ALASKA LEGISLATURE COMMITTEE FILES 1997-1998 8672
9559 SENATE JUDICIARY

196

As a loving father, I cannot imagine not being able to be there to support and help with my daughter's decisions in this regard. While I recognize that this is not the attitude that all parents take, I have to believe it is the ideal and standard with which society should expect from parents, not an attitude of judgement.

In summary, in no place in this bill does the confidentiality of the physician/patient relationship necessarily have to be abridged by the physician. It remains the minor(s) responsibility to be involved with the parent(s) or legal guardian and the court when such a decision regarding this surgical procedure is deemed necessary.

Finally, the question which has not been completely considered is that of "informed consent." The courts have consistently upheld the right of the parents to be responsible for medical care and decisions regarding their minor child(ren) with regards to surgical procedures. In a large manner, this may be considered to be contributed to by the ability of adults to help assure adequate, informed decisionmaking. Part of becoming an adult is learning to accept the consequences of our decisions. Part of being a parent is to allow our child(ren) to begin to make decisions and to learn to accept the consequences and responsibility for those decisions. Hopefully, this bill will stand on its own merit, continuing to re-inject a balance of responsibility on physicians and parents with regards to the impact of sexuality and teenage pregnancy on our society and to begin to respond accordingly.

I hope this information is helpful and encouraging to the adoption of this bill on the simple premise that parental guidance is desirable in our society.

Very truly yours,

Robert G. Thompson, M.D., FACOG
Reproductive Surgeon

P.S. I've left out all the statistics.

Dr. Ilona J. Hodson Farr, M.D.
3945 Geneva Place
Anchorage AK 99508-5055

February 18, 1997

Senator Loren Leman
Alaska State Capitol Building
Room 115
Juneau AK 99801

Dear Senator Leman:

I am a female family physician, practicing in Anchorage. I have been licensed to practice medicine since 1986. I am writing to offer my professional medical opinion in support of SB 24 and HB 37, which require parental consent for abortions in women under 18 years of age. I think it is very important for parents to be involved in this life changing process.

I think this would deter some teen pregnancies, as abortion could no longer be used as a secret form of birth control behind parent's backs -- often teens are rushed into this procedure because of shock, fear, and time constraints and aren't aware of the true ramifications of this procedure.

Many teens seek abortions because of fear of parental reaction. Yes, parents are often initially shocked, angry, and embarrassed when their teens get pregnant; but most of them end up helping during and after pregnancy, and look forward to their grandchildren. Many teens want to keep their babies, but only choose abortion because of pressure from boyfriends or fear of parental reaction. Often it isn't what they truly want. Many end up pregnant again soon after an abortion because of depression, and guilt feelings about destroying their previous unborn children. This depression often recurs throughout their life.

Some women end up with fertility problems later in life because of problems related to abortions, including scarring from the procedure itself, infections related to the procedure, or cervical incompetence (which causes problems in carrying future pregnancies). Also, the severe emotional trauma associated with the termination of a pregnancy.

I find it hard to believe that parents are not involved in the decision involving a surgical procedure on the children they are legally responsible for. The risk of death from a termination (i.e., an abortion) is 1 to 2 per 100,000 abortions, which can increase to about 115 per 100,000 abortions with termination later in pregnancy, once the baby is more fully developed. The risk of perforations of the uterus, which can result in hemorrhage, injury to the bowel, infections, and may result in hysterectomy or death is 1 per 1,000. Also, patients

can have adverse reactions to anesthetics, ranging from syncopy to convulsions to anaphylaxis with death. Women can bleed severely, often requiring IV fluids blood transfusions which increase the risk of acquiring HIV, hepatitis, CMV, and other blood borne diseases. Abortion is not a benign procedure and parental consent should be required, like it is for all other surgeries.

I am not against all abortions, as there are many medical reasons for them, but I feel strongly that women should have parental consent before undergoing them and counseling from a neutral agency showing what abortion does to a baby, what parental responsibilities they will face caring for a child, and their options regarding adoption. For rural areas, a video could be used to convey this information followed by counseling from maternal child health nurses, public health nurses, or even village health aides. Enforcement of child support laws against teenage males would also force them to take responsibility, and likewise help decrease teenage pregnancy rates.

In summary, I am in favor of parental consent as I feel it would help deter teenage pregnancies; help teens make the wisest choices for themselves and their families; help prevent decisions to have an abortion based upon the shock, fear, and initial panic reactions to pregnancy that teens commonly have; and prevent teenagers from making an uninformed and ill advised decision to undergo a serious medical procedure which can potentially be fatal, or result in life-long medical and/or mental problems. If you have any questions, I can be reached at my work phone number which is (907)562-2070.

Sincerely,

Ilona J. Hodson Farr, M.D.

cc: file

IRENE S. LOHKAMP, M.D.
BOARD CERTIFIED IN FAMILY PRACTICE

1200 AIRPORT HEIGHTS DRIVE, SUITE 2
ANCHORAGE, ALASKA 995
TELEPHONE: (907) 272-33
FAX: (907) 272-02

February 16, 1997 Reference: S.B. 24

Dear Senator Leman:

I am a physician in private practice specializing in family medicine. I naturally treat many children and adolescents on a daily basis. I need parental consent in order to even evaluate a minor, much less perform a procedure.

It is totally incongruous to me that our State should allow an abortion to be performed upon an adolescent or younger child without parental consent. I have found that children even as old as 18 frequently cannot tell me their drug allergies or other details of their medical history.

Teens and preteens tend to be short sighted in highly stressful situations for many reasons, such as fear of immediate consequences, with less appreciation of long term consequences. I have counseled teens with a crisis pregnancy. Abortion at those times is a quick fix; risks seem unimportant and something that "won't happen to me."

An unemancipated teen requires parental consent to allow me to pierce their ears or take off a mole-very minor procedures which are relatively very low risk. Abortion has serious potential risks that can affect a young girl well into her adulthood. As you know, in addition to the immediate risk of infection, bleeding and perforation, there are long term effects such as the increased risk of ectopic pregnancy and infertility, and possibly even an increased risk of breast cancer-not to mention the possibility of a post traumatic stress type syndrome which frequently occurs as late as 7-12 years after abortion.

Parents must be required to consent to operative procedures performed upon their children-abortion certainly should not be an exception. There is of course judicial bypass for children who are truly endangered by parental disclosure.

There is another effect upon public health which parental consent for abortion has repeatedly caused, that should not be minimized. States which require parental consent have lower teen pregnancy rates. Isn't it time to do something that will lower the teen pregnancy rate for a change.

Sincerely yours,

Irene Lohkamp MD

Irene Lohkamp, M.D.

LOUIS E. MAYER, M.D., A.P.C.
3300 PROVIDENCE DRIVE, SUITE 301
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LOUIS E. MAYER, M.D., A.P.C.
Diplomate, American Board of Family Practice

CHARLES E. MANWILLER, M.D.
Diplomate, American Board of Family Practice

Senator Loren Leman
Alaska State Capitol Building
Room 115
Juneau, Alaska 99801

February 18, 1997

Dear Senator Leman:

My name is Charles Manwiller, M.D. I have practiced medicine in Anchorage since 1965; I delivered babies until ten years ago. I am a family doctor.

I am writing to state my position on Senate Bill 24. It is my understanding that this bill will facilitate the involvement of parents in the decision of a teenage girl (under age 18) to have an abortion. I am in favor of this legislation for the following reasons:

1. An abortion is not without potential complications. A girl's parents have a responsibility to know about and approve a procedure which has medical and emotional impact on a minor daughter.

2. Confidentiality between child and parent, though applicable in the arena of sexually transmitted disease, should be waved in abortion. The parents need to know. Abortion involves the destruction of human life. The unborn baby might have infinite value as a future member of the family.

3. I propose that avoidance of parental involvement at this critical time in a teenager's life, while at the moment seemingly less threatening to the pregnant teen, ultimately is more divisive than constructive in the parent-daughter relationship.

4. Medical personnel are quite concerned about obtaining parental consent before treating a minor in almost every situation. Should an event containing the profound significance of an abortion be any less deserving of parental approval?

Thank you for your concern regarding this important family related issue.

Sincerely yours,

Charles E Manwiller MD

Charles E. Manwiller, M.D.

This statement has been sent to members of the House Appropriations Committee in anticipation of an amendment to require parental consent or notification for Title X services.

The undersigned organizations OPPOSE mandatory parental consent or notification requirements for teens receiving services at Title X-funded family planning clinics.

Advocates for Youth
American Academy of Family Physicians
American Academy of Pediatrics
American Association of University Women
American Civil Liberties Union
American College of Nurse Midwives
American College of Obstetricians and Gynecologists
American Jewish Committee
American Jewish Congress
American Medical Women's Association
American Nurses Association
American Psychological Association
American Public Health Association
American Social Health Association
American Society for Reproductive Medicine
Association of Maternal and Child Health Programs
Association of Reproductive Health Professionals
Association of Schools of Public Health
Association of State and Territorial Health Officials
Center for Reproductive Law and Policy
Center for Women Policy Studies
Child Welfare League of America
Family Planning Councils of America, Inc.
National Abortion and Reproductive Rights Action League
National Association of Nurse Practitioners in Reproductive Health
National Council of Jewish Women
National Family Planning and Reproductive Health Association
National Latina Institute for Reproductive Health (NLIRH)
National Organization for Women
National Organization for Women Foundation
National Women's Law Center
NOW Legal Defense and Education Fund
People For the American Way Action Fund
Planned Parenthood Federation of America
Sexuality Information and Education Council of the United States
The Alan Guttmacher Institute
Union of American Hebrew Congregations
United Methodist Church, General Board of Church and Society
Voters For Choice
Women's Legal Defense Fund
YWCA of the U.S.A.
Zero Population Growth

June 5, 1996

Nos. 88-1125, 88-1309

IN THE

Supreme Court of the United States

OCTOBER TERM, 1989

JANE HODGSON, M.D., *et al.*,
Petitioners, Cross-Respondents,

v.

STATE OF MINNESOTA, *et al.*,
Resondents, Cross-Petitioners.

On Writ of Certiorari to the United States Court of Appeals for the Eighth Circuit

BRIEF OF THE ASSOCIATION OF AMERICAN PHYSICIANS AND SURGEONS (AAPS) AS *AMICUS CURIAE* IN SUPPORT OF STATE OF MINNESOTA

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October 10, 1989

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TABLE OF CONTENTS

TABLE OF CONTENTS—Continued

TABLE OF CONTENTS—Continued

TABLE OF CONTENTS—Continued

TABLE OF AUTHORITIES

TABLE OF AUTHORITIES—Continued

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On Writ of Certiorari to the United States Court of Appeals for the Eighth Circuit

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BRIEF OF THE ASSOCIATION OF AMERICAN PHYSICIANS AND SURGEONS (AAPS) AS *AMICUS CURIAE* IN SUPPORT OF STATE OF MINNESOTA

INTEREST OF THE *AMICUS CURIAE* *

The Association of American Physicians and Surgeons, Inc. (AAPS), a not-for-profit corporation, is the largest association of private practicing physicians in the United States. AAPS is comprised of active, practicing physicians and osteopaths of all specialties, from every state and territory in the United States and the District of

* This brief is filed with the written consent of the parties, copies of which have been filed with the Clerk of this Court.

Columbia. One purpose of the AAPS is to protect and preserve the private practice of medicine in all of its aspects. AAPS supports the right of patients, both adults and minors, to be provided full and accurate medical information with which to render informed decisions pertaining to their medical treatment. The AAPS recognizes the importance of involving parents in the medical treatment of minors, particularly in the provision of surgical procedures. Many of the members of the AAPS are pediatricians and obstetricians/gynecologists who routinely provide medical services to minors. In addition, many AAPS members are family practitioners whose practices involve working with the family, as a unit, in the provision of medical treatment. For these reasons, the issues involved in this case are of acute interest to the Association.

SUMMARY OF ARGUMENT

In this challenge to the Minnesota parental notice of abortion law, as applied, Minnesota abortion clinics and physicians have launched a selective attack to overturn this Court's decisions in *H.L. v. Matheson*, 450 U.S. 398 (1981), *Bellotti v. Baird*, 443 U.S. 622 (1979), and *Planned Parenthood v. Ashcroft*, 462 U.S. 476 (1983), as well as the constitutional principle that parents have fundamental rights to rear and raise their minor daughters in the area of abortion decision-making. The clinics' record in this case focuses exclusively on a minute subsection of Minnesota teens—those who sought elective abortions through judicial bypass—constituting only 25% of all pregnant teens and never more than .31% of the entire population of Minnesota teens aged 10-17. The clinics attempt to establish the unremarkable proposition that parents and teenagers do not always see eye to eye on teens' activities, that some parents may be abusive, that parents may react with grief, fear, or anger when they suddenly discover that their minor, unwed daughter is unexpectedly pregnant, and that this discovery may

not improve but may harm the parent-teen relationship. The record contains several stories of sad and unfortunate relations between parents and their children. But these conflicts are part and parcel of the parent-child relationship throughout history, and, as part of that relationship, have defined parental authority throughout Anglo-American law. In this sense, adolescent pregnancy is no different than many other serious, adverse events in the lives of teenagers and their families—for example, drug abuse, juvenile delinquency, or failure in school. It is in these very circumstances that parental authority is defined by the law's reaffirmation and support.

If the clinics could show that the notice law resulted in tangible threats to the health of minors generally in Minnesota above and beyond that normally posed by pregnancy and elective abortion themselves—that minors suffered increased abuse from parents, that physicians were prevented from providing prenatal care, or that minors were denied prenatal care, it would then be plausible for the clinics to claim that the notice law was not reasonably related to preserving parental authority or adolescent health. But this is not the case that the clinics have made.

Part of the impact of the notice law that the clinics have either selectively ignored, misconstrued, or incompletely presented is revealed through the official demographic data of the Minnesota Department of Health on adolescent pregnancy, abortion, and childbirth. These data show that teenage pregnancy, abortion, and birth rates declined markedly between 1980-1986; teens who decided to abort were not unusually delayed from having abortions until later times of pregnancy that might increase the risk of abortion; and complications from abortions performed on teens did not increase relative to other age groups. In addition, a comparison of the pregnancy, abortion, and birth rates provides strong support for the conclusion that the notice law effectively caused a

decrease in the pregnancy rate. Between 1980-1986, the birth rate throughout Minnesota fell 12.5% for 10-17 year olds and 28.4% for 18-19 year olds, the abortion rate fell 27.4% for 10-17 year olds and 20.7% for 18-19 year olds, and the pregnancy rate fell 20.5% for 10-17 year olds and 25.4% for 18-19 year olds. Since it seems undisputed that the notice law directly decreased abortion rates, while birth rates simultaneously decreased, this strongly suggests that the law decreased abortion rates by affecting pregnancy rates. This supports the conclusion that the notice law in fact changed adolescent behavior. These data indicate that the notice law is reasonably related to Minnesota's compelling interest in preserving parental authority and adolescent health.

ARGUMENT

I. THE PEOPLE OF MINNESOTA HAVE A COMPELLING INTEREST IN HELPING PARENTS AND FAMILIES TO REDUCE TEENAGE PREGNANCY AND TEENAGE ABORTION.

This Court's decisions in *Roe v. Wade*, 410 U.S. 113 (1973), and *Planned Parenthood v. Danforth*, 428 U.S. 52 (1976), established a constitutional right to elective abortion for adolescent girls of any age that minors had not exercised at any time in the preceding history of this country. *See* Brief Amicus Curiae of the American Academy of Medical Ethics in Support of Cross-Petitioners in *Hodgson v. Minnesota*, No. 88-1125, 88-1309 at 2-23; Brief of Certain American State Legislators in Support of Appellants in *Webster v. Reproductive Health Services, Inc.*, No. 88-605. In the aftermath of those decisions, parents and public officials in every state have sought to adjust public policy on health care to take account of this new constitutional right while preserving other compelling, traditional social values. This Court has recently held that government has a "legitimate secular purpose" in reducing "the social and economic problems caused by

teenage sexuality, pregnancy, and parenthood." *Bowen v. Kendrick*, 108 S.Ct. 2562, 2571 (1988).

In 1985, approximately 26.3% of elective abortions were performed on minors age 18 or younger. Centers for Disease Control, *Abortion Statistics U.S., 1984-1985* (1989) (Table 1.). More than 40 percent of all teenagers who have known pregnancies obtain abortions. Henshaw, et al., *A Portrait of American Women Who Obtain Abortions*, 17 Fam. Plan. Persp. 90, 93 (1985); Russo, *Adolescent Abortion: The Epidemiological Context*, in G. Melton, ed., *Adolescent Abortion: Psychological & Legal Issues* 40, 49 (1986). In 1986, in Minnesota, approximately 49.3% of pregnancies for teens, age 10-17, ended in elective abortion. Table 1, *infra*. Nearly eighty percent (78%) of all abortions performed on teenagers are done in abortion clinics. Henshaw & O'Reilly, *Characteristics of Abortion Patients in the United States 1979-1980*, 15 Fam. Plan. Persp. 5, 11 (1983). One study found that less than half of the abortion clinics require parental notice, even for teenagers 15 years of age or younger; even fewer require parental notification before performing abortions on minors age 16 or older. Torres, et al., *Telling Parents: Clinic Policies and Adolescents' Use of Family Planning and Abortion Services*, 12 Fam. Plan. Persp. 284, 285 (1980) (Table 1). Yet, in this study of 1,170 unmarried teenage abortion patients, "[n]inety-one percent were living with their parents, four percent were living with relatives . . . ." *Id.* at 287.

A. Although Many States Have Enacted Parental Consent and Notice Laws, Minnesota Is Unique in Having Had A Parental Law In Effect Which Can Be Evaluated Through Demographic Data Collected By the Department of Health.

The States have sought to address the problem of teenage pregnancy and abortion in many different ways. They have instituted scores of public programs, includ-

ing family planning programs, adoption services, child care, school-based educational programs, and maternal and child health care programs. *See Teen Pregnancy: What is being Done? A State by State Look*, A Report of the House Select Committee on Children, Youth and Families, 99th Cong. 2d Sess. 56 & Appendix IV (Dec. 1986) (hereinafter *Teen Pregnancy*). The States stress parental involvement in many of these programs. *Id.* at 67-70.

