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Birth and Abortion Data

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The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) set out a number of goals for a revised program of public assistance. One of the goals of the legislation was to reduce the rate of illegitimacy (i.e., nonmarital childbearing) without increasing the incidence of abortion. The federal government relied on the states to develop and implement policies to accomplish this legislative goal; the assumption was that states would experiment with a variety of different approaches to achieving those goals. The states' efforts would then be evaluated, and the most effective policies would be identified.

Some critics, however, were concerned that federal and state policies that reduced benefits for women with children could result in an increase in abortions. Any change that made child rearing more difficult for low-income women could tip the balance in favor of abortion in some cases. In particular, it was feared that eliminating additional payments for births that were conceived while the mother was receiving income support (a policy known as the *family cap*) would force pregnant welfare recipients to terminate a larger number of pregnancies. To encourage states to develop policies that reduce nonmarital childbearing without increasing abortions, PRWORA provides for an "illegitimacy bonus"—an annual award of $20 million to $25 million—to states that are among the top five in reducing the proportion of births to unmarried women and that have no increase in the ratio of abortions to births.

The legislation was based on the assumption that data are available to measure trends in nonmarital childbearing and abortion incidence at the state level. Perhaps equally important, data are needed to assess the effectiveness of policies and programs that might affect policy outcomes. Because the federal statute anticipates that states will experiment with various policies and identify the most effective ones, researchers must be able to examine trends within the population subgroups most affected by the policy: low-income women and those who rely on public welfare programs. Therefore, trends in nonmarital childbearing and abortion need to be measured for those subgroups as well as for the entire population of a state. Because many counties and cities have teen pregnancy initiatives and other programs intended to reduce nonmarital pregnancy, data also need to be available for small geographic areas within states.

Unfortunately, although birth data are relatively complete and accurate, the abortion data for many states are too flawed for adequate assessment of the small or even moderate-sized trends

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that are likely to be caused by state policies. Reporting of abortion data is incomplete in most states, with the degree of incompleteness varying from one year to another; not all of the data items needed for complete assessment of the impact of welfare policies are collected, even by most states with complete reporting; and one state, California, collects no data on induced abortion. In some states new legislation is needed, and in others, the statistical agencies need to enforce existing requirements. In addition, the measurement of the marital status of women giving birth is imperfect in a few states, and birth certificates do not provide some of the information needed to assess the effects of policy on certain subgroups.

This chapter describes the ways in which abortion and birth data are collected; discusses the completeness, accuracy, and limitations of the data; offers some explanations for the unevenness in the measurement of abortion; and suggests some options for improving data quality and usefulness.

Sources of Abortion Data

Abortion data are available from state agencies, the National Center for Health Statistics, the Alan Guttmacher Institute, and population surveys.

State statistics agencies. As of October 2000, 49 states and the District of Columbia collected data on the induced terminations of pregnancy, California being the only state with no reporting. In Alaska, Maryland, New Jersey, New Hampshire, West Virginia, and the District of Columbia, reporting is voluntary. Four states—Alaska, Iowa, New Hampshire, and Oklahoma—established reporting systems only after 1995, the base year PRWORA established for awarding the illegitimacy bonus. Before those systems were implemented, the Division of Reproductive Health of the Centers for Disease Control and Prevention (CDC) obtained an approximate count of the number of abortions by surveying the larger clinics and hospitals in the four states. For California, the CDC estimated the number of abortions from trends in the number that were funded by Medi-Cal (California's Medicaid program), the number reported by certain providers, and other information.

In states with mandatory reporting, physicians who perform abortions or the facilities in which abortions are performed are required by statute or regulation to file information about each induced abortion with the state health statistics agency, which is usually a unit of the state health department. The agencies computerize the information and produce summary tables of each year's data.

Some states publish a separate report of abortion statistics, some include abortion statistics in an annual vital statistics report, and a few only provide selected tables on request. Wyoming is the only state with reporting that releases no abortion data to the public; by statute, it will release data only to a public health authority or to a physician licensed in the state. The state abortion reports vary widely in the data and tabulations presented. Some give information for all abortions that occurred in the state, some provide data on the state's residents who had abortions in the

state, and some provide data on the state's residents who had abortions either in the state or in neighboring states that share this information. A few states make electronic data files containing information on each abortion available to researchers, with certain information suppressed to preserve the confidentiality of patients and abortion providers. In this form, the data permit types of analysis and program evaluation that are not possible with the published aggregate data.

Each year, the CDC asks the states to provide a uniform set of tabulations of the abortions that occurred in the state. Although cooperation is voluntary, most states supply the requested information to the extent possible. The CDC combines the state tabulations and publishes them annually as a surveillance report in its *Morbidity and Mortality Weekly Report Surveillance Summaries* (Koonin, Strauss, Chrisman, Montalbano, Bartlett, and Smith 1999). The reports contain statistics on the abortions occurring in each state as well as national totals. For each state with the data, the report publishes the number and percentage distribution of abortions by age, race, Hispanic ethnicity, marital status, number of prior births, number of prior abortions, weeks of gestation at which the abortion occurred, and procedure used to terminate the pregnancy.

National Center for Health Statistics (NCHS). From 1978 to around 1994, NCHS operated a cooperative abortion statistics program under which states whose abortion reporting met NCHS' quality standards submitted their data to NCHS in return for a payment to support their abortion-reporting activities. NCHS monitored the data for quality, reformatted each year's data into a single data set containing information on approximately 300,000 abortions, and published a report with detailed tables. Because of funding limitations, the program never expanded beyond 14 states, although other states with eligible reporting systems were interested in joining. The program ended around 1994 as a consequence of NCHS budget cuts. The last year for which the report was published was 1988 (Kochanek 1991), although the combined data sets were compiled through 1992.

