(.100)	(.102)	(.250)	(.221)
Log(AFDC maximum benefit levels)	.410**	.421**	.481**	.577**
	(.136)	(.139)	(.198)	(.174)
2. Climate Variables				
Unenforced restrictions on Medicaid? (1=yes)	-.072	-.078	.043	.006
	(.055)	(.056)	(.070)	(.062)
Governor/House/Senate all Republican? (1=yes)	-.023	-.013	.095	-.012
	(.066)	(.068)	(.100)	(.088)
Governor/House/Senate all Democratic? (1=yes)	-.118**	-.091**	-.059	-.081*
	(.036)	(.036)	(.042)	(.037)
3. Provider Variables				
Log(total providers)	1.343**	1.452**	.860**	1.398**
	(.313)	(.320)	(.361)	(.318)

(continued)

Table 7—Continued

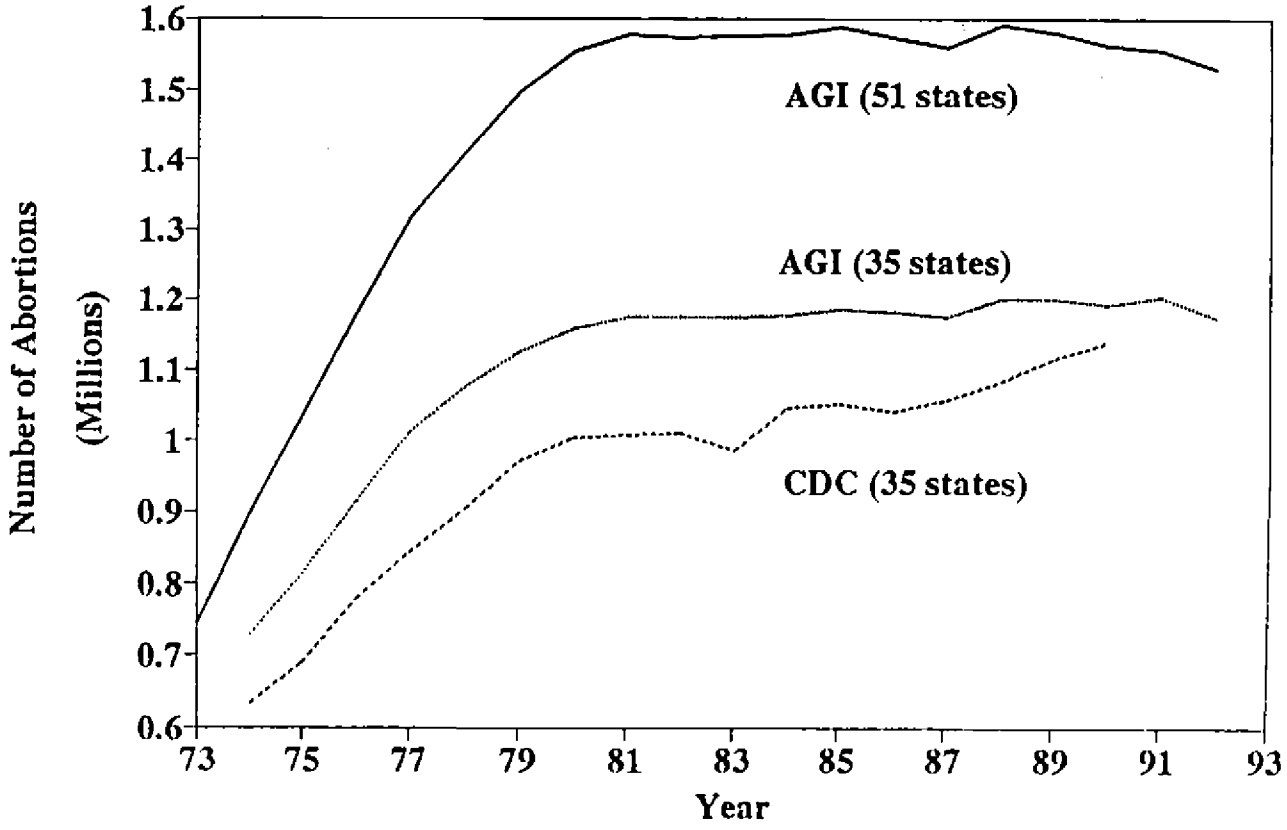
	CDC data			
	Teens	Nonteens	Nonwhites	Whites
	(1)	(2)	(3)	(4)
4. Demographic/Economic Variables				
Marriage rate/1000 women	-.004	.0003	.006	.003
	(.006)	(.006)	(.008)	(.007)
Percentage teens	—	—	-.027*	-.026*
		(.013)	(.011)	
Percentage older (ages 35-44)	—	—	-.011	-.010
		(.025)	(.022)	
Percentage black	-.122**	-.096**	—	—
	(.030)	(.030)		
Percentage in nonmetropolitan areas	-.0001	-.002	.014	.005
	(.006)	(.006)	(.009)	(.008)
Labor force participation rate among women	-.016	-.003	-.018	-.012
	(.010)	(.010)	(.012)	(.011)
Log(per-capita income)	.283	.434	1.569*	-.949
	(.526)	(.538)	(.868)	(.765)
Unemployment rate	.030*	.049**	.045**	.034*
	(.013)	(.013)	(.017)	(.015)
R-squared	.833	.828	.909	.797
Number of observations	555	555	474	474