Over 30 states, including Minnesota, have passed parental consent or notice legislation in order to protect the health of minors and to protect parental authority in the area of adolescent health decisionmaking. *See* Appendix I to this Brief. As this Court has said, "parental consent and notice are qualifications that typically may be imposed by the State on a minor's right to make important decisions." *Bellotti v. Baird*, 443 U.S. 622, 640 (1979) (plurality op.). Because this Court's decisions in *Roe v. Wade* and *Danforth* constitutionalized this area of the law, states can ensure parental involvement only through positive legislation.

Very few of these state parental consent and notice statutes have been allowed to go into effect for any meaningful period of time. Many have been declared unconstitutional by federal courts. Statutes in almost a dozen states are currently enjoined in the midst of pending litigation. *See* Appendix 1. As the district court below acknowledged, it was the first district court "ever to examine a parental notification or consent substitute statute in actual operation." *Hodgson v. Minnesota*, 648 F.Supp. 756, 774 (D.Minn. 1986). And there is no other currently pending litigation in this country that is examining the effect of parental notice or consent legislation as applied.

Determining the effect of these parental laws has also been frustrated by the absence of state or federal laws

requiring the reporting of statistical data. Data collected from reporting provide demographic statistics that are critical for the study of maternal morbidity and mortality. *See e.g., Teen Pregnancy* at 1-19; Smith, et al., *An Assessment of the Incidence of Maternal Mortality in the United States*, 74 Am. J. Pub. Health 780 (1984). "No federal laws require reporting for abortion." *Teen Pregnancy* at 5. State reporting requirements for abortion are in effect in less than thirty states. Appendix 1. Many states do not have reporting for a wide array of demographic factors. *Teen Pregnancy* at 1-19. Many states do not, or cannot, require mandatory reporting of abortion statistics. Illinois, for example, has been prohibited by court order from collecting abortion data since 1984. *Herbst v. Dalen*, No. 84 C 5602 (N.D.Ill. July 1, 1984). Reporting requirements are essential to determine the complete effect of these laws. Minnesota is virtually unique in having had a parental notice law and reporting statute in effect simultaneously for a meaningful period of time.

B. The Plaintiff Clinics Have Failed To Show That the Notice Law Adversely Impacts the Health of Teens, Adversely Impacts the Integrity of the Family, or Fails to Be Consistent With Parents' Rights to Rear and Counsel Their Children.

The clinics' attack on the Minnesota law falls into two broad categories: (1) testimony concerning various burdens imposed on pregnant teens by the notification requirement and the bypass procedure; (2) testimony questioning the necessity and effectiveness of the notification requirement and bypass procedure in furthering the statutory purposes of protecting parental authority and adolescent health. The clinics, and their *amicus*, contend that minors of any age are no less mature and no less capable of making important decisions than their adult parents.[1]

[1] The American Psychological Association (APA), which has filed an *amicus curiae* brief in this case in support of Hodgson,

The clinics' claim that the notice law had an adverse effect on minors in Minnesota is exclusively focused on those minors who sought abortions. The clinics' challenge reflects a narrow, distorted focus on the impact of the notice law. Minors who sought abortions through the bypass procedure between 1981-1984 constitute less than 25% (23.5%) of the total number of minors (aged 10-17) who became pregnant. *Cf.* Table 1-2, J.A. 60. The clinics' case focuses on only half of the pregnant teens in Minnesota, and that half amounts to only .30% of all Minnesota teens aged 10-17 who were under the influence of the law. *Cf.* J.A. 60, Tables 1-2.[2] The clinics' case thus virtually ignored the impact on the half of the teens who became pregnant and did not abort in Minnesota (and their parents). And the clinics' record says nothing about the drop in the pregnancy rate and how the notice law influenced teens who did not become pregnant. It is, therefore, wholly inaccurate for the clinics to claim that their witnesses had "first-hand knowledge of nearly 100% of the minors who were affected by the statute." Pet.Br.

has recently been criticized for filing briefs in this Court which overstate the extent to which "developmental theory and data confirm that adolescents and adults have equivalent decision-making capacities." Gardner, et al., *Asserting Scientific Authority: Cognitive Development and Adolescent Legal Rights*, American Psychologist 895 (June 1989). One of the Plaintiffs' experts, Lenore Walker, expounded this theory at trial and contributed to the APA brief. APA Brief at n.2.

[2] The 23.5% figure is derived from the estimated number of pregnancies in the 10-17 age group between August 1, 1981 and December 31, 1981 (10,872) compared with the stipulated number of bypass petitions filed during that same period (2,552). J.A. 60. (The 10,872 figure uses 5 mos. of the total number of pregnancies (3,714) in the 10-17 age group in Minnesota in 1981.) *See* Tables 1-2. It appears that 49.6% of the teens that aborted between Aug. 1, 1981 and December 31, 1981 sought judicial bypass. This is based on a comparison of the total of approximately 5,149 abortions for that time period for the 10-17 age group (5 mos. of 1981 total) with the stipulation of 2,552 bypass petitions in that period (J.A. 60).

at 29. By their challenge, the clinics would strip all Minnesota parents of the statutory protection of their constitutional rights, as well as all minors of the influence of the law in ensuring parental guidance, in order to remove the requirement of judicial bypass from .30% of Minnesota teens.

There is little, if any, evidence in the record on the experience of the 50% of the pregnant teens, aged 10-17 (or their families), who did not abort—no testimony from those teens or their parents (either custodial or non-custodial) or their doctors, no medical evidence of their pregnancy or current condition, no evidence of their experience in giving birth or caring for their newborn children, no evidence of their past history or future plans or aspirations, no evidence that any minor who carried her child to term later regretted it.

Even the experience of the 50% of the pregnant teens who aborted is presented in the record almost exclusively through the eyes of third parties (*not* parents)—abortion clinic personnel, court or administrative personnel, or experts apparently experienced with only teens who aborted.[3] These teens are "represented" only by three single mothers of pregnant daughters and eight teens as

[3] The following are the Plaintiffs' witnesses, excluding some of the named Plaintiffs: Paul Wendt, Meadowbrook Clinic; Allen Oleisky, judge, Stanley Hendhaw, statistician; Henry Albrecht, juvenile court judge; Edwin G. Widseth, asst. county atty.; Susanne Smith, supervisor, GAD program; Kathrine Welsh, Women's Health Center; Cynthia Daly, asst. public defender; Dr. Lenore Walker, psychologist; Gerald Martin, judge; Charlotte Baker, Midwest Health Center; Maria Honkala, medical asst.; Thomas P. Webber, Planned Parenthood administrator; Heather Sweetland, asst. public defender; Laura Hunter, abortion clinic counselor; Elissa Benedek, psychiatrist; William Sweeney, county judicial officer; Gary B. Mellon, psychologist; George Petersen, district judge; Paul Garrity, judge; Steven Butzer, psychiatrist; Neil Riley, judge; Edward Ehlinger, health department administrator; Henry David, Trans. Family Research Inst.; Dr. Arthur Horwitz, Meadowbrook clinic.

named plaintiffs. Pet. Br. at 23 n.49. The experience of certain minors who were deposed is characteristic of the lifestyle of many teens, but there is no evidence that the notice law seriously exacerbated the parent-teen relationship for these teens or for any significant number of Minnesota teens. Most of the Plaintiffs' experts relied on "studies" and "the "literature"—none of which seem to involve Minnesota youth. District Court Transcript (T.) 1137, 1146. The exception seems to be Steven Butzer, who cited two cases of Minnesota adolescents he had counseled, but his experience seems to have been only with girls who sought abortion. J.A. 296-300. There is apparently no evidence of even a single report of child abuse caused by the parental notification, or a single report of medical complications caused by the law, or a single case of parental prevention or coercion of an abortion. Cross Petitioners' Brief (Cross Pet.Br.) at 10-11, 18.

The data collected by the Department of Health tell a broader public health story—not only about those teens who aborted (.60% in 1982) but also about those who never got pregnant (98.7%) and those who carried their children to term (.66%); and it is a story different from the one that the clinics present. The data collected and reported by Minnesota are unique in what they can tell public health researchers about the effect of the notice law. This analysis of the Department's data demonstrates that the notice law is reasonably related to protecting parents' constitutional rights and protecting the health of minors, because it requires parental notice without causing any increased health problems for minors and, in fact, possibly decreases adolescent pregnancy and abortion rates *without* causing increased birth rates. This is an extraordinary benefit for teens and their families in Minnesota—an impact which the clinics virtually ignored.

II. WHILE THE MINNESOTA PARENTAL NOTICE OF ABORTION LAW WAS IN EFFECT AND ENFORCED, TEENAGE ABORTION AND PREGNANCY DECLINED SUBSTANTIALLY AND TEENAGE BIRTHS DID NOT GENERALLY INCREASE COMPARED TO PREVIOUS YEARS.

The Minnesota notice law was only in effect from August 1, 1981 through March 2, 1986, when a preliminary injunction was entered against the entire statute, followed by a permanent injunction on November 6, 1986. Minn. Stat. Ann. 144.343(2)-(7) (West 1989); *Hodgson v. Minnesota*, 648 F.Supp. 756, 760, 781 (D.Minn. 1986), *cert. denied*, 107 S.Ct. 1333 (1987); *Hodgson v. Minnesota*, 853 F.2d 1452, 1455 (8th Cir. 1988); Cross Pet. Br. at 10. That injunction continued in effect throughout the appellate review. After the court of appeals *en banc* reversed the district court's decision on August 8, 1988 and upheld the notice law, the Eighth Circuit issued an order on October 7, 1988, staying the issuance of its mandate pending the filing of a writ of certiorari, or until such time as this Court acted on the petition for certiorari. That stay continues in effect.

During the time that the notice law was in effect, the Minnesota Department of Health, Center for Health Statistics (the Department) collected demographic data from Minnesota abortion providers under mandatory statutory reporting requirements. Minn. Stat. Ann. 145.413 (West 1989); T. 2069, 2076-79 (Dr. Paul Gunderson). The Department began to collect data in 1973. T. 2072. The data collected included :

- the number of teenage pregnancies, abortions, and births,
- complications incurred by teenagers during abortion, and
- the gestational age at which the abortion was performed.

The data relied upon in this brief are the Department's official data. As it has to other researchers (T. 660), the Department provided official data through computer disks and data tables on incidence and population in age specific groupings appropriate for an evaluation of the law—10-17 years, 18-19 years, 20-24 years, 25-54 years.[4] The surveillance of abortion data by the Department begins with age 10. T. 2082. And the Department collects abortion data using a category of 17 years and under. Defendants' Exhibit (D. Exh.) 35; J.A. 481. Official population estimates were also provided by the Department because this analysis was conducted prior to the 1990 census.

In this analysis, it was assumed that any change in the incidence of pregnancy, abortion, and childbirth because of the notice law would most heavily fall on teens 17 and below, who were directly affected by the notice law (Minn.Stat.Ann. 645.451 (West 1989)); less heavily on teens age 18-19 who would have recently been subject to the law; somewhat less on women age 20-24; and least on women age 25-54.[5] The notice law itself does not define "minor" by age, and thus it is quite possible that there was some confusion as to who, among 17-19 year olds, was covered by the law. Moreover, some teens who gave birth at 18 might have been 17 at the time they became pregnant and thus were directly affected by the law. Those who were 18 or 19 in 1983-1986 were subject to the law in 1981 (as, for example, Francis H. (J.A. 68-69)), and the group as a whole could reasonably have been influenced by the law through socialization, including schooling and peer contacts. Similarly, some in the 20-24 age group in later years would have been subject to the law in the earlier years of its enforcement. Women age 25-54 would never have been personally affected by the law. For these reasons, these four groups were considered separately.

[4] The data presented in this brief do not include either teens or adults whose ages were unknown or non-Minnesota residents.

[5] Plaintiffs' witness, Stanley Henshaw, of the Alan Guttmacher Institute, also distinguished between teens age 17 and below and teens age 18-19. J.A. 98. The Director of the Minnesota Center for Health Statistics, Dr. Paul Gunderson, also relied on a category of "17 and below" because the Center collects data for this category. D. Exh. 35; T. 2082-84, 2101-2102, 2104.

This brief presents and analyzes the number and rates of adolescent pregnancies, abortions, and births in Minnesota between 1975 and 1986, the last year for which complete statistics were available.[6] In addition, the study examines the impact of the notice law on medical complications and gestational age at the time of abortion. The examination of rates allows for and takes into account adjustments for changes in the population of Minnesota. The brief also examines the impact on all of these phenomena among women age 25-54, in order to assess law-specific and general population effects. Figures and Tables noted hereafter are included in the Appendix to this Brief.

A. During the Four Years that the Notice Law Was In Effect, Teenage Pregnancies, Abortions, and Births Declined Substantially.

1. *Pregnancies*[7]

The Department's official data show that pregnancies for Minnesota teens, age 10-17, declined between 1981-1986, while the notice law was in effect. Table 1 and Figure 1a show that the number of pregnancies rose from 3,958 in 1975 to 4,315 in 1980 and then decreased to a low of 2,987 in 1983 and to 3,133 in 1986. Thus, the number of pregnancies in this age group grew by 9.0%

[6] At the time of trial in 1986, the State only presented data for years 1980-1983 (D. Exh. 35; J.A. 481) and Planned Parenthood had only data up to 1982 and not beyond. T. 660-61.

[7] Pregnancies equal the sum of abortions, live births, and fetal deaths.

between 1975 and 1980 and fell by 27.4% from 1980 to 1986. In this age group, the highest number of adolescent pregnancies occurred in the year before the notice law went into effect.

Table 1 and Figure 1b show that the number of pregnancies for the 18-19 age group increased from 6,494 in 1975 to a high of 8,301 in 1980 and then declined to a low of 5,493 in 1986. The number of pregnancies in this age group increased by 27.8% between 1975 and 1980 and fell by 33.8% from 1980-1986.

Table 1 and Figure 1c show that the number of pregnancies for the age group 20-24 increased between 1975 and 1980 from 22,001 to 28,093 and then declined between 1980 to 1986 from 28,093 to 22,792—almost to the 1975 figure.

Table 1 and Figure 1d figures show that pregnancies for the 25-54 age group increased between 1975 and 1980 but then continued to increase between 1980 to their highest level in 1986. This group would be the least likely to be affected by the notice law, and the figures show that, in fact, pregnancies in this age group continued to rise throughout the effective period of the notice law.

2. *Abortions*

The Department's data also show that abortions for teenagers, aged 10-17, declined between 1980 and 1986, while the notice law was in effect. Table 1 and Figure 1a show that abortions in this age group rose from 1,507 in 1975 to a high of 2,327 in 1980, the year before the notice law took effect, and then fell to a low of 1,395 in 1981 before rising to 1,545 in 1986. Abortions for this age group increased 54.4% from 1975 through 1980 and fell by 33.6% from 1980 to 1986.

For the 18-19 age group, abortions grew markedly between 1975 and 1980 before decreasing between 1980-1986. Table 1 and Figure 1b show that abortions for this

age group rose substantially from 1,758 in 1975 to a high of 3,380 in 1980, the year before the notice law took effect, and then fell to a low of 2,372 in 1986. Abortions thus rose 92.3% between 1975 and 1980, before falling 29.8% between 1980 and 1986.

In the 20-24 age group, Table 1 and Figure 1c show that abortions grew 124.1% from 2,702 to 6,054 between 1975 and 1980, the last year before enforcement of the notice law, and then remained relatively stable between 1980 and 1986, falling 5.5%.

For the 25-54 age group, abortions did not decline between 1980 and 1986, as Table 1 and Figure 1d show. Abortions in this age group increased 179.3% from 2,161 in 1975 to a high of 6,035 in 1986. Abortions thus rose 118.2% between 1975 and 1980 and rose 28.0% between 1980 and 1986.

3. *Births*

The Department's data show that births for teens age 10-17 declined while the notice law was in effect. In the 10-17 age group, as Table 1 and Figure 1a show, the number of births fell from 2,427 in 1975 to 1,974 in 1980, but continued to decline between 1980-1986, to 1,573 in 1986. Births for teens age 10-17 thus dropped by 18.7% from 1975 to 1980 but dropped 20.3% from 1980 to 1986.

For the 18-19 age group, Table 1 shows that births rose from 4,693 in 1975 to a high of 4,883 in 1980, the year before the notice law went into effect, and then declined to a low of 3,096 in 1986. For this age group, births increased by 4.0% from 1975 to 1980, but decreased by 36.6% from 1980 to 1986. In reviewing this age group, it must be remembered that some girls who became pregnant at 17 would give birth after they were 18. Thus, some girls who gave birth while they were 18 may well have been influenced by the law.

In the 20-21 age group, as Table 1 and Figure 1c show, births increased 14.4% from 1975-1980 but then de-

clined 22.6% between 1980-1986, from 21,899 to 16,959. In the 25-54 age group, as Figure 1d shows, births increased from 1975-1980, increased slightly between 1980-1982, and continued to increase 1982-1986. Births rose from 28,746 in 1975 to a high of 42,269 in 1986.

4. *Migration*

Migration out of Minnesota for abortions was apparently not conducted on any significant scale. Four states border Minnesota: North Dakota, South Dakota, Iowa, and Wisconsin. North Dakota has had a parental consent law in effect since at least 1981. N.D. Cent. Code 14-02.1-03.1 (1981 & 1989 Supp.).[8] South Dakota reports 5, 19, 20, 30, 20, and 17 abortions performed on Minnesota teen residents, 19 years and under, during 1981 through 1986, respectively. *South Dakota Vital Statistics* (1982-1987). Iowa has no parental or reporting law in effect. Wisconsin had no mandated reporting before 1987. One researcher, Robert Blum, concluded that "[i]n contradistinction to the Massachusetts data, there is little evidence to indicate large numbers of Minnesota youth are leaving the state for abortion. . . ." Blum, et al., *The Impact of a Parental Notification Law on Adolescent Abortion Decision-Making*, 77 Am. J. Pub. Health 619, 620 (1987).