The Alan Guttmacher Institute (AGI). Since 1974, AGI has periodically surveyed all hospitals, clinics, and physicians' offices where abortions are believed to be performed (Henshaw 1998). The original purpose of the surveys was to assess the availability of abortion services, but another important result was a count of the number of abortions performed. The surveys were conducted each year from 1974 through 1979, but less frequently thereafter because of their high cost and the effort required. After 1979, surveys were conducted in 1981, 1983, 1986, 1989, 1993, and 1997, and collected counts of abortions performed during the previous two years. The surveys have obtained data on the number of abortions and providers for all years from 1973 through 1996, except 1983, 1986, 1989, 1990, 1993, and 1994. AGI's surveys collect no information about the characteristics of the women having abortions except for the number past 12 weeks of gestation and, in some years, providers' estimates of the proportion of patients who live more than 100 miles and between 50 and 100 miles from the abortion facility.

Other surveys. A number of nationally representative household surveys have asked women for information about their reproductive history, including their abortion history. The most complete of these, the National Survey of Family Growth (NSFG), was fielded in1982, 1988, and

1995 and is planned for 2001. Surveys before 1982, however, exclude never-married women without children and therefore cannot be used to measure abortion. The National Longitudinal Survey of Youth also contains useful data on abortion. An advantage of the two surveys is that their content extends far beyond the limited demographic data collected by states to include questions on socioeconomic status, employment, marital history, receipt of public assistance, intention status of births, family structure, and many other items. Major disadvantages are that their sample sizes are not large enough to characterize geographic areas as small as a state and that abortions are seriously underreported. In the NSFG, for example, studies have calculated that abortions were underreported by 52 percent in 1982, 65 percent in 1988, and 41 percent in 1995 (Fu, Darroch, Henshaw, and Kolb 1998). Similar levels of underreporting have been found in other surveys. As a result, their usefulness for the analysis of abortion is limited even at the national level, and state-level analysis is impossible.

Quality of Abortion Data

AGI's abortion count is considered to be relatively complete because the researchers make extensive efforts to identify all abortion providers and follow up with as many telephone calls as necessary when providers do not respond to the survey. In AGI's 1997 survey, of the 3,032 facilities identified as possible abortion providers, information was obtained directly from 2,161; health department data were used for 365; and 123 were determined to have closed and not to have not performed abortions during 1995 or 1996. A remaining 303 facilities did not provide information; of those, estimates of the number of abortions performed were obtained from knowledgeable sources in their communities for 109, and AGI made estimates that were based on information from prior years for 48. No estimates were made for 146 facilities, none of which were known to be large providers of abortions (Henshaw 1998).

AGI has periodically surveyed random samples of physicians and hospitals to assess the number of abortions and providers missed in its provider survey. In 1997 only 9 of 286 hospitals surveyed responded that they performed abortions in 1996; AGI projected that nationally, approximately 124 hospitals, which together performed 4,200 abortions, had been missed. Those abortions equal only 0.3 percent of the 1,365,730 abortions that were reported, however (Henshaw 1998). No random sample of physicians was surveyed in 1997, but a 1993 survey found that about half of the physicians who performed small numbers of abortions in their private offices were missed. Collectively, those doctors may have provided about 3 percent of all abortions. On rare occasions, the AGI survey has missed larger providers, either doctors' offices or clinics. Thus, AGI estimates that its surveys miss from 3 to 6 percent of all abortions; because the percentage probably does not vary greatly, the year-to-year change is probably accurate to within about 1 or 2 percentage points.

The AGI surveys are subject to other sources of error, however. Many respondents estimate their number of abortions rather than report actual statistics and, rarely, a provider is counted twice under two different names. Therefore, although these errors are insignificant at the national

level, the possible percentage error for individual states is larger than that for the national total, and the totals can be too high as well as too low.

State health departments vary much more in the completeness of their abortion data. An indication of the completeness of reporting to states may be seen by comparing state health department reports with the totals reported by AGI (see appendix table A). When the figures are within a few percent of each other or the state's figures are higher than AGI's, the state's figures can be considered reasonably accurate, and it is easily possible that they are more accurate than AGI's. In 1996, 18 states reported totals either within 5 percent of AGI's or higher than AGI's. Health department figures, however, were more than 5 percent lower than AGI's in the remaining 29 states (including the District of Columbia and excluding states without reporting systems)—including 20 states in which health department figures were more than 10 percent lower and 12 states in which they were more than 20 percent lower. In most of those cases, the health department figures are almost certainly significantly incomplete.

Furthermore, the completeness of state reporting can vary from year to year. A few years ago, newspaper headlines in Long Island reported a skyrocketing number of abortions in that area. The higher numbers, however, simply reflected reporting by the largest abortion provider, whose abortions had not previously been included in the state figures. In reality, the abortion rate had changed little. Year-to-year comparisons are distorted by the creation of new abortion clinics that do not report, the closing of reporting clinics, and increases or decreases in efforts to induce clinics to report. Thus, for states with incomplete reporting, year-to-year comparisons may be inaccurate indicators of trends in the number of abortions. Appendix table A also shows that AGI provider surveys revealed an increase between 1992 and 1996 in the number of abortions in six states in which health department data showed a decrease; seven states showed an increase according to health department data but had no increase according to AGI data.

Even federal subsidization of abortion data collection does not in itself guarantee accurate statistics, as indicated by the experience of NCHS's Vital Statistics Cooperative System. In 1988, of the 14 states that received federal payments under this program for the collection of abortion data, two failed to obtain reports for more than 30 percent of the abortions counted by AGI and four missed between 10 and 30 percent. NCHS monitored the consistency but, evidently, not the completeness of the data.

For several reasons, some abortions may not be reported to health departments. First, understandably, some slip through the cracks because of imperfect administrative oversight on the part of abortion providers, who occasionally may not complete the reporting form. In addition, temporary staff may be unfamiliar with the forms, batches of forms can be misplaced, and so forth. Second, some clinics experience periods of weeks or months when abortion reporting lapses altogether as a result of staff turnover or other reasons. However, those abortions would be counted in the facility's service statistics and reported to AGI.