Standard deviations in parentheses;
*Significant at 5% level; **Significant at 1% level.
All regressions include a full set of state and year effects.

Figure 1

Total Number of Abortions 1973-1992

Sum over 51 and 35 States



Note that years 1983, 1986, 1989 and 1990 are missing in the AGI data and are smoothed for the purpose of this graph.

Figure 2

State Abortion Data
Annual Averages, 1974-1988

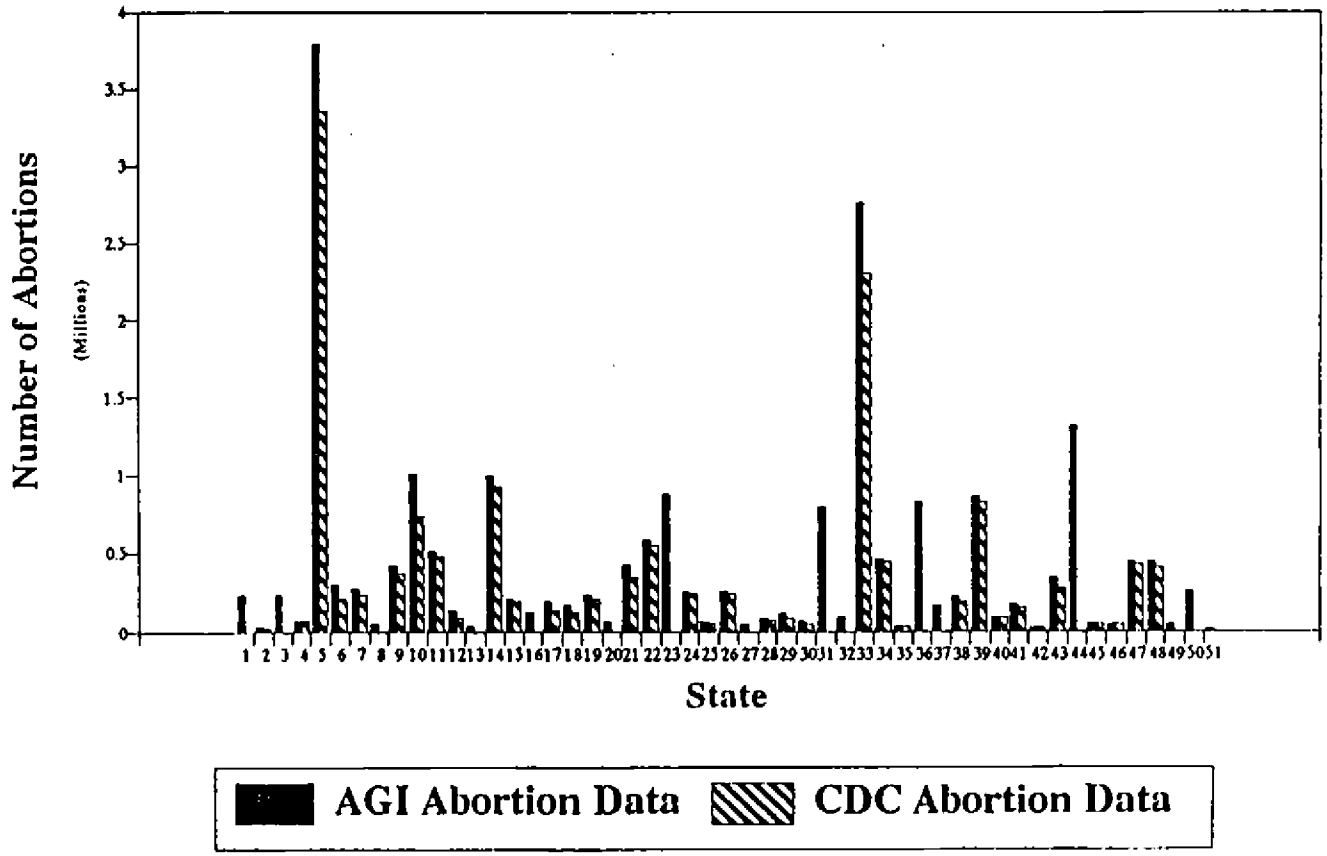
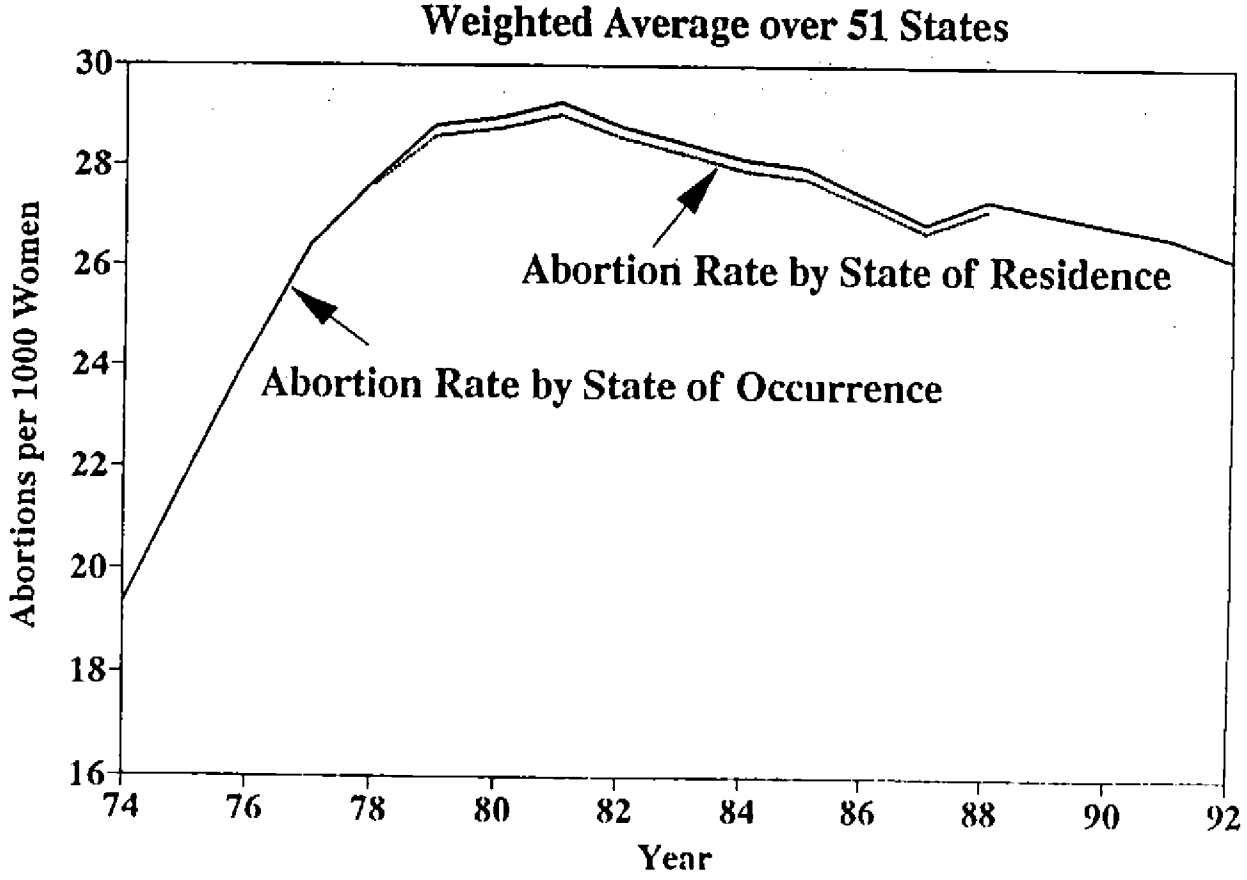