One study by Cartoof and Klerman purported to find significant migration out of Massachusetts in their study of the impact of the Massachusetts parental consent law. Cartoof & Klerman, *Parental Consent for Abortion: Impact of the Massachusetts Law*, 76 Am. J. Pub. Health 397 (1986). Nevertheless, as in the case where migration occurs between states with differences in the drinking age

[8] Stanley Henshaw suggested that there was migration to North Dakota based merely on the fact that a clinic opened up in Fargo in 1981. J.A. 99-101; Henshaw T. at 32. But he then chose to exclude North Dakota from his regional assessment of birth rates because of its parental consent law. Henshaw T. at 39-40.

for teenagers, the solution to migration is not to abolish the public health standards of stricter states but to strengthen the standards in the more permissive states. *Cf. South Dakota v. Dole*, 107 S.Ct. 2793 (1987); 23 U.S.C. 158 (1982 ed. and Supp. III). Regardless of the Massachusetts scenario, however, the facts indicate that Minnesota's experience is different. Massachusetts is geographically a small state bordered by several other states without parental involvement legislation that may be more easily reached by car or public transportation (e.g., Maine, New York). Thus, the conclusions of Cartoof and Klerman simply do not apply to Minnesota.

B. During the Four Years that the Notice Law Was In Effect, Teenage Pregnancy, Abortion, and Birth Rates Declined Substantially.

Because raw figures do not take account of possible changes in Minnesota's population for a particular age group from year to year, rates for pregnancies, abortions, and births were also calculated based on the Department's data. Rates, in this study, equal the occurrence (incidence) of a phenomenon per 1000 females. *Cf.* T. 661-65. The numerator is the number reflecting the phenomenon for females in that age category; the denominator is the population number for females in that age category (in thousands). The data in this brief rely on the Department's data for the entire population of Minnesota, not just on a sample. Table 2 contains rates for abortion, births and pregnancy for the various age groups between 1975-1986.

1. *Pregnancy Rate for 10-17 Year Olds*

The pregnancy rate equals the number of pregnancies in the particular age group divided by the population of females in that age group in thousands (pregnancies/population). Table 2 and Figure 2a show that the pregnancy rate for the 10-17 age group rose from 12.7 (12.7

per 1000) in 1975 to a high of 15.6 in 1980, the year before the notice law took effect, and then declined to a low of 11.3 in 1983 and 12.4 in 1986. Thus, even though the population of 10-17 year olds declined between 1975 and 1986, the pregnancy rate declined, as well, by 20.5% between 1980-1986.

2. *Pregnancy Rate for 18-19 Year Olds*

Table 2 and Figure 2b show that the pregnancy rate for the 18-19 age group rose substantially from 75.5 (75.5 per 1000) in 1975 to a high of 98.5 in 1980, the year before the notice law went into effect, but then fell after 1980 to 96.0 in 1981 and to 73.5 in 1986, below the 1975 level. Again, even though the population in Minnesota in the 18-19 age group fell from a high of 86,924 in 1976 to 74,689 in 1986, the pregnancy rate also declined 25.4% between 1980-1986.

3. *Abortion Rate for 10-17 Year Olds*

The abortion rate equals the number of abortions in the selected age group divided by the population of the females in that age group in thousands (abortions/population). Table 2 and Figure 2a show that the abortion rate for the 10-17 age group rose from 4.9 in 1975 to a high of 8.4 in 1980, the year before the notice law became effective, and then fell to 6.8 in 1981, to a low of 5.4 in 1983 and 6.1 in 1986.[9] The abortion rate thus rose 71.4% between 1975-1980 and then fell 27.4% between 1980-1986.

4. *Abortion Rate for 18-19 Year Olds*

The Department's data also show that the abortion rate for the 18-19 age group in Minnesota fell during the time

[9] Stanley Henshaw suggested that the rate of abortions for teens age 15-17 has declined, in part, because they passed themselves off as 18. Henshaw T. 61. This is implausible because it would result in an increase in the abortion rate for 18-19 year olds, which plainly did not occur.

that the notice law was in effect. Table 2 and Figure 2b show that the abortion rate rose from 20.4 in 1975 to a high of 40.1 in 1980, the year before the notice law became effective. The abortion rate then fell 4.8% to 38.20 in 1981 and a further 16.8% to a low of 31.80 in 1986. The abortion rate thus rose 96.6% between 1975-1980 and fell 20.7% between 1980-1986.

5. *Birth Rate for 10-17 Year Olds*

The birth rate equals the number of births in the selected age group divided by the population of females in that age group in thousands (births/population). Figure 2a and Table 2 show that the birth rate for the 10-17 age group in Minnesota fell from 7.8 (7.8 per 1000 teens) in 1975 to 7.2 in 1980, and that it continued to fall to 7.0 in 1981, to a low of 5.8 in 1983 and then to 6.3 in 1986. The birth rate therefore fell 7.7% between 1975-1980 but fell 12.5% between 1980-1986.

6. *Birth Rate for 18-19 Year Olds*

The Department's data show that the birth rate for the 18-19 age group in Minnesota fell during the time the notice law was in effect. Table 2 and Figure 2b show that the birth rate for the 18-19 age group rose from 54.6 in 1975 to 58.0% in 1980 (+6.2%), the last full year before the notice law took effect. The birth rate in this age group then fell to 57.4 in 1981 and to a low of 41.5 in 1986. Thus, the birth rate fell 28.4% between 1980-1986.

In sum, the Department's data refute the clinics' contention that the notice law increased the birth rate for teenagers in Minnesota. Between 1980-1986, the birth rate fell 12.5% for 10-17 year olds, 28.4% for 18-19 year olds, and 23.6% for 20-24 year olds.[10] In contrast,

[10] Stanley Henshaw acknowledged the decline in Minnesota birth rates for 15-17 and 18-19 year olds, but attributed this to a regional decline. J.A. 100.

the birth rate for 25-54 year olds increased 6.1% between 1980-1986. The Minneapolis birth rate data is separately examined in Section III below.

C. The Data Are Strong Evidence that the Notice Law Effectively Reduced Teen Pregnancy Rates in Minnesota During Its Effective Period.

The comparison of the pregnancy, abortion, and birth rates in Minnesota between 1981-1986 strongly supports the conclusion that the notice law effectively caused a decrease in the pregnancy rate in those years. Since the abortion rate fell 27.4% for 10-17 year olds and 20.7% for 18-19 year olds, while the birth rate throughout Minnesota simultaneously fell 12.5% for 10-17 year olds and 28.4% for 18-19 year olds, the pregnancy rate must have declined, as the data confirm, supporting the conclusion that the notice law in fact changed adolescent behavior. In other words, since it seems undisputed that the notice law did directly decrease abortion rates, while birth rates simultaneously decreased, the law must have decreased abortion rates by affecting pregnancy rates.

In addition, the number of teens, aged 10-17, who aborted as a percentage of all pregnant teens (including fetal deaths), aged 10-17, did not decline markedly between 1980-1986. The figures are, respectively, for those years: 53.9%, 49.0%, 47.3%, 47.9%, 46.0%, 50.3%, 49.3%. This is further evidence that the impact of the notice law was to reduce teen pregnancies generally, rather than to compel teens to give birth rather than abort.

On the other hand, it may not be possible, examining the pregnancy and abortion rates in Minnesota alone, to conclude with certainty that the notice law itself caused lower pregnancy rates by inducing minors to change their behavior. But the Department's data at least make clear that the notice law did not cause higher birth rates in Minnesota and was enforced during an unprecedented period when pregnancy and abortion rates declined for teens aged 10-17.

D. Minnesota Teenagers Did Not Have Abortions at Significantly Later Points in Pregnancy Relative to Other Age Groups While the Notice Law Was In Effect.

The plaintiff clinics claim that the notice law delayed minors from having abortions, pushing them into later gestational periods, with the implication that this increased the risk of abortion. Pet. Br. at 13-14; T. 2088; J.A. 347. For this claim, they rely, in part, on a report by the Meadowbrook Women's Clinic, one of the plaintiffs, that "as of December 1985, over 30% of their minor patients seeking abortions were in the second trimester." Pet. Br. at 14 n.29. But this bare statistic from one clinic, presented in isolation, says virtually nothing. Moreover, the Department's data bely these claims generally. *See also* Cross Pet. Br. at 19; J.A. 346-49, 474, 481.

Table 3 and Figure 3a show the number of abortions performed at [greater than] 12 weeks gestational age for all age groups between 1975-1986.[11] For the 10-17 age group, the number of abortions performed after 12 weeks grew from 403 in 1973 to 510 in 1980, jumping substantially between 1979-1980, but *declined* sharply (28.4%) from 1980-1981. Between 1981-1986, the number of abortions performed in this age group after 12 weeks continued to decline 8.8% to 333 in 1986.

Table 3 and Figure 3b show the percentage of abortions performed after 12 weeks. For the 10-17 age group,

[11] The 12-week point was used because 12 weeks is generally used as the line between the first and second trimesters and because the clinics' allegation is that the proportion of minors who had "second trimester abortions increased dramatically." Pet. Br. at 13-14. Dr. Paul Gunderson also used a 12 week cutoff. T. 2103-2104.

the percentage of abortions performed after 12 weeks grew 22.3% from 1975-1980, declined between 1980-1982, increased between 1982-1984 and then declined between 1984 and 1986, with the result that the percentage of abortions performed after 12 weeks in 1985 was nearly the same as the percentage in 1980. For 1980-1986, the percentage of abortions performed at [greater than] 12 weeks for 10-17 year olds dropped 1.4%.

The figures for the 10-17 age group, however, cannot properly be viewed in isolation but must be compared with the figures for the other three age groups in Minnesota between 1975-1986. The percentage of abortions performed after 12 weeks for the 18-19 age group declined from 16.6% in 1980 to 15.2% in 1982, and then increased from 1982 to 1984 before dropping between 1984-86, a total increase between 1980-86 of 10.3%. A similar pattern occurred for the 20-24 and the 25-54 age groups. The 20-24 age group shows a 9.8% increase from 1975-80 in the percentage of abortions performed after 12 weeks. But there is a significant increase in 1981 before a drop to 1986, with a resulting increase of 4.5% between 1980-86. For the 25-54 age group, the percentage of abortions performed after 12 weeks decreased 2.3% between 1975-80 and then increased 1.2% between 1980-86.

Three primary characteristics should be noted for all age groups. First, the percentage of abortions performed after 12 weeks is consistently related to age differences, both before and after the enactment of the notice law. The percentage of abortions after 12 weeks for the 10-17 age group is consistently higher than the 18-19 age group, which is consistently higher than the 20-24 age group, which is consistently higher than the 25-54 age group for all years from 1975-1986. Second, as Figure 3b shows, for all groups there appears to be a cyclical trend with "peaks" every four years, which the notice law has not interrupted. Third, after the notice law became effective

in 1981, the percentage of abortions after 12 weeks dropped for all age groups between 1980-1981, rose slightly from 1981-1982, and rose after 1982. The fact that the number and percentage of abortions performed after 12 weeks in the 10-17 age group dropped between 1980 and 1981, and the fact that the number of abortions for all age groups performed after 12 weeks increased after 1982, provide strong evidence that the notice law did not selectively increase the gestational age at which teens obtained abortion.

E. Minnesota Teenagers Did Not Have Increased Complications From Induced Abortion Relative to Other Age Groups While the Notice Law Was in Effect.

The plaintiff clinics also claim that complications from induced abortions incurred by teens subjected to the notice law increased because of the law. This claim is based entirely on journal publications about general rates of complications and not on any specific medical evidence in the record. *See* Pet. Br. at 11; J.A. 347-48.[12] By relying on general rates of complications, which generally increase with gestational age, the clinics' argument assumes the validity of their claim that the law caused adolescents to have later abortions. But this assumption has been contradicted by the Department's data. Independent of the gestational age data, the Department's data indicate that the claim of increased complications is unfounded. *See* Cross Pet. Br. at 19, 39-40; J.A. 347-48.

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[12] Plaintiffs' counsel told the district court: "In Plaintiffs' Exhibits 1 through 9 and also in Dr. Hodgson's testimony there is a claim that the risk increases through delay, specifically the types of risks such as laminaria due to cervical—lack of laminaria use which relates to cervical injury, but we haven't demonstrated or said on any particular patients those risks have occurred except those who haven't been able to get it, who have gone to childbirth, which of course is much more dangerous." T. 2088; J.A. 317. When asked by the court whether the claim was that the notice law "resulted in an increase in complications to minors" rather than an increase in "risk," counsel for plaintiffs replied, "No." *Id.*

For purposes of this analysis, it must be understood that between 1982-1984, the Department changed and broadened its definition of "complication" for purposes of the reporting statute. T. 2090-2094. This broader definition encompassed more specific instances of morbidity that were required to be reported as complications of abortion. Specifically, the Department changed their reporting form to include more examples of complications (from 8 categories to 12 categories), including a distinction between "minor" complications (not requiring hospitalization) and "major" complications (requiring hospitalization) (e.g., pelvic infection, hemorrhage, and others). In the aftermath, the Department found increased reporting of "minor" complications.

Table 4 and Figures 4a-4b show the number and percentage of abortions with reported complications for all age groups in Minnesota, 1975-1986. The rate of complications is determined by dividing the number of complications by the number of abortions. For the 10-17 age group, the number of complications declined from 16 in 1975 to 6 in 1980, and then declined to 0 in 1981, before jumping to 10 in 1982 and dropping to 8 in 1986, the same as the 1978 figure. Figure 4b shows that, for the 10-17 age group, the percentage of abortions with reported complications increases 56.3% between 1982-1984 but then declines 48.0% between 1984-1986. For the 18-19 age group, the percentage increases 211.1% between 1982-1984 and then declines 43.8% between 1984-1986. For the 20-24 age group, the percentage increases 60.9% between 1982-1984 and then declines 18.4% between 1984-1986. Finally, for the 25-54 age group, the percentage increases 33.7% between 1982-1984 and continues to increase 3.4% between 1984-1986.

In sum, the Department's data show that reported complications increased for all age groups between 1975-1986. This is entirely consistent with the Department's findings after the change in its definition of complications. Between 1982-1984, the percentage of complications *increased more* for the 18-19 and 20-24 age groups than for the 10-17 group. And, between 1984-1986, the percentage of complications *fell less* for all other groups than the 10-17 age group. These facts provide strong evidence that the notice law caused no increased complications for teens age 10-17 who were subject to the law.

III. THE CONTENTION THAT THE NOTICE LAW INCREASED BIRTHS TO TEENS IS BASED ON STATISTICS FOR ONLY THE LIMITED AREA OF THE MINNEAPOLIS CITY LIMITS AND THESE MUST BE VIEWED WITHIN THE CONTEXT OF OTHER DEMOGRAPHIC PHENOMENA IN MINNEAPOLIS AND THROUGHOUT THE STATE.

The plaintiff clinics claim that the notice law caused a 38.4% increase in the birth rate to teens age 15-17 by relying on a 38.4% increase in the birth rate for teens age 15-17 in Minneapolis between 1980-84. Pet.Br. at 12. Plaintiffs, purporting to quote Edward Ehlinger of the Minneapolis Dept. of Health, argue that the notice law "was the only factor that uniquely affected the fifteen to seventeen year old age group which could explain the difference." Pet.Br. at 12. Ehlinger, in fact, did not say that it was the "only" factor; he said merely that it "would be an important factor." T. 2030-31.

As this Court stated recently in *Webster v. Reproductive Health Services, Inc.*, 109 S.Ct. 3040, 3050 (1989), the states may "make a value judgment favoring childbirth over abortion." Thus, the fact that the notice law may have increased births to teens affected by the law is not a constitutional indictment against the law. Such a fact would merely imply that parental influence, as required by the law, had encouraged teens to give birth rather than abort. Such parental guidance is hardly a result which violates the Constitution. But, in fact, the data undermine the claim that the notice law caused in-

creased births to teens either in Minnesota generally or in Minneapolis specifically.

The clinics' assertion rests entirely on data gathered from the Minneapolis Department of Health concerning residents of the City of Minneapolis only. *See* P. Exh. 116; T. 2072 (Dr. Paul Gunderson). The data *do* show an increase of 38.4% between 1980-84 in births to teens between the age of 15-17 who are residents of Minneapolis. *See* Table 5. For 1980-87, the birth rate of Minneapolis teens aged 15-17 is 39.1, 41.2, 42.7, 47.3, 54.1, 58.2, 62.2, 64.5, respectively. When seen within the context of demographic statistics throughout Minnesota and within demographic changes in Minnesota in the 1980's, however, the allegation that the increase is due to the notice law is doubtful.

Initially, it is important to realize that teens who are residents of Minneapolis make up roughly only 6% of the teen population of Minnesota. In 1981, the 15-17 year old female population for Minnesota was 107,784, while the female population in Minneapolis for ages 15-17 was only 6,548. Thus, the 38.4% increase in the birth rate in Minneapolis was limited to 6% of the state's population of 15-17 year olds.

Statistics throughout Minnesota show that the 38.4% increase in the birth rate to Minneapolis residents age 15-17 between 1980 and 1984 was unique to Minneapolis and did not occur in metropolitan Minneapolis or in Minnesota in general, as Table 5 and Figure 5a show. *See also* T. 2073-74 (Dr. Paul Gunderson). The birth rates for ages 15-17 in years 1980-1986 in metropolitan Minneapolis are 17.4, 17.2, 17.2, 15.1, 17.4, 16.5, 17.8. And the birth rate for ages 15-17 between 1980-86 in Minnesota as a whole is 17.5, 17.5, 16.6, 14.6, 16.1, 15.1, 15.6. In addition, Minneapolis differs in birth rate from other geographic regions in Minnesota for other age groups besides 15-17, particularly for ages 10-14, 18-19, and 25-34, as Table 5 and Figures 5b-5e show. Finally, the Minneapolis birth rate for 15-17 year olds continues

to climb throughout 1986 and 1987, even after the notice law was enjoined in March, 1986.