Third and most important, some facilities do not report at all, either because they are not aware of the reporting requirement, they want to avoid the administrative burden and have not been subject to sanctions, or for some other reason. Another important factor, however, is providers' fear that the information they provide may fall into the hands of antiabortion protestors or competitors. Most physicians and clinic staff have a high level of concern, even anxiety, about their safety and about the privacy of their patients. Some clinic directors take extraordinary measures to protect personal information about their physicians and staff, including their home addresses and even their names. Some do not want competitors to know how many patients they serve. Under those circumstances, clinics may be reluctant to submit reports to the state despite assurances of confidentiality. Concern about possible breaches of confidentiality are common in some states, even though known confidentiality lapses are rare.

Some observers believe that abortion reporting may suffer if increasing numbers of physicians provide early medical abortions in their offices using mifepristone, methotrexate, or another agent with a prostaglandin. Such providers may not be known to state statistics agencies and may be unaware of reporting requirements. As of 1996, however, almost all medical abortions were provided in facilities in which surgical abortions were also performed, and there is no reason to believe this situation has changed (Henshaw 1998). Early medical abortion requires physicians to make most of the investment they would need to make for surgical abortion, including ultrasound equipment, procedures for counseling and obtaining informed consent, malpractice insurance, on-call arrangements, and surgical backup for cases in which the medical method fails. They therefore have little incentive to provide abortions medically if they are unwilling to perform them surgically. At least for the next few years, almost all abortions will continue to take place in known abortion facilities. After mifepristone becomes available, plans are in place for the distributor to inform purchasers of state reporting requirements.

Although the most prevalent problem is underreporting of abortions, it is also possible for abortions to be overreported. For example, overreporting can happen when the medical records department of a hospital bases its abortion reports on computerized ICD codes that are ambiguous or incorrect without manually checking the charts. Staff may assume that events coded "abortion, unspecified" are always legal, induced abortions rather than spontaneous or illegal abortions. A patient recorded as having an induced abortion with complications also may have been recorded by another facility if she was brought to the hospital with complications of an abortion performed elsewhere. In addition, treatments of in utero deaths or spontaneous abortions occasionally have been mistakenly reported as induced abortions (Spitz, Lee, Grimes, Schoenbucher, and Lavoie 1983).

In addition to the completeness of reporting, another important concern is that, even in states with accurate reporting of abortions, the number of state residents who have abortions in other states is uncertain. It was undoubtedly the intent of PRWORA's authors that state policies not increase the number of abortions obtained by residents regardless of where the abortions occur. Their aim would not be met if a reduction were achieved only because women went to a neighboring state for abortion services.

Consequently, tabulation of abortions according to the woman's state of residence is more relevant for many policy purposes than is tabulation by the state in which the abortion took place. In comparing states with respect to their abortion rates, the results can be differ greatly, depending on whether one compares rates based on occurrence or on the woman's state of residence (table 2). For example, 41 percent of the abortions in Kansas in 1996 were for women from other states, whereas only 10 percent of Kansas residents who had abortions did so in other states. In that year, in 12 states, 20 percent or more of the residents who had abortions had them outside their home states. About 84 percent of abortions obtained by Wyoming residents took place in Colorado and other states.

Abortions should therefore be allocated back to the woman's state of residence, but this is not always possible with health department data. In addition to the states without reporting systems, at least five states (Arizona, Florida, Iowa, Louisiana, and Massachusetts) do not ascertain the state of residence of out-of-state women, and several states record the name of the state only if it is a neighboring state. Some states participate in cooperative agreements with other states to exchange information about the abortions obtained by each other's residents, but even a state with good reporting usually cannot get complete information from all neighboring states. For example, Mississippi has fairly complete reporting and obtains information on its residents who have abortions in Alabama, but the state is nevertheless left with incomplete information on its residents because no data are available from Louisiana or Tennessee.

Where possible, the CDC reports the proportion of each state's abortions that were for out-of-state women, but it does not tabulate abortions according to the woman's state of residence. AGI attempts this tabulation using state health department data (as appendix table B also shows). For states with incomplete abortion reporting, AGI assumes that the missed abortions are similar to reported abortions with respect to the women's state of residence. For states that collect no data on state of residence, AGI collects the information directly from abortion providers.

Little research has evaluated the accuracy of the specific information items collected on the abortion-reporting forms. In several instances, errors on particular items occurred because of systematic mistakes in data processing or misunderstanding by abortion clinic staff of the definition of terms on the reporting form. In states that ask only two categories of marital status (married and unmarried), women who are separated may be classified by the women themselves or by clinic staff into either category, and women who are cohabiting may report themselves to be married. Length of the pregnancy at the time of the abortion is subject to physician judgment, errors in the woman's report of the date of her last menstrual period, errors for women with irregular periods, and some physicians' defining gestation as beginning at the estimated date of conception rather than two weeks before the estimated date of conception, as prescribed by the instructions for the model reporting form. Variables that rely on women's reports may be inaccurate for items such as history of prior abortions.

In most states, information for most individual items is missing for less than 4 percent of reported abortions. In 1996, according to the CDC abortion surveillance report, data on age were

missing for only 0.7 percent of reported abortions nationwide. Data were missing for less than 3 percent of abortions for each of the other items except race (3.6 percent) and Hispanic ethnicity (5.0 percent). Reporting also tends to be incomplete for educational attainment, which is not compiled by the CDC but is collected by most states. Out of concern for patients' rights, a few abortion providers allow women to decide which items will be reported.

An additional weakness of the current abortion-reporting system is the delay in releasing data on the national level. The CDC's publication of the abortion surveillance report for 1996 took place in July 1999. The typical lag between the end of the data year and publication of national results is 2.5 to 3 years. The CDC is reluctant to release its detailed data before every state has reported, which makes it dependent on the slowest state. Delay of this length reduces the value of the data for evaluating program impact. Natality statistics require only 1.5 years; it should be possible to release abortion statistics in a more timely manner.