Figure 3

Abortion Rates by State of Occurrence and State of Residence



Note that years 1983, 1986, 1989 and 1990 are missing in the data and are smoothed for the purpose of this graph. Weights are based on the female fertile population in each state.

Figure 4

State Abortion Rates
1988

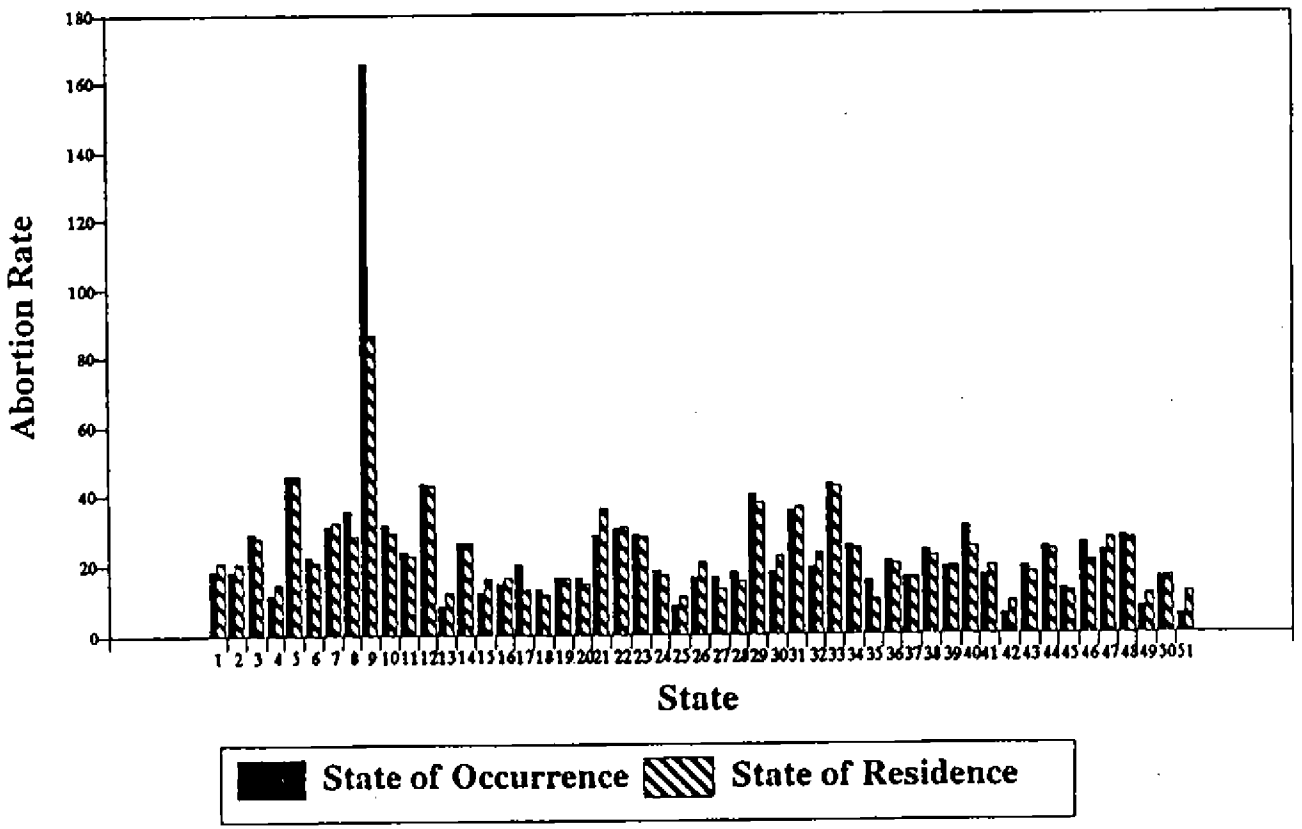


Figure 5

Abortion Rates by Age Group

Weighted Average over 24 and 51 States

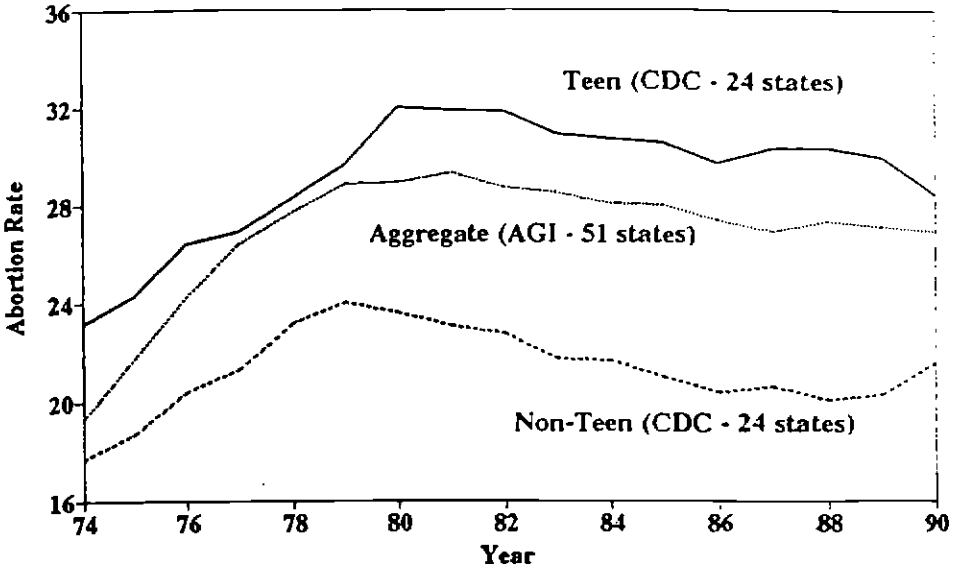
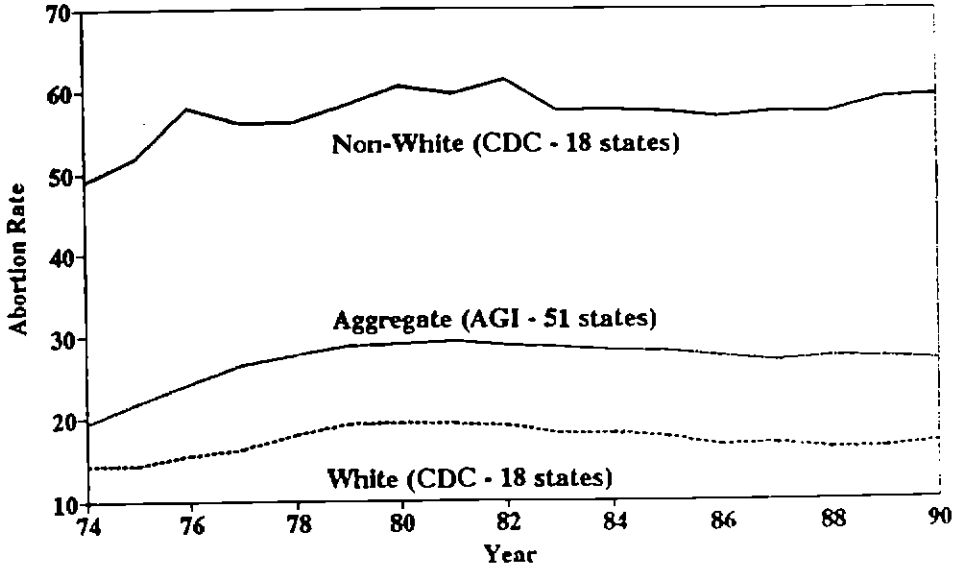