The number of births to teens as a percentage of all births in Minneapolis must also be considered. In Table 7 and Figure 7a, it is apparent that the percentage of births to minors in Minneapolis is lower than that found in the nation generally, but exhibits a remarkably parallel trend to the national trend over time. The selective increase in birth rate in Minneapolis is reflected in the Minneapolis line in Figure 7a, insofar as the percentage of total births to teen births in Minneapolis rises contrary to the national and statewide trend between 1985-1987. But this increase occurs later than we would expect were it a result of a law enacted in 1981. The real increase in the percent of births to minors does not happen until several years later: 1985, 1986, and 1987, when the law was no longer in effect. The increase in the 15-17 year old Minneapolis birth rate during 1981-83 is *not* accompanied by an increase in births to minors as a percentage of total births. This clearly parallels both the Minnesota and national trends in its decline during 1981-83. The opposing trends in Minneapolis in birth rate to minors 15-17 (Figure 5a) and percent of births to minors (Figure 7a) indicate that birth rates must have been increasing in general in Minneapolis from 1981-83, regardless of age. This indicates that the increase in birth rates in Minneapolis to minors during the enactment period of the notice law was merely part of a larger trend effecting all minors and adult women, including those not subject to the law.

Moreover, the increase in births for Minneapolis teens age 15-17 leads to a different conclusion when the Minneapolis population is examined in more detail. When the Minneapolis births are broken down by race, and compared with data from the National Center for Health Statistics, the increase in births to girls under 18 is seen to be largely confined to the minority population, spe-

cifically the population of Asian-Pacifics. Figure 7b is a breakdown by race of the Minneapolis and national trend lines in Figure 7a. The Asian-Pacific Island percentage of births to minors deviates from the national trend and increases dramatically. All other races roughly parallel national trends in their decline, at least until 1986, when the notice law was enjoined. This would suggest that Asian-Pacifics are disproportionately impacting the birth rate for teens age 15-17 in Minneapolis. It is implausible that the notice law would selectively impact Asian-Pacifics more than other races in Minneapolis. Therefore, other explanations for the Minneapolis increase in birth rate should be explored.

Figure 8 suggests one possible explanation—a substantial increase in the population of Asian-Pacific teens. Figure 8 shows the percent of minority enrollment in the Minneapolis Public School District from 1971 to 1987. This Figure shows that the percentage of Asian enrollment sharply increases between 1980-1981 and continues to increase from 1981-1987. It is precisely during this time that the percent of all births to minors for the Asian-Pacific population experienced the greatest increase. These statistics show an unusual increase in both the Asian-Pacific population in Minneapolis and in the percentage of births to minors for this population.

This increase in births to Asian-Pacific minors must be compared with the abortion behavior of this population. The abortion rate is important to consider because the clinics' challenge to the notice law is predicated on the assumption that it keeps minors from getting abortions. The notice law can directly influence only the abortion rate and the birth rate is influenced by a reduction in the number of abortions. This implies that as the influence of the notice law on the abortion rate decreases, its potential influence on the birth rate should also decline. Yet, Dr. Paul Gunderson testified to the virtual nonexistence of abortion to the Asian-Pacific population. *See*

T. 2076 (Dr. Paul Gunderson commenting on the low abortion rate of Asians in Minnesota). It is improbable, therefore, that a group with an extremely low abortion rate before the law went into effect would be the most effected by the law in terms of birth rate. Some other factor(s), and not the notice law, must explain this increase.

In summary, the Minneapolis data do not support the contention that birth rates for teens in Minneapolis increased because of the notice law. When viewed in conjunction with the data from other regions of Minnesota, it appears that the notice law did not increase births to teens in Minneapolis. Together with the marked decrease in pregnancy rates and abortion rates in Minnesota, these data demonstrate that the notice law, as applied, is reasonably related to preserving parental authority and protecting the health of minors.

CONCLUSION

The judgment of the court of appeals should be affirmed in No. 88-1125 and reversed in No. 88-1309.

Respectfully submitted.

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APPENDIX

APPENDIX 1:

STATE REPORTING REQUIREMENTS AND PARENTAL CONSENT OR NOTICE OF ABORTION STATUTES

ALABAMA: Parental consent statute enacted in 1987; in effect and enforced since September 23, 1987. Ala. Code sec. 26-21-3 (Supp. 1988); *Ex parte: State of Alabama* and *Ex parte: Anonymous*, 531 So.2d 901 (Ala. 1988).

No reporting statute.

ALASKA: Parental consent statute enacted in 1970. Alaska Stat. sec. 18.16.010(a)(3) (1987). On October 21, 1976, an opinion of the Attorney General declared that this subsection is "clearly unconstitutional."

No reporting statute.

ARIZONA: Parental notice statute enacted in 1982; Ariz. Rev. Stat. Ann. sec. 36-2152 (1986); enjoined by federal court. New parental consent statute enacted May 22, 1989, with an intended effective date of September 15, 1989; preliminarily enjoined by federal court on September 15, 1989, and injunction extended on September 22, 1989. *Planned Parenthood v. Neeley*, No. CIV 89-489 TUC ACM (D.Ariz. 1989).

Reporting statute in effect from January 1, 1968. Ariz. Rev. Stat. Ann. sec. 36-340 and 341 (1986).

ARKANSAS: Parental consent statute enacted in 1969. Ark. Stat. Ann. sec. 41-2555 (Supp. 1985). Enjoined by federal court in 1980. *Smith v. Bentley*, 493 F.Supp. 916 (E.D. Ark. 1980). New parental notification statute enacted in 1989. Ark. Acts 270.

Reporting statute in effect from February 19, 1981. Ark. Stat. Ann. sec. 20-18-603 (1987).

CALIFORNIA: Parental consent statute enacted in 1987, with intended effective date of January 1, 1988.

Cal. Health & Safety Code sec. 25958 (Supp. 1988). Continuing state court injunction since December 28, 1987, entered on facial challenge to parental consent statute. *American Academy of Pediatrics v. Van de Kamp*, No. 884574 (Cal. Super. Ct. Dec. 28, 1987), *appeal docketed*, No. A040911 (1st Cir. Cal. App. argued August, 1989).

Reporting statute was added by statutes in 1971, amended and effective on June 30, 1973, and operative on July 1, 1973. Cal. Health & Safety Code sec. 25955.5 (1981).

COLORADO: No parental or reporting statute.

CONNECTICUT: No parental or reporting statute.

DELAWARE: Parental notice statute enacted on June 17, 1969, but not presently operative. Del. Code Ann. tit. 24, sec. 1790(b)(3) (1981).

Reporting statute enacted on June 17, 1969. Del. Code Ann. tit. 24, sec. 1790(c) (1981).

DISTRICT OF COLUMBIA: No parental or reporting statute.

FLORIDA: Parental consent statute enacted in 1979. Fla. Stat. Ann. sec. 390.001(4)(a) (West Supp. 1985). Enjoined by federal court on July 10, 1979, and subsequently declared unconstitutional; *Scheinberg v. Smith*, 482 F.Supp. 529 (S.D. Fla. 1979), *aff'd*, 659 F.2d 476 (5th Cir. 1981); parental consent statute enacted on June 15, 1988, with intended effective date of October 1, 1988; enjoined by federal court injunction on facial challenge on October 6, 1988, which was dissolved on February 13, 1989. *Jacksonville Clergy Consultation v. Martinez*, 707 F. Supp. 1301 (M.D. Fla. 1989), *appeal docketed*, No. 89-3127 (11th Cir.). Declared unconstitutional on May 12, 1989. *In re T.W.*, 543 So.2d 837 (Fla. App. 5 Dist. 1989).

Reporting statute in effect as of August 5, 1979. Fla. Stat. Ann. tit. 29, sec. 390.002 (1986).

GEORGIA: Parental notice statute enacted on April 14, 1987, with intended effective date of July 1, 1987. Ga. Code Ann. sec. 24A-4401 (Supp. 1988). Enjoined by federal injunction on June 30, 1987. *Planned Parenthood v. Harris*, 670 F. Supp. 971 (N.D. Ga. 1987). Amended parental notice statute enacted on March 31, 1988, with intended effective date of July 1, 1988; enjoined by continuing federal injunction on July 11, 1988. *Planned Parenthood v. Harris*, 691 F.Supp. 1419 (N.D. Ga. 1988).

There are two reporting statutes in the Georgia Code of 1981, which became effective on November 1, 1982. Ga. Code Ann. sec. 31-10-19, 16-12-141 (1988).

HAWAII: No parental or reporting statute.

IDAHO: Parental notice statute enacted in 1973; Idaho Code sec. 18-609(6) (1985).

No reporting statute.

ILLINOIS: Parental consent statute (Ill. Ann. Stat. ch. 38, para. 81-51 *et seq.* (Smith-Hurd 1989)) enacted in 1977 with an effective date of Jan. 1, 1978; enjoined by federal court in *Wynn v. Scott*, 448 F.Supp. 997 (N.D. Ill. 1978), *aff'd* 582 F.2d 1375 (7th Cir. 1978); *see also Wynn v. Carey*, 559 F.2d 193 (7th Cir. 1979). Parental notice statute enacted on November 2, 1983, with intended effective date of January 31, 1984; Ill. Rev. Stat. ch. 38, para. 81-65 (1988); enjoined by continuing federal court injunction since January 26, 1984. *Hartigan v. Zbaraz*, 584 F.Supp. 1452 (N.D. Ill. 1984), *aff'd*, 763 F.2d 1532 (7th Cir. 1985), *aff'd by equally divided court*, 108 S.Ct. 479 (1989).

Reporting statute amended in 1984. Ill. Rev. Stat. ch. 38, para. 81-30 (1989). Enjoined by continuing federal court temporary restraining order since 1984 from gathering abortion statistics, *Herbst v. Daley*, No. 84 C 5602 (N.D. Ill. July 1, 1984).

INDIANA: Parental consent statute enacted in 1971; enjoined by federal court. *Gary-Northwest Women's Serv. Inc. v. Bowen*, 418 F.Supp. 9 (N.D. Ind. 1976), *aff'd on other grounds*, 429 U.S. 1067 (1977). Parental notification statute enacted in 1982, with intended effective date of Sept. 1, 1982; Ind. Code Ann. sec. 35-1-58.5-2.5 (Burns Supp. 1986). Enjoined by federal court in *Indiana Planned Parenthood v. Pearson*, 716 F.2d 1127 (7th Cir. 1983); New parental consent statute enacted in 1984; enforced since September 1, 1984.

Reporting statutes in effect as of July 26, 1973. Ind. Code Ann. sec. 35-1-58.5-3 and sec. 35-1-58.5-5 (Burns Supp. 1988).

IOWA: No current parental involvement or reporting statute.

KANSAS: No parental involvement statute.

Reporting statute in effect as of July 1, 1975. Kan. Stat. Ann. sec. 65-445 (1985).

KENTUCKY: Parental consent statute enacted in 1982 with intended effective date of July 15, 1982. Ky. Rev. Stat. Ann. sec. 311-732 (1983). A temporary restraining order was entered against Kentucky's entire abortion statute on July 9, 1982, and the entire Act was declared unconstitutional on September 11, 1984. See *Eubanks v. Brown*, 604 F. Supp. 141 (W.D. Ky. 1984). The parental consent statute was amended in 1984 and again in 1986 with an intended effective date of July 15, 1986; temporary restraining order entered on July 10, 1986, on facial challenge and order lifted in approximately March of 1989. On Aug. 23, 1988, the district court partially enjoined the law, but upheld it as modified. See *Eubanks v. Wilkinson*, No. C82-0360-L(A), slip op. at 35-36 (W.D. Ky. Aug. 23, 1988), *appeal docketed*, No. 88-6085 (6th Cir. Sept. 22, 1988), No. 89-5353 (6th Cir. Mar. 21, 1989).

Reporting statute intended to be in effect as of July 15, 1982, but a temporary restraining order was entered against the State's entire abortion Act on July 9, 1982, and then the Act was declared unconstitutional on September 11, 1984. See *Eubanks v. Brown*.

LOUISIANA: Parental consent statute enacted in 1978, amended in 1980 and amended and reenacted in 1981 with this most recent version going into effect on July 23, 1981; La. Rev. Stat. Ann. sec. 40:1299.35.5 (West Supp. 1988); upheld by federal court in *Margaret S. v. Treen*, 597 F. Supp. 636 (E.D. La. 1984).

Reporting statute enacted in 1978. La. Rev. Stat. Ann. sec. 40:1299.35.10, 40:1299.35.11 (1989). Constitutionality upheld except to the extent that the statute requires doctors to provide the zip code or residence of the pregnant woman. *Margaret S. v. Edwards*, 488 F. Supp. 181 (E.D. La. 1980). Related reporting statute enacted in 1979. La. Rev. Stat. Ann. sec. 40:48 (1989).

MAINE: Parental notice statute enacted in 1979 with an intended effective date of Sept. 14, 1979, but it was enjoined on Sept. 13, 1979. Me. Rev. Stat. Ann. tit. 22, sec. 1597 (1980 and Supp. 1988); *Women's Community Health Center v. Cohen*, 477 F. Supp. 542 (D.Me. 1979).

Reporting statute in effect as of March 31, 1978. Me. Rev. Stat. Ann. tit. 22, sec. 1596 (1980).

MARYLAND: Parental notice statute enacted in 1982; Md. Health-Gen. Code Ann. sec. 20-103 (1987). Attorney General issued opinion that it is unconstitutional. 70 Op. Atty. Gen. (Dec. 31, 1985).

Reporting statute in effect since 1968. Md. Health-Gen. Code Ann. sec. 20-208(c) (1987).

MASSACHUSETTS: Parental consent statute enacted on August 2, 1974, with intended effective date of October 31, 1974; Mass. Ann. Laws ch. 112, sec. 12 (Michie/Law. Co-op. 1985); enjoined by federal court on October

30, 1974; constitutionality upheld. The Massachusetts statute was enjoined and never enforced until after this Court's decision in 1981. *Bellotti v. Baird*, 443 U.S. 622, 625 n.1 (1979); constitutionality upheld. *Planned Parenthood v. Bellotti*, 641 F.2d 1006 (1st Cir. 1981).

Reporting statute was in effect as of 1974. Mass. Ann. Laws ch. 112, sec. 12R (Michie/Law. Co-op. 1985).

MICHIGAN: No parental statute.

Reporting statute enacted in 1978. Pub. Act 368 of 1978. Mich. Stat. Ann. sec. 14.15 (2835) (Callaghan 1988).

MISSISSIPPI: Parental consent statute enacted in 1986, with intended effective date of July 1, 1986; Miss. Code Ann. sec. 41-41-53 (1988); enjoined by continuing, preliminary federal injunction since July 2, 1986, on facial challenge. *Barnes v. Mississippi*, No. J86-0458 (w) (S.D. Miss. 5/13/87).

No reporting statute.

MISSOURI: Parental consent statute enacted on June 14, 1974, with intended effective date of June 14, 1974; upheld by federal court on January 31, 1975. *Planned Parenthood v. Danforth*, 392 F. Supp. 1362 (1975); parental consent statute enacted in 1979 with intended effective date of June 29, 1979; Mo. Ann. Stat. sec. 188.028 (Vernon Supp. 1989); enjoined by federal court injunction from time of enactment until 1985. *See Planned Parenthood v. Ashcroft*, 483 F. Supp. 679, 683 (W.D. Mo. 1980); constitutionality upheld in *Planned Parenthood v. Ashcroft*, 462 U.S. 476 (1983); subject to renewed challenge; injunction lifted in 1986. *T.L.J. v. Webster*, 792 F.2d 734 (8th Cir. 1986).

Reporting statutes have been in effect since June 29, 1979. Mo.Ann. Stat. sec. 188.052 and 188.055 (Vernon Supp. 1989); upheld in *Planned Parenthood v. Danforth*, 428 U.S. 52 (1976).

MONTANA: Parental notice statute enacted in 1974, but not presently operative. Mont. Code Ann. sec. 50-20-107 (1987).

Reporting statute in effect since 1974. Mont. Code Ann. sec. 50-20-110 (1987).

NEBRASKA: Parental notice statute enacted in 1981 with effective date of May 29, 1981; Neb. Rev. Stat. sec. 28-347 (1985); enjoined on September 16, 1983, in *Orr v. Knowles*, No. 81-0-301 (D.Neb. Sept. 16, 1983).

Reporting statute in effect as of July 1, 1978. Neb. Rev. Stat. sec. 28-343, 344, 345 (1985). Declared unconstitutional and enjoined insofar as statute requires physicians to make an official report of "prescribed" abortions. *Women's Services, P.C. v. Thone*, 483 F. Supp. 1022 (D. Neb. 1979).

NEVADA: Parental notice statute enacted on June 14, 1985, with intended effective date of July 1, 1985; Nev. Rev. Stat. sec. 442.255 (1986 & Supp. 1988); enjoined by continuing federal injunction since June 28, 1985, entered on facial challenge; appeal pending before Ninth Circuit since July 24, 1985. *Glick v. McKay*, 616 F. Supp. 322 (D. Nev. 1985), *appeal docketed*, No. 85-2335 (9th Cir. 1985).

Reporting statute in effect as of 1973. Nev. Rev. Stat. sec. 442.260 (1986).

NEW HAMPSHIRE: No parental or reporting statute.

NEW JERSEY: No parental or reporting statute.

NEW MEXICO: No parental statute.

Reporting statute enacted in 1977. N.M. Stat. Ann. sec. 24-14-18 (1986).

NEW YORK: No parental statute.

Reporting statute enacted in 1953 and most recently amended in 1987, effective Jan. 1, 1988. N.Y. Pub. Health Law sec. 4160, 4161 (McKinney 1989).

NORTH CAROLINA: No parental or reporting statute.

NORTH DAKOTA: Parental consent statute enacted in 1981; N.D. Cent. Code sec. 14-02.1-03.1 (Supp. 1987).

Reporting statute in effect since 1975; N.D. Cent. Code sec. 14-02.1-07; upheld in *Leigh v. Olson*, 497 F. Supp. 1340 (D. N.D. 1980).