Reasons for Poor Enforcement of Reporting Requirements

Reporting tends to be especially incomplete when it is voluntary, as in Maryland, New Jersey, and the District of Columbia, but it is also incomplete in many states in which it is mandatory and sanctions are available for enforcement. Where reporting is mandatory, lax enforcement of the requirements can be attributed to three factors: underfunding of the responsible state agencies, lack of interest on the part of state personnel, and lack of awareness of the problem beyond a few state officials.

Regarding the funding of the abortion-reporting systems, Jack Smith of the CDC stated the following:

> Rarely did legislatures appropriate any resources for health departments to implement or maintain abortion reporting systems. With no additional resources to establish data collection, do data editing, entry, and processing, and perform statistical analysis and prepare publications, the implementation and maintenance of abortion reporting systems have been low priority. The responsibility for reporting systems usually falls on already overburdened offices of vital and health statistics and the approach to enforcement of the requirements for providers to report is quite passive, especially with regard to reporting by private physicians (Smith 1998, 1).

Interviews with state statistics officials suggest that the completeness of reporting depends to a great extent on the personal interest of individuals in the state health agencies. Where reporting is complete, it is often because one or two officials have taken it on themselves to maintain the quality of reporting. Among the techniques used are mailings to all the physicians in a state who might be providing abortions to inform them of the requirements, conducting periodic training sessions with clinic and hospital staff, monitoring reports and investigating instances in which the number of procedures reported by a facility drops suddenly, checking telephone directories

for facilities that are not reporting, and reminding providers that legal action may be brought against those who do not report.

The larger the population of the state and the number of abortion providers, the more difficult it is to secure complete reporting. In a small state, one or two individuals can maintain the quality of reporting, but additional effort is required in a large state. In addition, compared with other areas, large cities are more likely to have low-quality or marginalized providers who resist reporting or are unaware of the requirements. They are also more likely to have more physicians who provide abortion services only for patients in their private practice and are therefore difficult for the state agency to identify. One state with a large population and many providers, Pennsylvania, has relatively complete reporting, possibly because all doctors and facilities that perform abortions are required to be registered with the state. This procedure may increase providers' awareness of the importance of reporting, and it facilitates follow-up and enforcement by the state statistics agency.

Options for Improving the Quality of Abortion Data

To improve the quality of abortion data, policy makers have at least two options. One is to create a new federal data collection system. The other is to incorporate the existing state reporting programs into a cooperative federal–state system.

A new federal data collection system. Many developed countries have national reporting systems for tracking abortions. Almost every Western European country has reporting requirements much like those used in a number of states. Abortion providers submit a form to a national government agency for each abortion performed, and the national agency tallies the results and publishes statistics annually.

To establish a similar system in the United States, federal legislation would be needed that requires abortion providers to report their abortions directly to a federal agency, probably NCHS or another unit of CDC. Alternatively, federal incentives could be established to induce states to require abortion providers to report all abortions to the federal agency. In either case, the federal agency would be responsible for locating abortion providers, supplying them with reporting forms and instructions, monitoring the completeness and quality of data, imposing sanctions when necessary to ensure compliance, compiling the data, and publishing results. In the states that did not give up their own reporting systems, abortion providers would be subject to dual reporting requirements.

Such a system would undoubtedly meet considerable resistance because the collection of most other vital and health statistics is a state responsibility. A national system would be likely to be seen as an intrusion on state prerogatives. In addition, it is not clear that a federal agency would be as effective as many states in enforcing the reporting requirements. One precedent for national reporting, the collection of data on reportable communicable diseases by the CDC, is not encouraging: Such reporting is incomplete, and sanctions are rarely applied for failure to report.

Also, it would seem inefficient not to take advantage of the existing state systems that are effective.

An advantage of a federally controlled system, however, would be increased equity in treatment of the states. Although reporting might still be better in some states than in others because of differences in the number of abortion providers and provider cooperation, the states themselves could not influence the results through neglect, lack of resources, or policy.

A cooperative federal–state system. A more promising approach would be to improve the state abortion reporting systems. With accurate state systems, it would be relatively inexpensive for a federal agency to compile state data files into a national data set of individual abortions, as is done with birth data and as NCHS used to do with 14 cooperating states, as described earlier. For a state to have accurate abortion reporting, it needs (1) legislation or regulations that require all providers to report abortions and authorize sanctions for those who fail to report, (2) reporting of a range of data items that is more inclusive than those currently collected by many states, (3) reporting for each abortion individually rather than reporting of aggregate data, and (4) conscientious compliance with and enforcement of the reporting requirements. Each requirement is discussed below.

- ***Legislation.*** Although most states already have mandatory reporting, new legislation would be needed in the remaining states. California has a reporting law that is not enforced because of legal challenges, and five other states (Alaska, Maryland, New Hampshire, New Jersey, and West Virginia) and the District of Columbia would need to change their reporting from voluntary to mandatory (Saul 1998). Other states might find that they need to strengthen the sanctions available for use against noncompliant providers.

- ***More inclusive data items***. For the impact of welfare reform and other public policies to be assessed, the minimum required data set should include the following items: month of the procedure; weeks of gestation; abortion procedure used; and the woman's age, marital status, state and county of residence, education, race, and ethnicity. These items are all included on the NCHS' model reporting form, the U.S. Standard Report of Induced Termination of Pregnancy. Other items on the model form (the number of births and number of prior abortions) are also useful for evaluation purposes.

  Evaluation of welfare reform would be facilitated by revising one item and adding at least one new item. The question on marital status needs revision: At present, it has only two answer categories (married and unmarried), but it should be expanded to five categories (married, separated, divorced, widowed, and never married), as is already done in many states.[2]

[1] The "married/not married" classification is ambiguous with respect to separated women, who may be coded into either marital status.

The new item needed—whether the woman is currently a recipient of public assistance and, if so, which programs she receives—is more problematic, however. Many abortion providers will consider questions about the patient's program participation to be an unnecessary intrusion on the woman's privacy and will be reluctant to ask them. Similarly, women may refuse to answer. Information about public assistance is not generally seen as needed for public health purposes and is therefore not currently collected. An exception is Medicaid eligibility, because Medicaid pays for abortion services in some states, and in others, many providers offer a reduced fee to Medicaid recipients.