Figure 6

Abortion Rates by Race

Weighted Average over 18 and 51 States

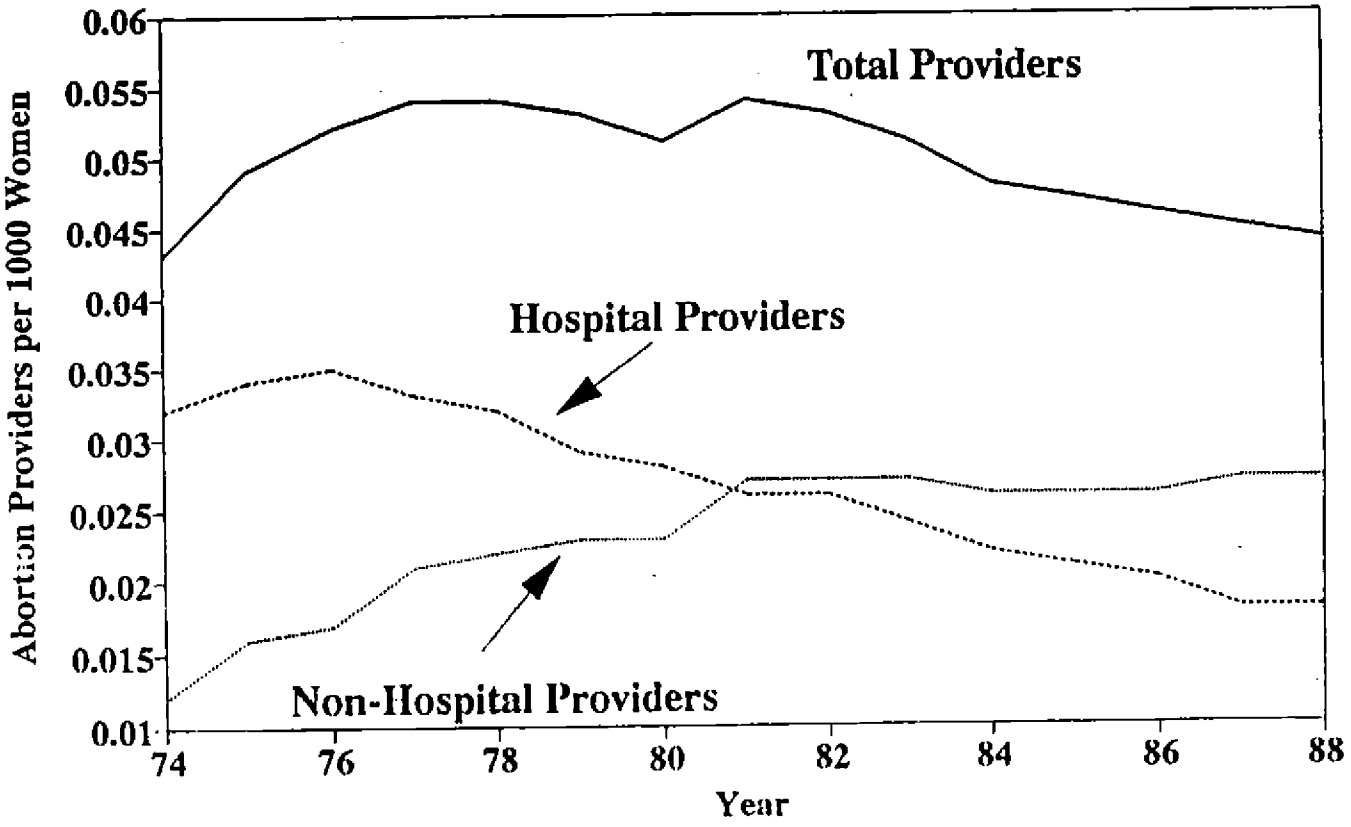


Note that years 1983, 1986, 1989, and1990 are missing in the AGI data and are smoothed for the purpose of this graph. Weights are based on the female fertile population in each state.

Figure 7

Abortion Provider Rates

Weighted Average over 51 States



Note that years 1983 and 1986 are missing in the data and are smoothed for the purpose of this graph. Weights are based on the female fertile population in each state.