OHIO: Parental notice statute enacted on November 20, 1985, with intended effective date of March 24, 1986; Ohio Rev. Code Ann. sec. 2151.85, 2919.12, and 2505.73 (Page Supp. 1985); enjoined by continuing federal injunction on facial challenge since March 31, 1986 (TRO), which became a preliminary injunction on April 22, 1986; *Akron Center for Reproductive Health v. Slaby*, 633 F. Supp. 1123 (N.D. Ohio 1986), *aff'd*, 854 F.2d 852 (6th Cir. 1988), *prob. juris. noted sub nom., Ohio v. Akron Center for Reproductive Health, Inc.*, U.S. No. 88-805.

No reporting statute.

OKLAHOMA: No parental law.

Reporting statute in effect as of October 1, 1978. Okla. Stat. Ann. tit. 63, sec. 1-738, 1-739 (West 1981).

OREGON: No parental law.

Reporting statute enacted in 1983. Or. Rev. Stat. Ann. sec. 435.496 (1987).

PENNSYLVANIA: Parental consent statute enacted in 1982; Pa. Stat. Ann. tit. 18, sec. 3206 (Purdon 1983); parental consent statute amended on March 25, 1988, with intended effective date of April 24, 1988; enjoined by continuing federal injunction since April 21, 1988, on May 23, 1988. *Planned Parenthood v. Casey*, 686 F.Supp. 1089 (E.D. Pa. 1988).

Reporting statute enacted in 1982. Pa. Stat. Ann. tit. 18, sec. 3214 (Purdon 1983). Partially enjoined in

American College of Obstetricians and Gynecologists v. Thornburgh, 613 F.Supp. 656 (E.D. Penn. 1985). The statute was amended on March 3, 1988, with an intended effective date of April 24, 1988. On April 21, 1988, a federal court granted a temporary restraining order and enjoined public disclosure of reports filed pursuant to sec. 3214(f). *Planned Parenthood v. Casey*, 686 F.Supp. at 1092. Then, the court permanently enjoined certain provisions of the reporting statute on May 23, 1988. *Id.* at 1129-1134.

RHODE ISLAND: Parental consent law enacted in 1982; R.I. Gen. Laws sec. 23-4.7-6 (Supp. 1985).

No reporting statute.

SOUTH CAROLINA: Parental consent statute was enacted in 1974; S.C. Code Ann. sec. 44-41-30 (Law. Co-op. 1985); enjoined by federal court; *Floyd v. Anders*, 440 F.Supp. 535 (D.S.C. 1977).

Reporting statute in effect as of 1975. S.C. Code Ann. sec. 44-41-60 (Law. Co-op. 1985).

SOUTH DAKOTA: Parental consent statute was enacted in 1973, but it is not presently operative. S.D. Codified Laws Ann. sec. 34-23A-7 (1986).

Reporting statute in effect as of 1973. S.D. Codified Laws Ann. sec. 34-23A-10 (1986).

TENNESSEE: Parental consent statute enacted in 1978; Tenn. Code Ann. sec. 39-4-202 (1982); enjoined by federal court in 1979; *Planned Parenthood v. Alexander*, No. 79-843 (Tenn. Ch. Ct. Oct. 21, 1979); parental consent statute enacted May 12, 1988, with intended effective date of July 1, 1989; enjoined by continuing federal injunction on facial challenge on June 30, 1989; and ruled unconstitutional on July 24, 1989, in *Planned Parenthood v. McWherter*, 716 F.Supp. 1064 (M.D. Tenn. 1989), *appeal docketed*, No. 89-6026 (6th Cir. Aug. 15, 1989).

Reporting statute in effect as of 1973. Tenn. Code Ann. sec. 39-4-203 (1982).

TEXAS: No parental or reporting statute.

UTAH: Parental notice statute enacted in 1974; Utah Code Ann. sec. 76-7-304 (1978); enjoined by federal court injunction; *L.R. v. Hanson*, No. 80-78 (D. Utah Feb. 8, 1980); constitutionality upheld in *H.L. v. Matheson*, 450 U.S. 398 (1981); subject to renewed challenge in 1986; *H.B. v. Wilkinson*, 639 F.Supp. 952 (D. Utah 1986). Upheld and in effect.

Reporting statute in effect from 1974 and amended in 1981. Utah Code Ann. sec. 76-7-313 (1978).

VERMONT: No parental or reporting statute.

VIRGINIA: No parental or reporting statute.

WASHINGTON: Parental consent statute enacted in 1970 with effective date of May 14, 1970; Wash. Rev. Code sec. 9.02.070 (1974). Enjoined on January 7, 1975, in *State v. Koome*, 84 Wash.2d 901, 530 P.2d 260 (1975).

No reporting statute.

WEST VIRGINIA: Parental notice statute enacted in 1984; W. Va. Code sec. 16-2F-3 (1985).

No reporting statute.

WISCONSIN: No parental statute.

Reporting statute enacted in 1985 and in effect as of Nov. 1, 1986. Wis. Stat. Ann. sec. 69.186 (West 1989).

WYOMING: Parental consent and notice statute enacted in 1989 with an effective date of June 8, 1989. Wyo. Stat. sec. 35-6-118 (1989).

Reporting statute in effect after May 27, 1977. Wyo. Stat. sec. 35-6-107 and 108 (1988).

Table 1
Abortions, Births, and Pregnancies*

YEAR	AGE	ABORTIONS	BIRTHS	(FETAL DEATHS)	PREGNANCIES
1973	10-17	.	2406	24	.
	18-19	.	4509	46	.
	20-24	.	18276	123	.
	25-54	.	27211	277	.
1974	10-17	.	2330	35	.
	18-19	.	4849	37	.
	20-24	.	19096	174	.
	25-54	.	28198	267	.
1975	10-17	1507	2427	24	3958
	18-19	1758	4693	43	6494
	20-24	2702	19137	162	22001
	25-54	2161	28746	238	31145
1976	10-17	2050	2309	22	4391
	18-19	2511	4469	37	7017
	20-24	3643	18630	156	22431
	25-54	2895	29678	264	32837
1977	10-17	2274	2280	19	4573
	18-19	2693	4804	50	7347
	20-24	4528	19883	133	24524
	25-54	3529	32492	261	36282
1978	10-17	2180	2089	18	4271
	18-19	3054	4844	40	7738
	20-24	5066	19851	141	25058
	25-54	3872	33710	287	37849
1979	10-17	2308	2035	21	4364
	18-19	3293	4720	44	8057
	20-24	5683	20938	126	26747
	25-54	4355	35823	245	40423

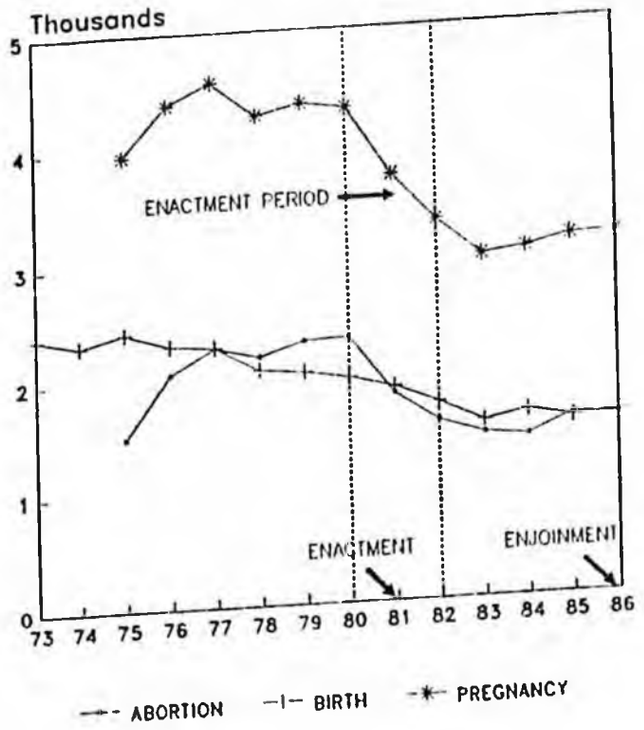
* Source: Raw data provided by the Minnesota Department of Health. Reported abortions, births, (fetal deaths) and pregnancies are those occurring in Minnesota, with non-residents and woman of unknown age excluded. Pregnancies = abortions + births + fetal deaths. Assumes negligable occurrence of abortion to those of age 9 and below and age 55 and above. Abortion data unavailable for 1973 and 1974.

Table 1 (Continued)
Abortions, Births, and Pregnancies

YEAR	AGE	ABORTIONS	BIRTHS	(FETAL DEATHS)	PREGNANCIES
1980	10-17	2327	1974	14	4315
	18-19	3380	4883	38	8301
	20-24	6054	21899	140	28093
	25-54	4716	37238	246	42198
1981	10-17	1820	1876	18	3714
	18-19	3064	4602	31	7697
	20-24	6047	21638	135	27820
	25-54	4601	38854	269	43804
1982	10-17	1584	1727	16	3307
	18-19	2799	4218	37	7052
	20-24	5903	21161	132	27256
	25-54	5180	39581	242	45003
1983	10-17	1432	1538	17	2987
	18-19	2547	3641	35	6223
	20-24	5467	19319	137	24943
	25-54	5012	39309	260	44581
1984	10-17	1395	1617	19	3031
	18-19	2586	3502	24	6112
	20-24	6032	18864	136	25032
	25-54	5525	40941	282	46748
1985	10-17	1570	1537	15	3122
	18-19	2531	3401	26	5958
	20-24	6057	18409	109	24585
	25-54	5812	42157	281	48250
1986	10-17	1545	1573	15	3133
	18-19	2372	3096	25	5493
	20-24	5724	16959	109	22792
	25-54	6035	42269	240	48544

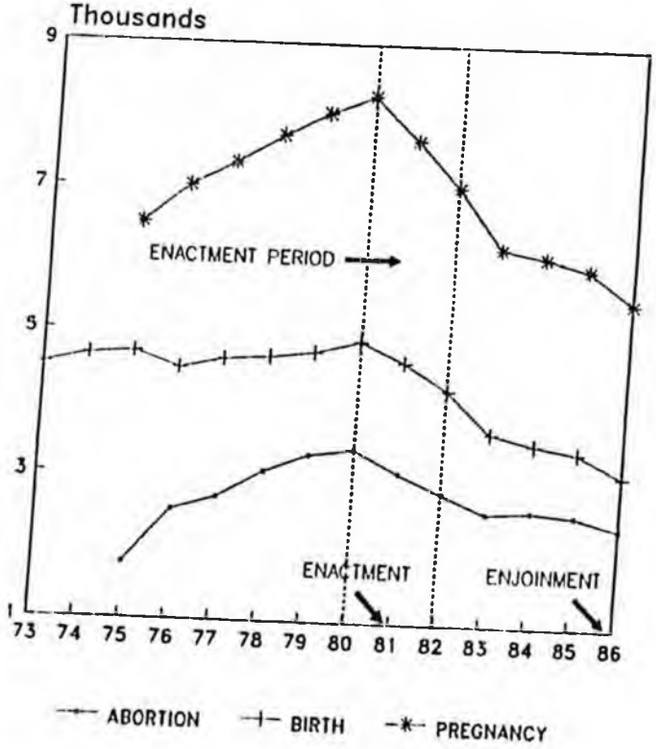
* Source: Raw data provided by the Minnesota Department of Health. Reported abortions, births, (fetal deaths) and pregnancies are those occurring in Minnesota, with non-residents and women of unknown age excluded. Pregnancies = abortions + births + fetal deaths. Assumed negligable occurrence of abortion to those of age 9 and below and age 55 and above. Abortion data unavailable for 1973 and 1974.

Figure 1a
Abortions, Births, and Pregnancies
Ages 10–17



14a

Figure 1b
Abortions, Births, and Pregnancies
Ages 18–19



15a

Figure 1c
Abortions, Births, and Pregnancies
Ages 20–24

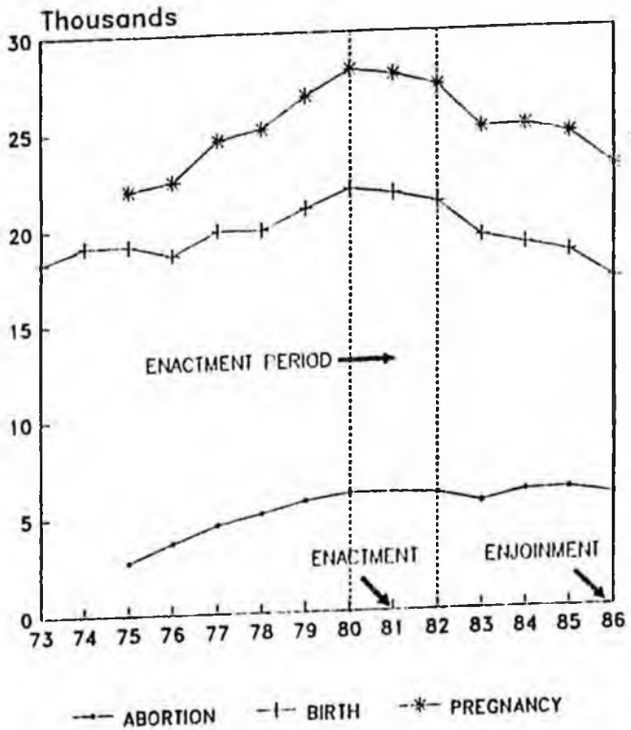


Figure 1d
Abortions, Births, and Pregnancies
Ages 25–54

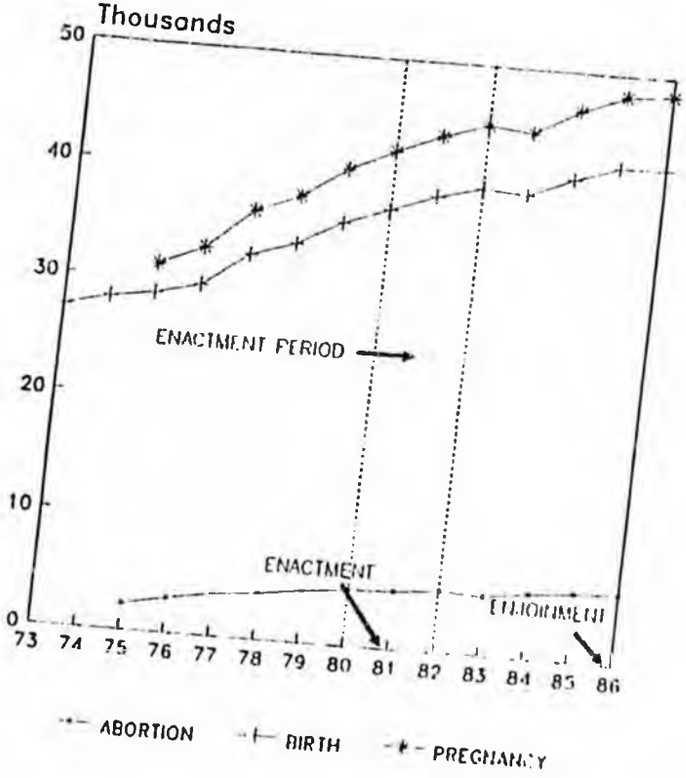


Table 2
Abortion, Birth, and Pregnancy Rates*

YEAR	AGE	POPULATION	ABORTION RATE	BIRTH RATE	PREGNANCY RATE
1973	10-17	319598	.	7.5	.
	18-19	72982	.	61.8	.
	20-24	177400	.	103.0	.
	25-54	852953	.	41.7	.
1974	10-17	318010	.	7.3	.
	18-19	73248	.	63.5	.
	20-24	178011	.	106.7	.
	25-54	859470	.	42.8	.
1975	10-17	310605	4.9	7.8	12.7
	18-19	85997	20.4	54.6	75.5
	20-24	178645	15.1	107.1	123.2
	25-54	883332	3.2	42.1	45.6
1976	10-17	305394	6.8	7.6	14.4
	18-19	86924	28.9	51.4	80.7
	20-24	183437	19.9	101.6	122.3
	25-54	899068	4.1	42.5	47.0
1977	10-17	296203	7.7	7.7	15.4
	18-19	86249	31.2	53.4	85.2
	20-24	187586	24.1	105.9	130.7
	25-54	709131	5.0	45.8	51.2
1978	10-17	288244	7.6	7.2	14.8
	18-19	85898	35.6	54.2	90.3
	20-24	192125	26.4	103.3	130.4
	25-54	724824	5.3	46.5	52.2
1979	10-17	282243	8.2	7.2	15.5
	18-19	85227	38.6	55.4	94.5
	20-24	186312	29.0	106.7	136.3
	25-54	744422	5.9	48.1	54.3

* Rate per 1000 female population. Source: Raw data provided by the Minnesota Department of Health. Rates reflect abortions, births, (fetal deaths), and pregnancies occurring in Minnesota, with non-residents and women of unknown age excluded. Assumes negligable occurrence of abortion to those of age 9 and below and age 55 and above. Abortion data unavailable for 1973 and 1974.

Table 2 (Continued)
Abortion, Birth, and Pregnancy Rates*

YEAR	AGE	POPULATION	ABORTION RATE	BIRTH RATE	PREGNANCY RATE
1980	10-17	276088	8.4	7.2	15.6
	18-19	84247	40.1	58.0	98.5
	20-24	198731	30.5	110.2	141.4
	25-54	754692	6.3	49.3	55.9
1981	10-17	267488	6.8	7.0	13.9
	18-19	80222	38.2	57.4	98.0
	20-24	198269	30.5	109.1	140.3
	25-54	770544	6.3	50.2	56.9
1982	10-17	262199	6.0	6.8	12.8
	18-19	77282	36.2	54.6	91.3
	20-24	197924	30.1	106.9	137.7
	25-54	787094	6.6	50.3	57.2
1983	10-17	263225	5.4	5.8	11.4
	18-19	77508	32.9	47.0	80.3
	20-24	198460	27.7	97.3	125.7
	25-54	789802	6.4	49.8	56.5
1984	10-17	249162	5.6	6.5	12.2
	18-19	74080	34.9	47.3	82.5
	20-24	199312	30.3	94.7	125.6
	25-54	798979	6.9	51.2	58.5
1985	10-17	251107	6.3	6.1	12.4
	18-19	74810	33.9	45.6	79.9
	20-24	200994	30.2	91.6	122.3
	25-54	808028	7.2	52.3	59.9
1986	10-17	251625	6.1	6.3	12.4
	18-19	74689	31.8	41.5	73.5
	20-24	201415	28.4	84.2	113.2
	25-54	808824	7.4	52.3	60.0

* Rate per 1000 female population. Source: Raw data provided by the Minnesota Department of Health. Rates reflect abortions, births, (fetal deaths), and pregnancies occurring in Minnesota, with non-residents and women of unknown age excluded. Assumes negligable occurrence of abortion to those of age 9 and below and age 55 and above. Abortion data unavailable for 1973 and 1974.