- ***Individual-level, not aggregate data.*** Most states collect information for individual abortions, but Florida, Massachusetts, and the District of Columbia ask abortion providers to report aggregate data. The District of Columbia, for example, requests monthly reporting of the number of abortions performed for women in each age group, the number for women of each race, and so forth. Such aggregate information, however, does not permit analysis of the number of women by age and race jointly. As a result, one cannot determine, for example, the number of white teenagers who obtained abortions. Individual-level data make possible the cross-tabulations that are needed for almost any evaluation of program effects and would be needed to monitor trends of concern to those interested in the effects of welfare reform, such as the abortion rate of unmarried teenagers.

- ***Compliance and enforcement.*** To achieve individual-level reporting of an expanded set of items, new legislation or regulations would be needed in many states. Unfortunately, it is unlikely that many states will enact new requirements on their own initiative within the foreseeable future, although several states (Alaska, Iowa, New Hampshire, and Oklahoma) have recently established abortion-reporting systems, and Delaware has made reporting mandatory. Therefore, the federal government would need to create incentives strong enough to induce states to take action. One approach is for federal payments under PRWORA to be made contingent on states' making mandatory the reporting of the needed data items. To answer objections that such a requirement constitutes an unfunded federal mandate, the data collection could be subsidized, as it was for 14 states until 1992 and as it is currently for natality and mortality statistics. In 1996, states received federal support of about $12.5 million per year for the collection of data on roughly 6.2 million births, deaths, and spontaneous fetal deaths, which covered a little less than half of state costs. At the same amount per record, the federal subsidy for abortion data would be about $2.7 million.

Perhaps the most challenging compliance task is to improve the completeness of reporting in the many states in which significant numbers of abortions go unreported in spite of mandatory reporting requirements. As documented above, reporting can be incomplete even when mandatory because of underfunding of the responsible state agencies, lack of interest on the part of state personnel, and lack of awareness of the problem beyond a few state officials. Federal subsidy of abortion reporting would presumably increase the resources devoted to the abortion-reporting systems and encourage states to assign higher priority to this activity. In addition, the subsidy could be contingent on a state's meeting minimum standards of reporting completeness,

quality, and scope.

The degree of interest of the responsible state officials is as important as federal incentives in achieving accurate abortion reporting. As described earlier, the states with complete abortion statistics usually have state statistics officers who take a special interest in abortion data collection. One approach to focusing the state officials' attention on abortion statistics would be for the responsible federal agency to hold an annual or periodic conference of state vital and health statistics officers specifically on the topic of abortion data. Such a conference would give states with successful systems an opportunity to describe the approaches and strategies they have found to be helpful, and states with less successful systems could share their problems. Peer pressure would result in increased attention to abortion reporting. To encourage attendance, the conference should be held at an attractive location at federal expense.

Another problem is that the public, as well as state and federal officials, may not be aware that reporting is incomplete. In the absence of well-publicized evidence to the contrary, it is easy for collectors and users of the data to assume that the statistics are accurate, even when they are not. At present, only the publication of AGI data every four years or so provides a comparison against which officials and others may detect possible shortfalls in their own abortion reporting.

The responsible federal agency could take a number of steps to increase states' awareness of the shortcomings of their abortion statistics. One approach would be to periodically audit state reports, a process that would involve verifying that all facilities advertising abortion services either have filed abortion reports or are not performing abortions. A sample of hospitals could also be checked. The audit would seek to ensure that the reporting of each provider was complete (e.g., by querying any large month-to-month variations in the number of abortions reported).

Another approach would be for the federal agency to assess and publish a report on each state's reporting each year. The state reports could be compared with AGI data and other sources of information, including the previous year's report. A third method would be to require states to routinely report to the federal agency a code number for each abortion provider and the number of abortions reported. The federal agency could use those reports to monitor year-to-year changes in data from the providers and to check to ensure that facilities that advertise abortion services are reporting data.

At present, the CDC is reluctant to openly criticize state data for fear of antagonizing state officials and jeopardizing their cooperation, which is entirely voluntary. The federal agency responsible for ensuring complete reporting would need to be willing to criticize states if reporting was deficient and to impose sanctions if necessary.

Source of Birth Data

Basic information on all births in the United States is available from birth certificates, which record the characteristics of the parents, characteristics of the newborn, and aspects of the

mother's prenatal care and health behaviors that might affect the baby. The information is collected electronically or is coded and converted to electronic form by the states. The states then share it with NCHS, which combines data from all states and publishes extensive tabulations. NCHS usually reports the data according to the woman's place of residence rather than where the birth took place. Tabulations are possible by small geographic areas; the only limitation is a policy not to disaggregate to the point at which individuals could be identified. NCHS also makes available to researchers a data file with information about individual births.

Information about women having births is also available from various national sample surveys. The largest of these, the Current Population Survey (CPS), interviews a representative sample of approximately 50,000 households each month and collects information on income, program participation, and family structure that is not available from birth certificates. The June version of the survey records whether each woman in the household has given birth within the last year. This survey can be used to track national trends in the birth rates of subgroups defined by income and other characteristics relevant to program evaluation that are not available from birth certificates. Even such a large sample, however, does not include enough births to analyze trends in individual states.

Other surveys conducted every few years, such as the National Survey of Family Growth, collect a much broader range of information about women, including those who recently gave birth. As with the CPS, the samples are not large enough to characterize individual states or to assess the impact of individual state policies and programs. Because the surveys are conducted only every few years, short-term trends are difficult to measure, even on a national level.

Quality of Birth Data

The recording of births is relatively complete because parents have a strong incentive to obtain birth certificates for their children. Even illegal aliens want birth certificates to ensure citizenship for their children. NCHS estimates that 99.3 percent of all births are recorded, which makes the data as complete as one could hope for in any statistic and certainly accurate enough for program evaluation.