Figure 8

Population Shares Affected by Policy Restrictions on Abortion

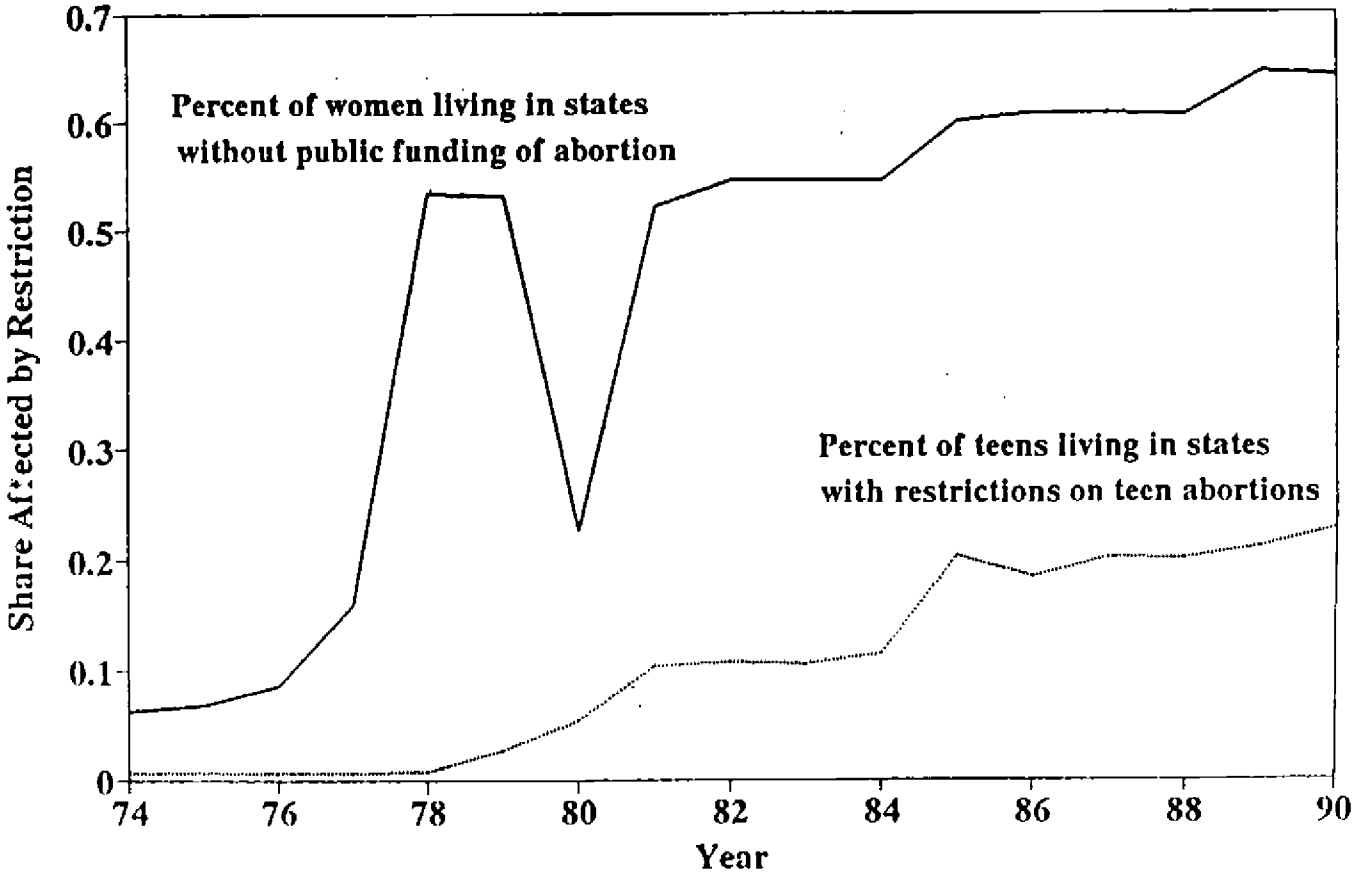


Figure 9

Unexplained Movement Over Time

Abortions by State of Occurrence