Figure 2a
Abortion, Birth, and Pregnancy Rates
Ages 10–17

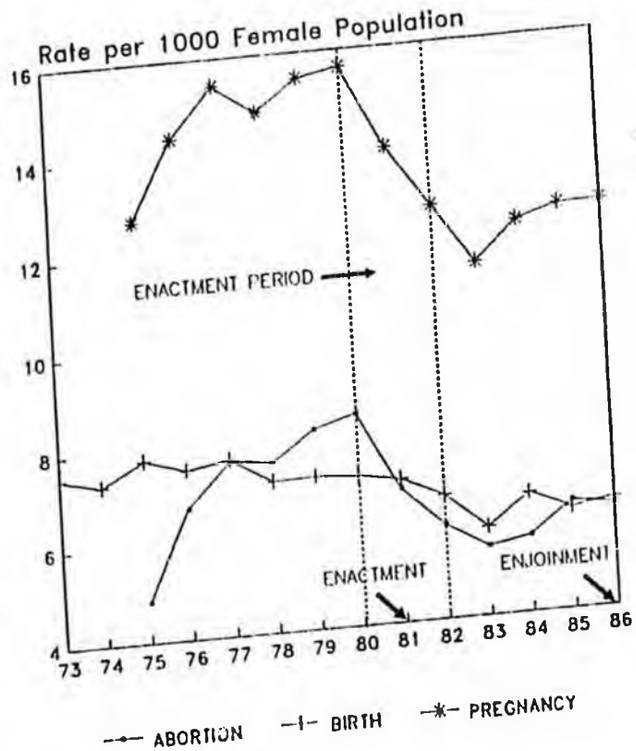


Figure 2b
Abortion, Birth, and Pregnancy Rates
Ages 18–19

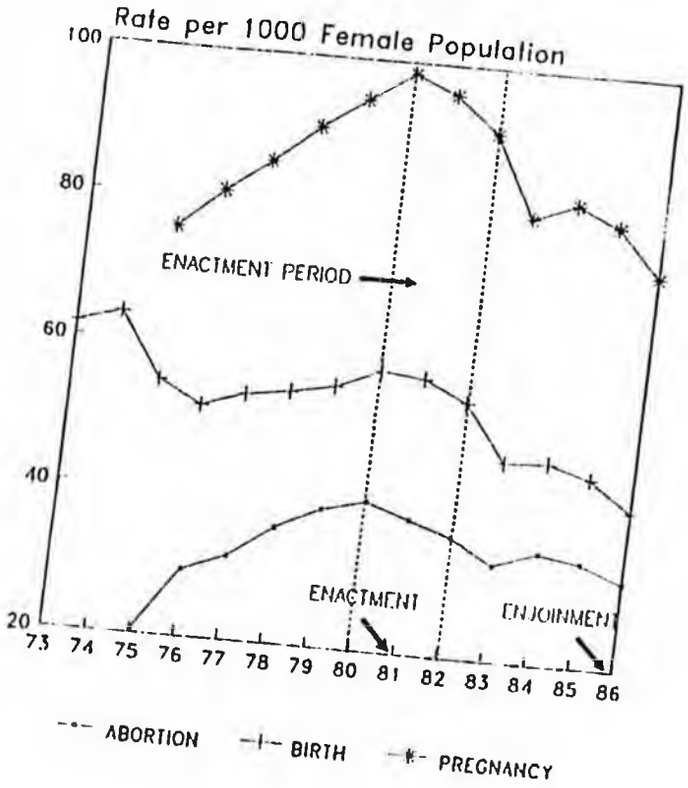


Figure 2c
Abortion, Birth, and Pregnancy Rates
Ages 20–24

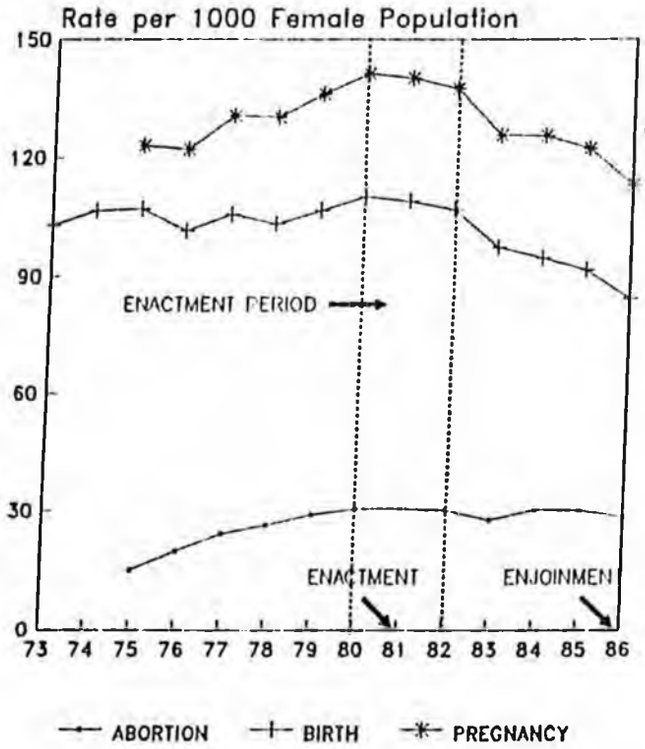


Figure 2d
Abortion, Birth, and Pregnancy Rates
Ages 25–54

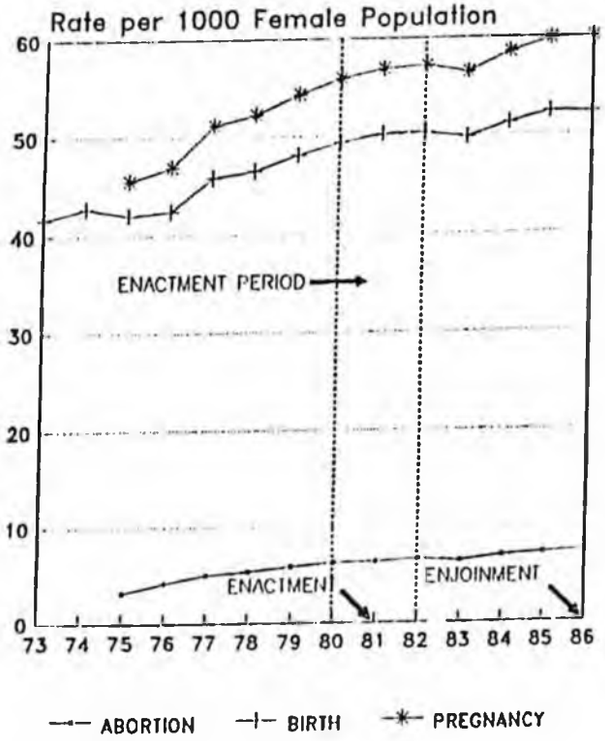


Table 3
Number and Percentage of Abortions
with Gestation Age > 12 Weeks*

YEAR	AGE	TOTAL NUMBER OF ABORTIONS	ABORTIONS PERFORMED AT > 12 WKS GESTATION	PERCENTAGE OF ABORTIONS PERFORMED AT > 12 WKS GESTATION
1975	10-17	1507	270	17.9
	18-19	1758	228	13.0
	20-24	2702	275	10.2
	25-54	2181	189	8.7
1976	10-17	2060	470	22.8
	18-19	2511	426	17.0
	20-24	3643	446	12.2
	25-54	2895	308	10.6
1977	10-17	2274	474	20.8
	18-19	2693	464	17.2
	20-24	4528	512	11.3
	25-54	3529	368	10.4
1978	10-17	2186	403	18.4
	18-19	3054	449	14.7
	20-24	5060	505	10 0
	25-54	3872	302	7.8
1979	10-17	2308	432	18.7
	18-19	3293	460	14.0
	20-24	5683	591	10.4
	25-54	4355	327	7.5
1980	10-17	2327	510	21.9
	18-19	3380	562	16.6
	20-24	6054	681	11.2
	25-54	4718	403	8.5

* Source: Raw data provided by the Minnesota Department of Health. Table reflects abortions occurring in Minnesota, with non-residents and women of unknown age excluded. Assumes negligable occurrence of abortion to those of age 9 and below and age 55 and above.

Table 3 (Continued)
Number and Percentage of Abortions
with Gestation Age > 12 Weeks*

YEAR	AGE	TOTAL NUMBER OF ABORTIONS	ABORTIONS PERFORMED AT > 12 WKS GESTATION	PERCENTAGE OF ABORTIONS PERFORMED AT > 12 WKS GESTATION
1981	10-17	1820	365	20.1
	18-19	3084	462	15.1
	20-24	6047	625	10.3
	25-54	4881	363	7.4
1982	10-17	1564	322	20.6
	18-19	2799	425	15.2
	20-24	5963	631	10.6
	25-54	5180	412	8.0
1983	10-17	1432	334	23.3
	18-19	2547	419	16.5
	20-24	5487	626	11.4
	25-54	5012	370	7.4
1984	10-17	1395	360	25.8
	18-19	2586	489	18.9
	20-24	6032	786	13.0
	25-54	5525	461	8.3
1985	10-17	1570	361	23.0
	18-19	2531	441	17.4
	20-24	6067	723	11.9
	25-54	5812	450	7.8
1986	10-17	1545	333	21.6
	18-19	2372	435	18.3
	20-24	5724	668	11.7
	25-54	6035	516	8.6

* Source: Raw data provided by the Minnesota Department of Health. Table reflects abortions occurring in Minnesota, with non-residents and women of unknown age excluded. Assumes negligable occurrence of abortion to those of age 9 and below and age 55 and above.

Figure 3a
Number of Abortions
with Gestation Age > 12 Weeks

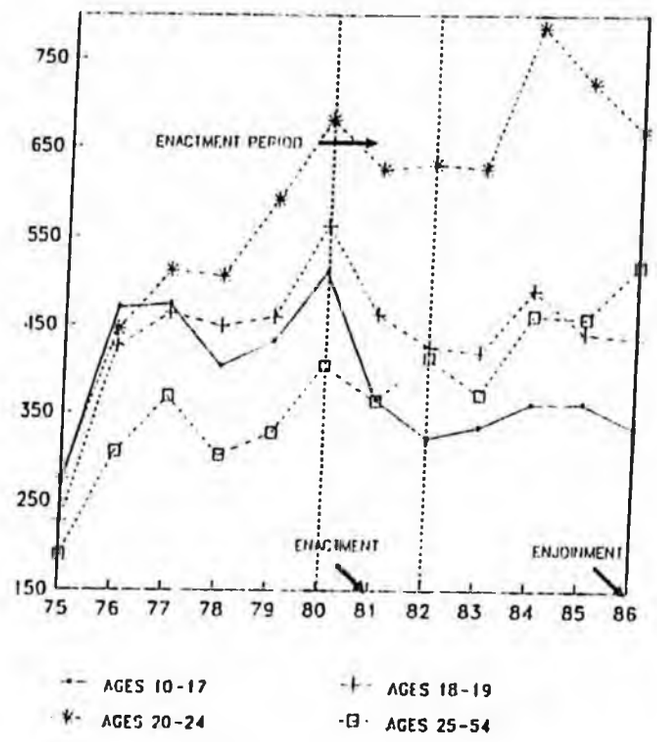


Figure 3b
Percentage of Abortions with Gestation Age > 12 Weeks

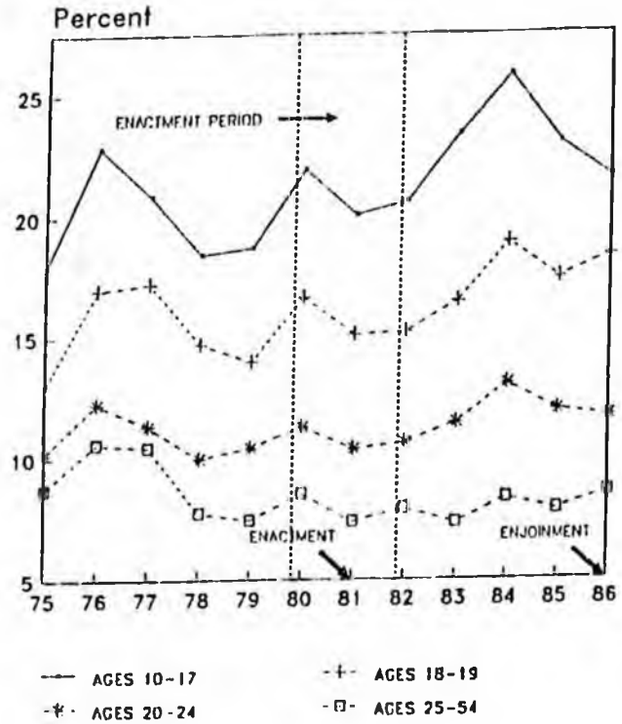


Table 4
Number and Percentage of Abortions with Reported Medical Complications*

YEAR	AGE	TOTAL NUMBER OF ABORTIONS	ABORTIONS WITH MEDICAL COMPLICATIONS	PERCENTAGE OF ABORTIONS WITH MEDICAL COMPLICATIONS
1975	10-17	1507	16	1.06
	18-19	1758	25	1.42
	20-24	2702	32	1.18
	25-54	2161	26	1.20
1976	10-17	2060	11	0.53
	18-19	2511	7	0.28
	20-24	3643	20	0.55
	25-54	2805	21	0.73
1977	10-17	2274	5	0.22
	18-19	2693	6	0.22
	20-24	4528	14	0.31
	25-54	3529	11	0.31
1978	10-17	2136	8	0.37
	18-19	3054	19	0.62
	20-24	5066	26	0.51
	25-54	3872	19	0.49
1979	10-17	2308	3	0.13
	18-19	3293	2	0.06
	20-24	5883	8	0.14
	25-54	4355	5	0.11
1980	10-17	2327	6	0.26
	18-19	3380	10	0.30
	20-24	6054	8	0.13
	25-54	4710	14	0.30

* Source: Raw data provided by the Minnesota Department of Health. Table reflects abortions occurring in Minnesota, with non-residents and women of unknown age excluded. Assumes negligible occurrence of abortion to those of age 9 and below and age 55 and above.

Table 4 (Continued)
Number and Percentage of Abortions
with Reported Medical Complications*

YEAR	AGE	TOTAL NUMBER OF ABORTIONS	ABORTIONS WITH MEDICAL COMPLICATIONS	PERCENTAGE OF ABORTIONS WITH MEDICAL COMPLICATIONS
1981	10-17	1820	0	0.00
	18-19	3084	8	0.26
	20-24	6047	21	0.35
	25-54	4881	11	0.23
1982	10-17	1564	10	0.64
	18-19	2799	10	0.36
	20-24	5963	38	0.64
	25-54	5180	46	0.89
1983	10-17	1432	10	0.70
	18-19	2547	20	0.79
	20-24	5487	49	0.89
	25-54	5012	51	1.02
1984	10-17	1395	14	1.00
	18-19	2588	29	1.12
	20-24	6032	62	1.03
	25-54	5525	66	1.19
1985	10-17	1570	13	0.83
	18-19	2531	12	0.47
	20-24	6067	76	1.25
	25-54	5812	60	1.03
1986	10-17	1545	8	0.52
	18-19	2372	15	0.63
	20-24	5724	48	0.84
	25-54	6035	74	1.23

* Source: Raw data provided by the Minnesota Department of Health. Table reflects abortions occurring in Minnesota, with non-residents and women of unknown age excluded. Assumes negligable occurrence of abortion to those of age 9 and below and age 55 and above.