Most states record the marital status of the mother in two categories (married or not married), with separated women counted as married. The model birth certificate recommended to the states by NCHS defines the mother as married if she was married "at birth, conception or any time between." Thus, the woman could be counted as married even if the father was never the woman's husband.[3] Although some policy makers might consider the child illegitimate in such cases, this small deviation from the ideal measure would have little effect on the measurement of trends.

[3] A few states do ask whether the mother is married to the father.

A more important problem is that two states (Michigan and New York) do not ask the marital status of the mother. In those states, marital status is inferred from other information on the birth certificate, including whether a paternity acknowledgment was received and whether the father's name is missing. The inferential methods affect comparisons with other states, and they distort trends if the accuracy of the inferences changes over time (e.g., because of increased efforts to have paternity acknowledged). Trends also may be distorted in states that have changed their way of measuring marital status. California and Nevada changed from inferential systems to a direct question in 1997, and Connecticut did so in 1998. New York City changed its method of inferring marital status to conform to the method used by the rest of the state in 1997.

Reporting approaches 100 percent for many of the items on the birth certificate. For example, the mother's age was recorded for 99.97 percent of all births in 1996. Information for items pertaining to the father, however, especially for unmarried women, is much less complete. In 1998, for example, the age of the father was missing for 14 percent of births and for 42 percent of births when the mother was unmarried (see the chapter by Ventura in this volume). Such high rates of missing information severely limit the usefulness of the data pertaining to unmarried fathers.

The major limitation of birth certificate data is the absence of many of the variables of interest to program evaluators: measures of income, program participation, employment status, and the like. The data could be improved marginally by adding a direct question on marital status in states that currently do not ask for that information, but questions covering other aspects of socioeconomic status would be seen as intrusive and inappropriate for a birth certificate.

Birth certificate data permit the level of nonmarital childbearing to be measured as the percentage of births to unmarried women. An alternative measure, which may be more meaningful for some purposes, is the number of nonmarital births per 1,000 unmarried women of childbearing age. An advantage of this measure is that it is not influenced by the number of births to married women. However, it cannot be calculated without estimating the number of unmarried women in a state, and such estimates are generally unavailable except in census years.

Summary and Discussion

PRWORA envisioned changes in state policies that would reduce the rate of nonmarital childbearing without increasing the abortion rate. The success of new policies and programs on those dimensions can only be assessed with accurate time-trend data on both nonmarital childbearing and abortion incidence before and after PRWORA and the other policy changes.

The rate of nonmarital childbearing, defined as the proportion of all births that occurred to unmarried women, is measured adequately and comparably by NCHS for all states except Michigan and New York, which infer marital status from other information, as described earlier. For Michigan, time trends are probably indicative, although with a higher degree of uncertainty than in states with direct measures. Time trends since 1994, however, are problematic for

California, Connecticut, Nevada, and New York, which have changed their method of measuring the marital status of parents.

For detailed evaluation of the impact of state welfare policies, information about women giving birth beyond that available from birth certificates is needed. The most important additional information needed includes the mother's income, program participation, employment status, and family structure. Unfortunately, no such data sources are available for most states. One possibility would be to use data from the Pregnancy Risk Assessment Monitoring System (PRAMS), a survey of new mothers that several states conduct annually. Although nonresponse introduces some uncertainty into the results, especially for low-income mothers, if the relevant questions were included on PRAMS or similar surveys, the information could be useful for assessing program impact.

Although the data on the marital status of women giving birth is generally satisfactory for measuring trends, much could be done to improve the completeness of abortion data. Most states have incomplete reporting of abortions despite reporting requirements, some have voluntary reporting, and one has no reporting system. Trends in the numbers of reported abortions are unreliable because of changes in the facilities that agree to report. Even states with complete reporting are unable to accurately measure the number of their residents who have abortions, because some neighboring states have incomplete data or do not share data. Many states do not collect all the data items recommended by the CDC, and none collect the information on program participation, income, and socioeconomic status needed for detailed analysis of program effects.

The most feasible way to obtain accurate abortion data would be to establish a cooperative federal–state system modeled on the NCHS program for recording natality and mortality statistics. To create such a system, federal legislation is needed that would provide strong incentives for states to require the reporting of a minimum set of information for each abortion. Federal financial support for state data collection would be an important part of the incentive package, but other incentives would also be needed.

The states would collect abortion data and share the information with the implementing federal agency, as is done with birth certificate data. The federal agency would monitor the quality and completeness of the data and publish tabulations with abortions allocated to the woman's state of residence rather than the state in which the abortion took place. As with births, it would make individual-level data (with identifying information removed) available to researchers.

A fundamental difference from the cooperative arrangement for collecting birth statistics is that complete abortion reporting cannot be assumed, whereas little special effort is needed to ensure complete reporting of births. The federal agency would need to have resources to monitor the completeness of each state's reporting and the authority to apply sanctions if necessary. It would also need to provide technical assistance to the states, hold conferences, and draw attention to states whose data fall below acceptable standards of quality and completeness.

Although the federal enforcement aspect of the proposed system is outside the tradition of federal and state vital and health statistics collection, experience has shown that without outside monitoring and the availability of sanctions, some states will be lax in enforcing their abortion-reporting requirements.

A high-quality national abortion-reporting system is essential for awarding the federal bonus to the states with the greatest reduction in nonmarital childbearing and no increase in the rate of abortions. With the currently available data, a state could be incorrectly awarded the bonus because an increase in abortions was obscured by deterioration in abortion reporting; similarly, an otherwise eligible state could be disqualified because its abortion reports incorrectly indicate an increase in the abortion rate.

Perhaps more important, complete and accurate abortion data are needed to evaluate specific welfare reform policies. The family cap, for example, was found to have increased the abortion rate among Medicaid recipients in New Jersey, but limitations in New Jersey's abortion reporting, which captured only about 54 percent of the state's abortions in 1996, make the finding questionable. With the data currently available, it is difficult to know whether the abortion rate of low-income women increased in relation to that of higher income women after the new welfare policies were adopted.