Figure 4a
Number of Abortions
with Reported Medical Complications

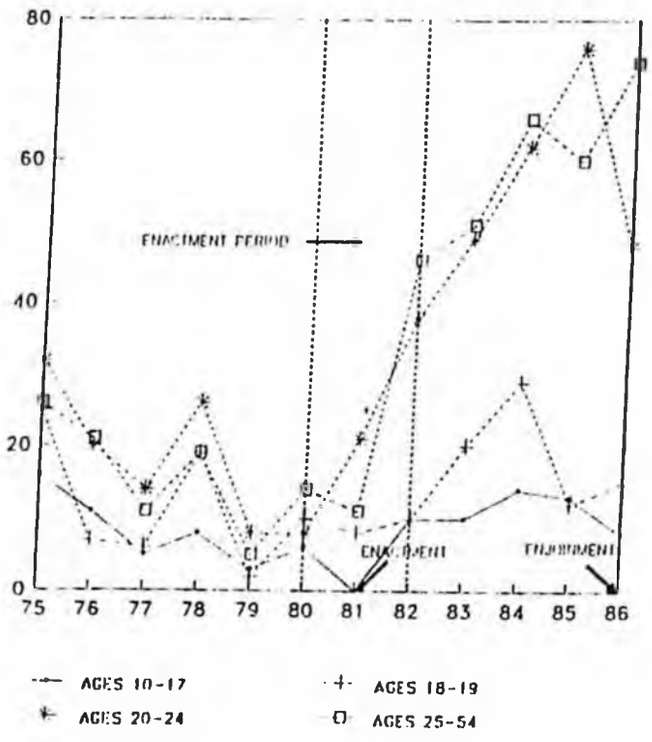


Figure 4b
Percentage of Abortions with Reported Medical Complications

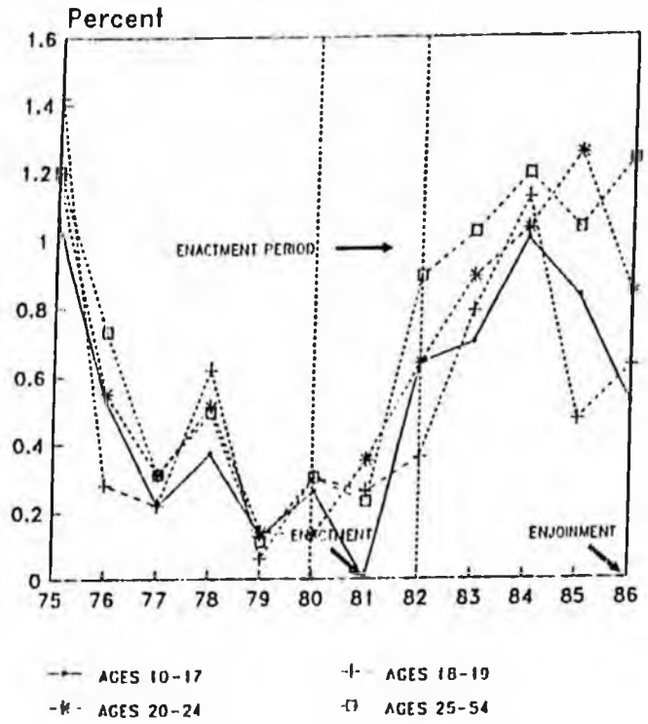


Table 5
Birth Rate for Different Regions of Minnesota*

YEAR	AGE	MINNESOTA	METROPOLITAN MINNEAPOLIS**	MINNEAPOLIS
1973	10-14	0.4	0.4	.
	15-17	20.4	20.4	.
	18-19	63.7	53.9	.
	20-24	100.0	96.1	.
	25-34	95.4	87.2	.
1974	10-14	0.3	0.3	.
	15-17	19.1	19.1	.
	18-19	64.5	57.4	.
	20-24	109.3	106.0	.
	25-34	97.8	83.3	.
1975	10-14	0.4	0.4	.
	15-17	21.0	18.7	.
	18-19	56.1	46.7	.
	20-24	110.2	91.3	.
	25-34	93.9	86.9	.
1976	10-14	0.4	0.4	1.7
	15-17	19.7	18.2	36.7
	18-19	52.9	47.0	48.8
	20-24	104.5	85.0	82.9
	25-34	93.8	85.8	87.9
1977	10-14	0.3	0.3	1.1
	15-17	19.6	18.3	39.4
	18-19	55.1	48.1	58.1
	20-24	108.1	88.5	84.4
	25-34	90.8	89.6	72.9

* Rate per 1000 female population. Sources: Raw data provided by the Minnesota and Minneapolis Departments of Health. Non residents and women of unknown age are excluded. Minneapolis data were provided in a form unsuitable for figuring rates for ages 35-44 or above.

** Metropolitan Minneapolis is defined as a seven-county region including Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington Counties.

Table 5 (Continued)
Birth Rate
for Different Regions of Minnesota*

YEAR	AGE	MINNESOTA	METROPOLITAN MINNEAPOLIS**	MINNEAPOLIS
1978	10-14	0.4	0.4	1.3
	15-17	17.8	16.0	35.4
	18-19	55.0	51.7	61.5
	20-24	106.6	85.3	63.2
	25-34	100.3	90.0	73.7
1979	10-14	0.3	0.4	1.7
	15-17	17.8	17.6	39.7
	18-19	56.9	52.6	56.3
	20-24	110.0	88.4	67.8
	25-34	102.8	91.9	74.8
1980	10-14	0.3	0.4	1.6
	15-17	17.5	17.4	39.1
	18-19	59.3	53.8	62.9
	20-24	113.4	92.3	71.3
	25-34	104.7	95.3	77.5
1981	10-14	0.3	0.4	1.3
	15-17	17.5	17.2	41.2
	18-19	59.1	53.9	65.0
	20-24	112.4	94.0	71.5
	25-34	105.8	98.9	82.7
1982	10-14	0.4	0.5	2.2
	15-17	16.6	17.2	42.7
	18-19	56.2	52.1	65.9
	20-24	109.9	88.8	69.8
	25-34	104.6	97.3	84.6

* Rate per 1000 female population. Sources: Raw data provided by the Minnesota and Minneapolis Departments of Health. Non-residents and women of unknown age are excluded. Minneapolis data were provided in a form unsuitable for figuring rates for ages 35-44 or above.

** Metropolitan Minneapolis is defined as a seven-county region including Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington Counties.

Table 5 (Continued)
Birth Rate
for Different Regions of Minnesota*

YEAR	AGE	MINNESOTA	METROPOLITAN MINNEAPOLIS**	MINNEAPOLIS
1983	10-14	0.3	0.5	1.9
	15-17	14.6	15.1	47.3
	18-19	48.5	45.4	58.1
	20-24	100.0	80.1	64.3
	25-34	103.3	97.3	83.2
1984	10-14	0.3	0.5	1.3
	15-17	16.1	17.4	54.1
	18-19	48.7	45.7	63.1
	20-24	97.4	79.5	66.4
	25-34	106.6	102.3	85.9
1985	10-14	0.4	0.6	2.1
	15-17	15.1	16.5	58.2
	18-19	47.0	45.8	73.4
	20-24	94.4	80.1	69.7
	25-34	108.6	108.1	89.8
1986	10-14	0.4	0.5	2.0
	15-17	15.6	17.8	62.2
	18-19	42.6	44.0	81.2
	20-24	88.6	74.2	70.6
	25-34	107.6	108.3	87.5
1987	10-14	.	.	2.2
	15-17	.	.	64.5
	18-19	.	.	92.2
	20-24	.	.	67.5
	25-34	.	.	84.2

* Rate per 1000 female population. Sources: Raw data provided by the Minnesota and Minneapolis Departments of Health. Non-residents and women of unknown age are excluded. Minneapolis data were provided in a form unsuitable for figuring rates for ages 35-44 or above.

** Metropolitan Minneapolis is defined as a seven-county region including Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington Counties.

Figure 5a
Birth Rate
for Different Regions of Minnesota
Ages 15–17

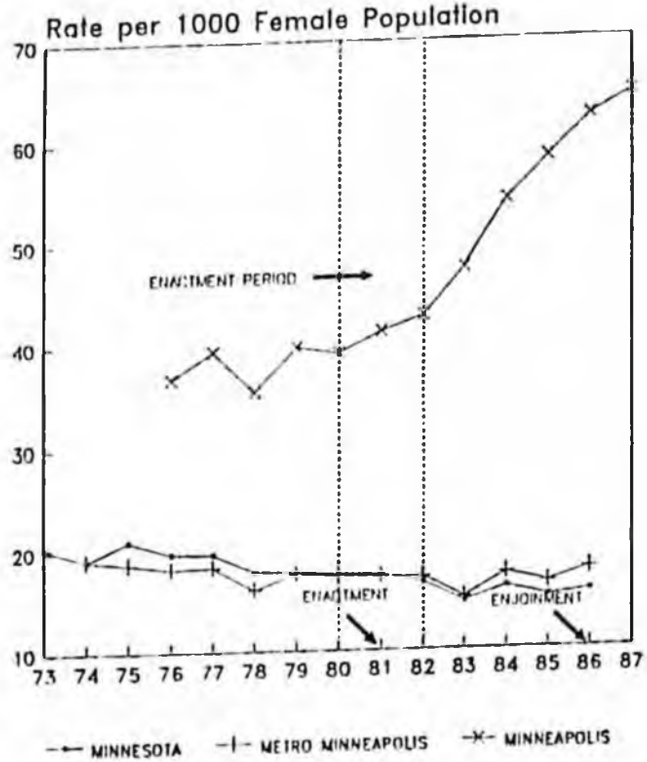


Figure 5b
Birth Rate
for Different Regions of Minnesota
Ages 10–14

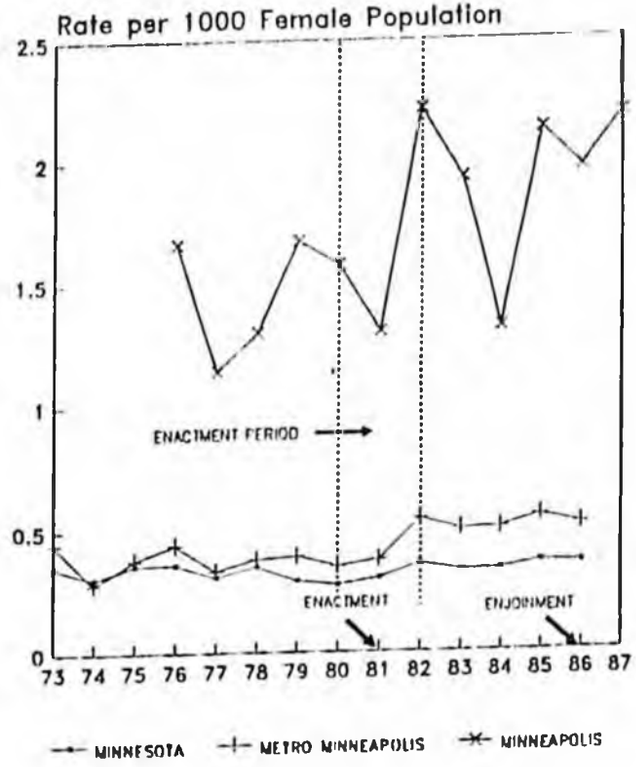


Figure 5c
Birth Rate
for Different Regions of Minnesota
Ages 18–19

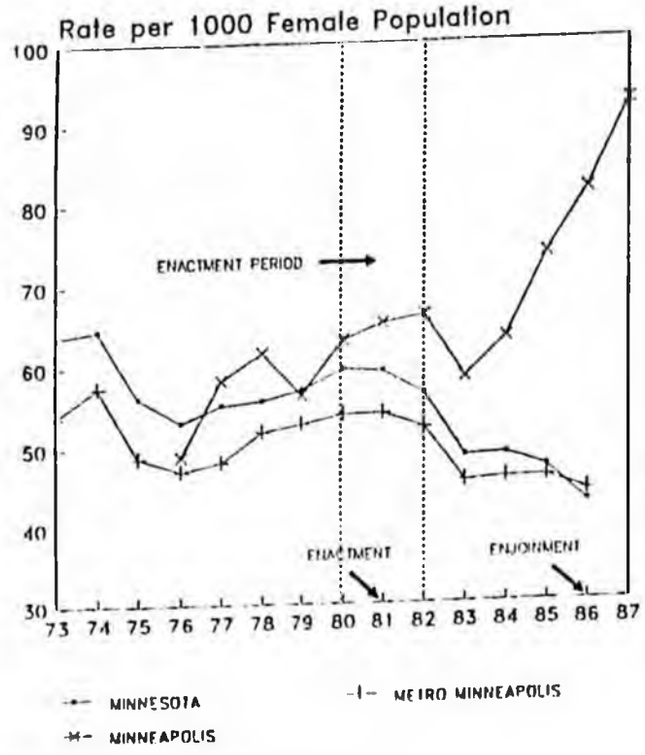


Figure 5d
Birth Rate
for Different Regions of Minnesota
Ages 20–24

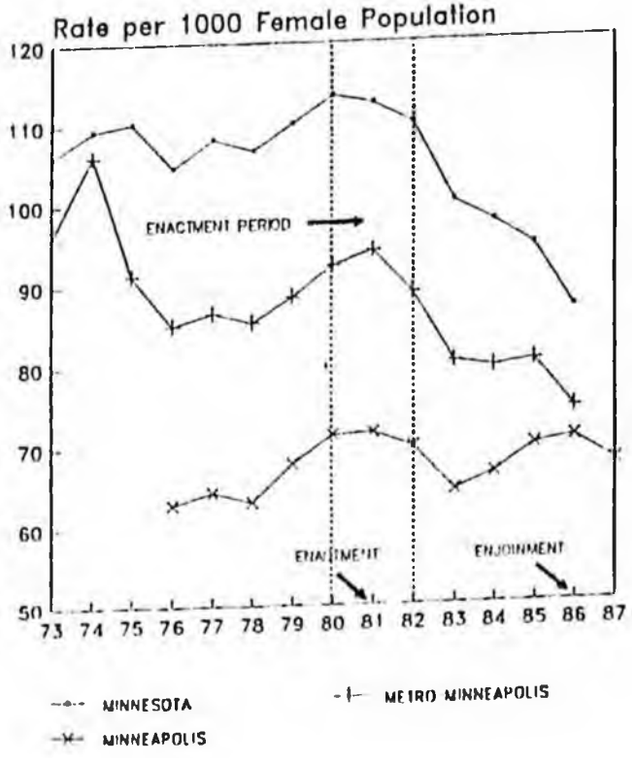


Figure 5e
Birth Rate
for Different Regions of Minnesota
Ages 25–34

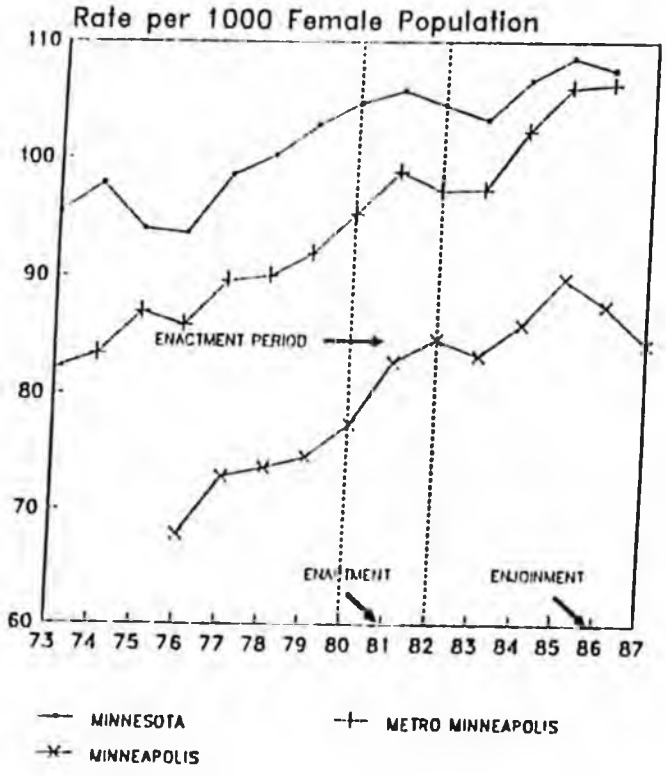


Table 6
Birth Rate for Minneapolis Residents
by Age Group*

YEAR	AGES 10-14	AGES 15-17	AGES 18-19
1976	1.7	36.7	48.8
1977	1.1	39.4	58.1
1978	1.3	35.4	61.5
1979	1.7	38.7	58.3
1980	1.8	39.1	62.9
1981	1.3	41.2	65.0
1982	2.2	42.7	65.9
1983	1.9	47.3	58.1
1984	1.3	54.1	63.1
1985	2.1	58.2	73.4
1986	2.0	62.2	81.2
1987	2.2	64.5	92.2

YEAR	AGES 20-24	AGES 25-34
1976	62.9	67.8
1977	64.4	72.9
1978	63.2	73.7
1979	67.8	74.8
1980	71.3	77.5
1981	71.5	82.7
1982	69.8	84.8
1983	64.3	83.2
1984	66.4	85.9
1985	69.7	89.8
1986	70.8	87.5
1987	67.5	84.2

* Rate per 1000 female population. Source: Raw data provided by the Minneapolis Department of Health. Data provided in a from unsuitable for figuring rates for ages 35-44 or above.

Figure 6
Birth Rate for Minneapolis Residents
by Age Group

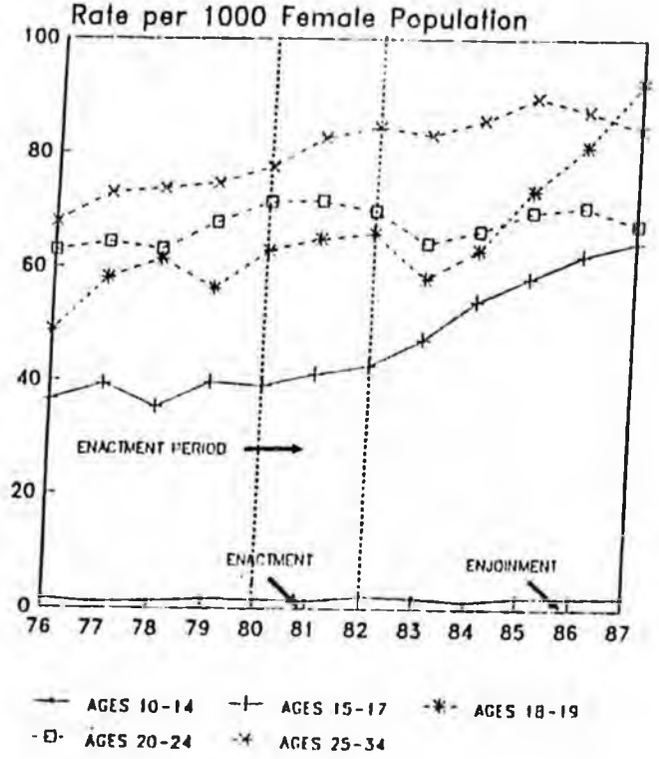


Table 7
Births to Mothers < 18 Years of Age
as Percentage of Total Births*

	MINNEAPOLIS	U.S.	MINNESOTA
1970		6.3	
1973			4.6
1974			4.2
1975		7.6	4.4
1976	6.2		4.2
1977	5.9		3.9
1978	5.1		3.4
1979	5.3		3.2
1980	4.7	5.8	3.0
1981	4.5	5.4	2.8
1982	4.3	5.2	2.6
1983	4.4	5.0	2.4
1984	4.4	4.8	2.5
1985	4.5	4.7	2.3
1986	4.6	4.6	2.5
1987	5.1		2.4

MINNEAPOLIS BY RACE

	WHITE	BLACK	ASIAN/PACIFIC ISLAND	AMERICAN INDIAN
1976	4.0	15.3	0.0	18.9
1977	4.1	13.7	1.4	13.9
1978	3.4	11.5	0.0	12.9
1979	2.9	13.5	3.0	15.3
1980	2.9	11.4	1.7	13.3
1981	2.6	11.4	4.6	13.0
1982	2.9	11.0	5.0	11.0
1983	2.2	11.0	4.9	13.7
1984	2.3	10.6	6.5	11.2
1985	2.2	10.4	7.1	11.1
1986	2.3	12.9	5.8	9.3
1987	1.9	12.1	6.5	10.8

* Source: National Center for Health Statistics: *Health, United States, 1988*. DHHS Pub. No. (PHS) 89-1232. Public Health Service. Washington. U.S. Government Printing Office, Mar. 1989. p.47. Minneapolis raw data provided by the Minneapolis Department of Health. Data for some years not available.