Even aside from welfare reform, an accurate national abortion data system would have other important uses. Without complete and accurate abortion data, it is difficult to measure the effects of state and local programs to reduce teenage pregnancy. Abortion data are needed to assess the effects of sex education policies and programs, promotion of abstinence, improvements or restrictions in family-planning services, and requirements that minors seeking abortions notify their parents or obtain parental consent.

Many states have implemented restrictions on abortion that raise important questions that can be answered only with accurate abortion data. If the restrictions prevent women from obtaining abortions, they may constitute an undue burden and therefore be unconstitutional. Conversely, if data show that access to services remains unchanged, a basis for opposition to the restrictions disappears. Among the policies that merit evaluation are waiting periods, clinic regulations, Medicaid funding restrictions, and policies that affect the availability of abortion service providers.

Finally, abortion data are needed to evaluate the effects of new developments and emerging social trends. Some opponents of abortion predict that the availability of medical methods of early abortion will increase the abortion rate because abortion will seem easier. Similarly, family-planning advocates hope that emergency contraception will reduce the number of abortions. Only accurate data will enable those predictions to be tested. More generally, abortion data are needed for an understanding of trends in the rates of birth and unintended pregnancy. Data now available are reasonably adequate at the national level, but much better understanding could be gained from data on smaller geographic areas and population subgroups.

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Appendix Table A. Number of abortions as reported by state health departments/CDC and AGI, 1992 and 1996, percent difference between data sources, and change 1992-1996, by state

	Reported abortions, 1992			Reported abortions, 1996			Change 1992-1996	
State	State health department*	AGI	Percent difference**	State health department*	AGI	Percent difference**	State health department*	AGI
U.S. Total	**1,359,145**	**1,528,930**	**-11.1**	**1,221,585**	**1,365,730**	**-10.6**	**-137,560**	**-163,200**
Alabama	13,358	17,450	-23.4	13,826	15,150	-8.7	468	-2,300
Alaska	*1,783*	2,370	-24.8	2,139	2,040	4.9	356	-330
Arizona	14,353	20,600	-30.3	11,016	19,310	-43.0	-3,337	-1,290
Arkansas	5,675	7,130	-20.4	5,882	6,200	-5.1	207	-930
California	*338,700*	304,230	11.3	*280,180*	237,830	17.8	-58,520	-66,400
Colorado	10,607	19,880	-46.6	9,710	18,310	-47.0	-897	-1,570
Connecticut	17,762	19,720	-9.9	14,094	16,230	-13.2	-3,668	-3,490
Delaware	5,601	5,730	-2.3	4,482	4,090	9.6	-1,119	-1,640
District of Columbia	17,698	21,320	-17.0	13,674	20,790	-34.2	-4,024	-530
Florida	69,285	84,680	-18.2	80,040	94,050	-14.9	10,755	9,370
Georgia	38,052	39,680	-4.1	35,790	37,320	-4.1	-2,262	-2,360
Hawaii	5,954	12,190	-51.2	4,916	6,930	-29.1	-1,038	-5,260
Idaho	1,378	1,710	-19.4	1,022	1,600	-36.1	-356	-110
Illinois	56,552	68,420	-17.3	53,613	69,390	-22.7	-2,939	970
Indiana	12,983	15,840	-18.0	13,341	14,850	-10.2	358	-990
Iowa	*6,759*	6,970	-3.0	*7,602*	5,780	31.5	843	-1,190
Kansas	10,385	12,570	-17.4	10,685	10,630	0.5	300	-1,940
Kentucky	8,696	10,000	-13.0	7,000	8,470	-17.4	-1,696	-1,530
Louisiana	12,423	13,600	-8.7	11,865	14,740	-19.5	-558	1,140
Maine	3,226	4,200	-23.2	2,615	2,700	-3.1	-611	-1,500
Maryland	19,860	31,260	-36.5	12,363	31,310	-60.5	-7,497	50
Massachusetts	34,527	40,660	-15.1	29,293	41,160	-28.8	-5,234	500
Michigan	34,496	55,580	-37.9	30,208	48,780	-38.1	-4,288	-6,800
Minnesota	15,546	16,180	-3.9	14,193	14,660	-3.2	-1,353	-1,520
Mississippi	7,555	7,550	0.1	4,206	4,490	-6.3	-3,349	-3,060
Missouri	13,390	13,510	-0.9	11,629	10,810	7.6	-1,761	-2,700
Montana	2,869	3,300	-13.1	2,763	2,900	-4.7	-106	-400
Nebraska	5,637	5,580	1.0	5,214	4,460	16.9	-423	-1,120
Nevada	8,022	13,300	-39.7	6,965	15,450	-54.9	-1,057	2,150
New Hampshire	*3,129*	3,890	-19.6	*2,300*	3,470	-33.7	-829	-420
New Jersey	38,168	55,320	-31.0	31,860	63,100	-49.5	-6,308	7,780
New Mexico	5,624	6,410	-12.3	5,033	5,470	-8.0	-591	-940

State	Reported abortions, 1992			Reported abortions, 1996			Change 1992-1996	
	State health department*	AGI	Percent difference**	State health department*	AGI	Percent difference**	State health department*	AGI
New York	164,274	195,390	-15.9	152,991	167,600	-8.7	-11,283	-27,790
North Carolina	35,253	36,180	-2.6	33,554	33,550	0.0	-1,699	-2,630
North Dakota	1,493	1,490	0.2	1,291	1,290	0.1	-202	-200
Ohio	36,019	49,520	-27.3	36,530	42,870	-14.8	511	-6,650
Oklahoma	*9,881*	8,940	10.5	*6,769*	8,400	-19.4	-3,112	-540
Oregon	12,685	16,060	-21.0	13,767	15,050	-8.5	1,082	-1,010
Pennsylvania	49,042	49,740	-1.4	38,004	39,520	-3.8	-11,038	-10,220
Rhode Island	6,667	6,990	-4.6	5,437	5,420	0.3	-1,230	-1,570
South Carolina	11,008	12,190	-9.7	9,326	9,940	-6.2	-1,682	-2,250
South Dakota	1,038	1,040	-0.2	901	1,030	-12.5	-137	-10
Tennessee	18,029	19,060	-5.4	17,989	17,990	0.0	-40	-1,070
Texas	91,113	97,400	-6.5	91,470	91,270	0.2	357	-6,130
Utah	3,941	3,940	0.0	3,639	3,700	-1.6	-302	-240
Vermont	2,778	2,900	-4.2	2,139	2,300	-7.0	-639	-600
Virginia	29,641	35,020	-15.4	25,770	29,940	-13.9	-3,871	-5,080
Washington	27,573	33,190	-16.9	26,138	26,340	-0.8	-1,435	-6,850
West Virginia	2,812	3,140	-10.4	2,470	2,610	-5.4	-342	-530
Wisconsin	15,549	15,450	0.6	13,673	14,160	-3.4	-1,876	-1,290
Wyoming	296	460	-35.7	208	280	-25.7	-88	-180

*As reported to the CDC. Numbers in italics were derived by the CDC by surveying large providers or were estimated by the CDC.
**Percent by which health department totals are lower or higher than AGI's.
Sources: References 1 and 3.

Appendix Table B. Number of abortions* and abortion rates by state of occurrence and residence, 1996								
	Provided in the state			Obtained by residents**			Abortion rate***	
		To non-residents			Obtained out of state		By state of:	
State	Total	Number	Percent	Total	Number	Percent	Residence**	Occurrence
U.S. Total	**1,365,730**	**87,210**	**6**	**1,359,840**	**81,320**	**6**	**22.8**	**22.9**
Alabama	15,150	2,210	15	14,940	2,000	13	15.3	15.6
Alaska	2,040	0	0	2,310	270	12	16.5	14.6
Arizona	19,310	260	1	20,120	1,070	5	20.6	19.8
Arkansas	6,200	570	9	6,670	1,040	16	12.3	11.4
California	237,830	1,130	0	237,870	1,170	0	33.0	33.0
Colorado	18,310	1,880	10	16,670	240	1	19.0	20.9
Connecticut	16,230	600	4	16,510	880	5	22.9	22.5
Delaware	4,090	1,410	34	2,970	290	10	17.5	24.1
District of Columbia	20,790	10,370	50	11,190	770	7	83.2	154.5
Florida	94,050	5,270	6	90,160	1,380	2	30.7	32.0
Georgia	37,320	3,510	9	35,230	1,420	4	19.9	21.1
Hawaii	6,930	20	0	6,930	20	0	27.3	27.3
Idaho	1,600	100	6	2,450	950	39	9.4	6.1
Illinois	69,390	4,350	6	66,920	1,880	3	25.2	26.1
Indiana	14,850	520	4	18,330	4,000	22	13.8	11.2
Iowa	5,780	610	11	6,150	980	16	10.0	9.4
Kansas	10,630	4,350	41	6,940	660	10	12.3	18.9
Kentucky	8,470	1,740	21	7,890	1,160	15	8.9	9.6
Louisiana	14,740	2,770	19	13,110	1,140	9	13.1	14.7
Maine	2,700	80	3	3,390	770	23	12.2	9.7
Maryland	31,310	1,760	6	39,080	9,530	24	32.9	26.3
Massachusetts	41,160	3,070	7	40,150	2,060	5	28.6	29.3
Michigan	48,780	2,090	4	47,430	740	2	21.7	22.3
Minnesota	14,660	1,340	9	13,950	630	5	13.3	13.9
Mississippi	4,490	240	5	9,010	4,760	53	14.4	7.2
Missouri	10,810	1,180	11	16,040	6,410	40	13.5	9.1
Montana	2,900	500	17	2,430	30	1	13.1	15.6
Nebraska	4,460	890	20	3,930	360	9	10.8	12.3
Nevada	15,450	1,750	11	14,080	380	3	40.7	44.6
New Hampshire	3,470	740	21	4,670	1,940	42	17.1	12.7
New Jersey	63,100	1,400	2	64,230	2,530	4	36.4	35.8
New Mexico	5,470	240	4	6,560	1,330	20	17.3	14.4
New York	167,600	4,860	3	164,080	1,340	1	40.2	41.1
North Carolina	33,550	3,620	11	31,070	1,140	4	18.7	20.2

	Provided in the state			Obtained by residents**			Abortion rate***	
		To non-residents			Obtained out of state		By state of:	
State	Total	Number	Percent	Total	Number	Percent	Residence**	Occurrence
North Dakota	1,290	430	33	1,050	190	18	7.6	9.4
Ohio	42,870	3,160	7	41,320	1,610	4	16.4	17.0
Oklahoma	8,400	520	6	8,490	610	7	11.9	11.8
Oregon	15,050	1,830	12	13,540	320	2	19.5	21.6
Pennsylvania	39,520	1,920	5	42,080	4,480	11	16.2	15.2
Rhode Island	5,420	1,010	19	5,290	880	17	23.8	24.4
South Carolina	9,940	620	6	12,440	3,120	25	14.5	11.6
South Dakota	1,030	230	22	1,200	400	33	7.6	6.5
Tennessee	17,990	3,410	19	16,690	2,110	13	13.8	14.8
Texas	91,270	3,900	4	88,250	880	1	20.0	20.7
Utah	3,700	360	10	3,850	510	13	8.1	7.8
Vermont	2,300	480	21	2,050	230	11	15.2	17.1
Virginia	29,940	1,730	6	33,170	4,960	15	21.0	18.9
Washington	26,340	1,240	5	26,950	1,850	7	21.4	20.9
West Virginia	2,610	330	13	3,400	1,120	33	8.6	6.6
Wisconsin	14,160	590	4	14,980	1,410	9	13.0	12.3
Wyoming	280	20	7	1,630	1,370	84	15.5	2.7

*Numbers of abortions are rounded to the nearest 10.
**Excludes 5,860 abortions provided to non-U.S. residents.
***Per 1,000 women aged 15-44.
Source: The Alan Guttmacher Institute.