Table 7 (Continued)
Births to Mothers < 18 Years of Age
as Percentage of Total Births*

UNITED STATES BY RACE

	WHITE	BLACK	ASIAN/PACIFIC ISLAND	AMERICAN INDIAN
1970	4.8	14.7	3.3	7.5
1975	6.0	16.1	2.7	11.0
1980	4.5	12.2	1.7	8.8
1981	4.3	11.4	1.8	8.5
1982	4.1	11.1	1.8	8.0
1983	3.9	10.9	1.7	7.9
1984	3.7	10.6	1.8	7.4
1985	3.7	10.3	1.8	7.1
1986	3.7	10.4	1.9	7.4

* Sources: National Center for Health Statistics: *Health, United States, 1988* DHHS Pub. No. (PHS) 89-1232. Public Health Service. Washington, U.S. Government Printing Office, Mar. 1989. p.47. Minneapolis raw data provided by the Minneapolis Department of Health. Data for some years not available.

Figure 7a
Births to Mothers < 18 Years of Age
as Percentage of Total Births
Minneapolis, Minnesota, and U.S.

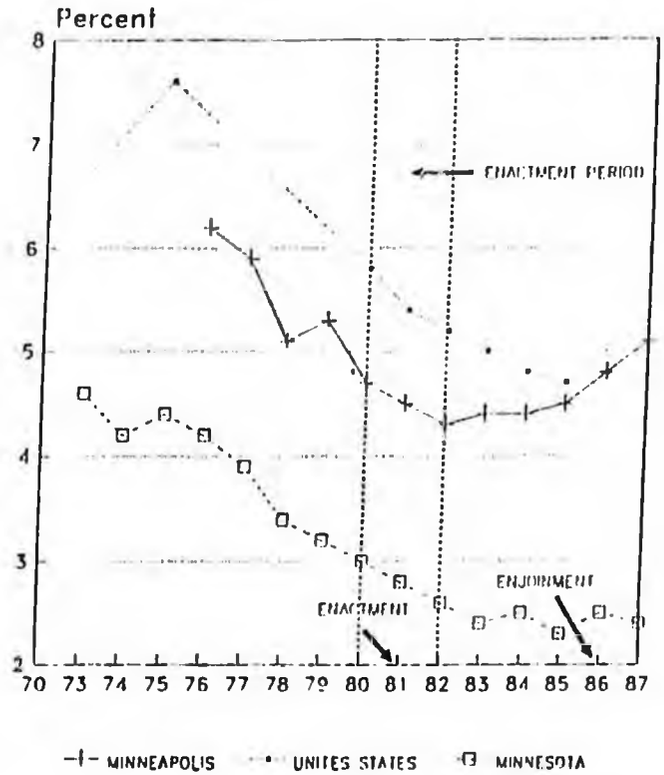


Figure 7b
Births to Mothers < 18 Years of Age
as Percentage of Total Births
by Race/Ethnicity
Minneapolis and U.S.

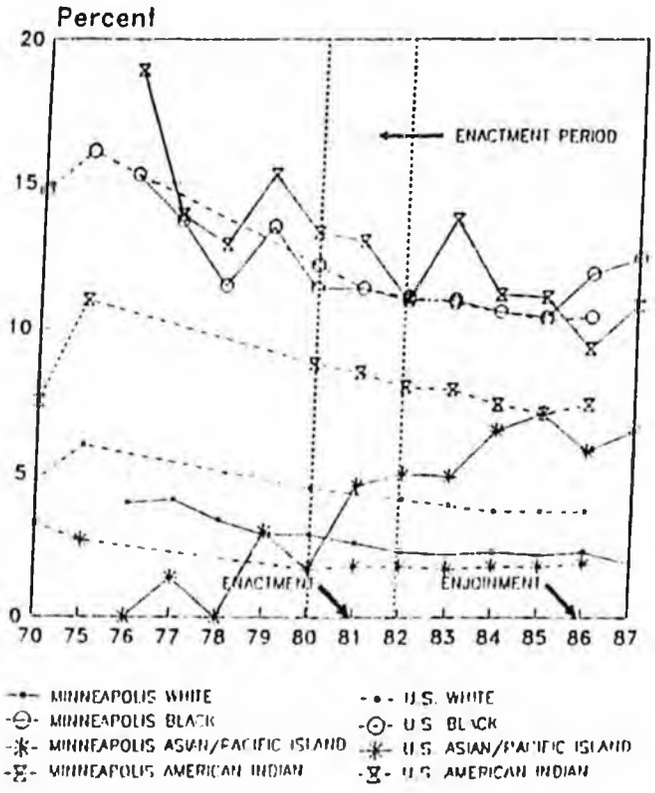
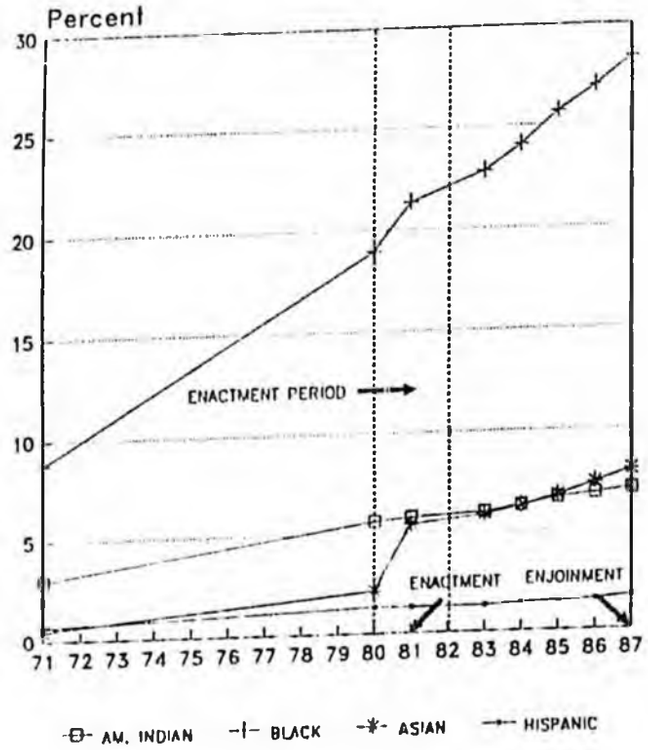


Table 8
Percent Racial/Ethnic Enrollment
Minneapolis Public School District*

	AMERICAN INDIAN	BLACK	ASIAN	HISPANIC
1971	3.0	8.8	0.5	0.7
1980	5.6	19.0	2.1	1.3
1981	5.8	21.3	5.4	1.3
1983	6.0	22.8	5.8	1.3
1984	6.3	24.1	6.2	1.4
1985	6.6	25.7	6.7	1.4
1986	6.8	26.9	7.3	1.5
1987	7.0	28.4	8.0	1.7

* Source: Raw data provided in *Racial-Ethnic Enrollment Trends in Twin Cities Area Schools, 1986-1987.* Pub. No. 620-88-115. Metropolitan Council, St. Paul, Minnesota.

Figure 8
Percent Racial/Ethnic Enrollment
Minneapolis Public School District



ARTICLES

Risk of Breast Cancer Among Young Women: Relationship to Induced Abortion

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Background: Certain events of reproductive life, especially completed pregnancies, have been found to influence a woman's risk of breast cancer. Prior studies of the relationship between breast cancer and a history of incomplete pregnancies have provided inconsistent results. Most of these studies included women beyond the early part of their reproductive years at the time induced abortion became legal in the United States. *Purpose:* We conducted a case–control study of breast cancer in young women born recently enough so that some or most of their reproductive years were after the legalization of induced abortion to determine if certain aspects of a woman's experience with abortion might be associated with risk of breast cancer. *Methods:* Female residents of three counties in western Washington State, who were diagnosed with breast cancer (n = 845) from January 1983 through April 1990, and who were born after 1944, were interviewed in detail about their reproductive histories, including the occurrence of induced abortion. Case patients were obtained through our population-based tumor registry (part of the Surveillance, Epidemiology, and End Results Program of the National Cancer Institute). Similar information was obtained from 961 control women identified through random digit dialing within these same counties. Logistic regression analysis was used to estimate odds ratios and confidence intervals (CIs). *Results:* Among women who had been pregnant at least once, the risk of breast cancer in those who had experienced an induced abortion was 50% higher than among other women (95% CI = 1.2-1.9). While this increased risk did not vary by the number of induced abortions or by the history of a completed pregnancy, it did vary according to the age at which the abortion occurred and the duration of that pregnancy. Highest risks were observed when the abortion was done at ages younger than 18 years—particularly if it took place after 8 weeks' gestation—or at 30 years of age or older. No increased risk of breast cancer was associated with a spontaneous abortion (RR = 0.9; 95% CI = 0.7-1.2). *Conclusion:* Our data support the hypothesis that an induced abortion can adversely influence a woman's subsequent risk of breast cancer. However, the results across all epidemiologic studies of this premise are inconsistent—both overall and within specific subgroups. The risk of breast cancer should be re-examined in future studies of women who have had legal abortion available to them throughout the majority of their reproductive years, with particular attention to the potential influence of induced abortion early in life. [J Natl Cancer Inst 86:1584-1592, 1994]

In 1973, the Supreme Court legalized induced abortion in the United States. Since that time, this procedure has been used by many women to terminate unwanted pregnancies. The Alan Guttmacher Institute estimates that as of 1990, one in four U.S. women younger than 45 years of age had had at least one induced abortion (Henshaw SK: personal communication). Since the timing and number of completed pregnancies are known to affect a woman's risk of breast cancer (1), it is possible that a history of terminated pregnancies may have an effect as well.

In 1981, Pike *et al.* (2) reported a 2.4-fold increase in the risk of breast cancer among young women (aged younger than 35 years) that was associated with a first-trimester induced abortion prior to a full-term pregnancy. While additional studies have examined the general question of induced abortion as a risk factor for breast cancer (*3-10*), they primarily included women who, by the early 1970s, already were beyond the early part of their reproductive lives. Thus, the studies have been limited, to some extent, in their ability to evaluate the impact of an abortion at a relatively young age or prior to a first pregnancy.

We conducted a case–control study of breast cancer in young women born recently enough to have had some or most of their reproductive years after the legalization of induced abortion to determine if there were certain aspects of a woman's experience

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See "Notes" section following "References."

cancer.

Patients and Methods

All white women diagnosed with a first invasive or in situ breast cancer between January 1, 1983, and April 30, 1990, who were residents of King, Pierce, or Snohomish County in Washington State and who were born after 1943, were eligible for the study. We restricted our study to white women, since approximately 85% of this population is white and no minority group makes up more than 5% of the population. These women were identified through the Cancer Surveillance System, a population-based tumor registry that serves 13 counties in western Washington State and is part of the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute (NCI). Of the 1011 eligible cases, 845 (83.6%) were successfully interviewed. Reasons for not obtaining an interview for case patients included the following: deceased (n = 58; 5.7%), patient refusal (n = 71; 7.0%), and physician refusal to give permission (n = 37; 3.7%). Ninety-eight of the case patients interviewed had been diagnosed as having an in situ lesion.

Controls were recruited by random digit dialing, using the method described by Waksberg (11). To minimize geographic clustering of controls that can occur using the Waksberg-Mitofsky method of random digit dialing, we used a clustering factor of two residences per sampling unit (denoted "k" by Waksberg). Use of a "k" of 2 resulted in no more than two controls per sampling unit, although the majority of sampling units yielded either one or no controls. All telephone numbers were called at least nine times at different times of the week during a 2- to 6-week period before they were abandoned. Telephone numbers that resulted in refusals to answer the screening questions were called again by a different interviewer 4–6 months later. One half of the initial refusers were successfully screened on the second attempt. One-step recruitment was used, with a stratified sampling design that recruited controls into age strata evenly throughout the control ascertainment period (12,13). The King County controls were shared by another study, therefore age stratification requirements were determined by the study needing the largest number of controls. Eligible women who agreed to receive a letter about the study were contacted within 3 weeks of the initial random digit dialing contact by an interviewer to schedule a personal interview. We were unable to determine residential status after nine or more attempts for 4% of the telephone numbers dialed (3%: "no answer," 0.2%: "slow busy" [tone repeated 60 times per minute], and 0.5%: "fast busy" [tone repeated 120 times per minute]). In the past, we found the majority of these numbers to be nonresidential. We were able to obtain a household census for 97% of the known private residences. Of the 1230 respondents who met the study's residence and age requirements, 901 (73%) were successfully interviewed for a final overall response rate of 75.5%.

All but 1.8% of the interviews were conducted in person. To aid the women's recall, trained interviewers used a calendar on which major life events were identified. Only events that took place before each woman's reference date (month and year of diagnosis for the case patients and a comparable date for controls) were recorded. Demographic, lifestyle, and medical-history data were obtained, as well as data on family history of breast and other cancers. We also obtained a detailed history of birth-control methods used by each woman. A complete menstrual and pregnancy history was obtained for all women. For each induced or spontaneous abortion reported, questions were asked regarding the gestational age (number of weeks or 1-8, 9-12, 13-16, or >16 weeks) and method of birth control (if any) at the time of conception. In addition, the type of procedure was ascertained for each induced abortion.

Logistic regression analysis using EGRET (Statistics and Epidemiology Research Corp., Seattle, Wash.) statistical software was used to estimate odds ratios (ORs) and confidence intervals (CIs) associated with induced abortion. The primary focus of the analysis was on the difference in the subsequent risk of breast cancer between pregnant women who did and did not choose to terminate that pregnancy but who, based on their demographic characteristics and childbearing histories, were otherwise at similar risk. Thus, all analyses presented are adjusted for age (continuous), family history of breast cancer (none, mother or full sister, or grandmother, aunt, or half sister), religion (none/Jewish/other, Catholic/Mormon/Seventh-day Adventist, or other Christian), and age at first pregnancy (11-17, 18-19, 20-29, or 30–41 years). Adjustment for age at first birth was done in analyses that were restricted to parous women (women who ever had a live birth or stillbirth). Further adjustment for residence, alcohol use, cigarette smoking history, age at menarche, income, education, and marital status. Analyses relating to gestational length were restricted to the categories 1-8, 9-12, and 13 or more weeks, since the women who did not know the exact number of weeks of gestation were asked to report which of the above gestational categories best represented their experience. Analyses for spontaneous abortion were adjusted for age, marital status (never married, currently or formerly married, or living as married), family history of breast cancer, age at first live birth, and body mass index (quartiles). The term relative risk (RR) is used hereafter instead of odds ratio, since the two have similar values in case–control studies of other than very common diseases.

Results

On the average, controls in our study were somewhat younger than the breast cancer case patients (Table 1). Adjusting for age, an increased risk of breast cancer was associated with early age at menarche, nulliparity, and having a first- or second-degree relative who had breast cancer. In contrast, parous case patients and controls were similar with respect to age at first birth and number of children. Women in the highest quartile of body mass index had a 20% reduction in breast cancer risk. The proportion of control participants with a history of induced abortion decreased with increasing age and increasing parity and differed by religious affiliation (Table 2). However, that proportion varied little by other characteristics.

Among women who had been pregnant at least once, a history of induced abortion was associated with an increased risk of breast cancer (RR = 1.5; 95% CI = 1.2-1.9) (Table 3). The RR was also 1.5 (95% CI = 1.2-2.0) in women who had given birth at least once, adjusting for age at first full-term pregnancy. When we confined this analysis to parous women whose only pregnancies were live births and/or induced abortions, the RR was 1.6 (95% CI = 1.2-2.3). The magnitude of the association did not vary substantially by whether the induced abortion preceded or followed a first birth or by the interval from first abortion to cancer diagnosis. The magnitude of the increase in risk of breast cancer was similar between women who had one or more than one induced abortion. The RR associated with having an induced abortion was 1.8 (95% CI = 1.2-2.9) in women younger than 35 years at diagnosis and/or reference date; it was 1.4 (95% CI = 1.0-1.9) in 35- to 44-year-old women. While pregnancies terminated by an induced abortion at 9-12 weeks' gestation were associated with a somewhat higher risk than those terminated earlier, that trend was not continued in the small number of abortions that took place beyond 12 weeks. The elevation in risk associated with induced abortion was greater in women who underwent their first induced abortion either before 18 years of age (RR = 2.5; 95% CI = 1.1-5.7) or at age 30 years and older (RR = 2.1; 95% CI = 1.2-3.5) (Table 3). The risk associated with abortion did not vary by early or late stage of disease at diagnosis. Among women who had an induced abortion as a teenager, there was no variation in risk by age at menarche (data not shown).

We examined the combined influence of age at first induced abortion and the gestational length at the time the abortion occurred. Fifteen case patients, but only five controls, had terminated a pregnancy when younger than 18 years of age that had lasted more than 8 weeks (adjusted RR = 9.0; 95% CI = 2.0-

Characteristic	Case patients (n = 845) No.	%	Controls (n = 961) No.	%	Age-adjusted RR (95% CI)
Age, y					
21-30	71	8	163	17	
31-35	197	23	246	26	Not applicable
36-40	380	45	388	40	
41-45	197	23	164	17	
Birth year					
1935-1949	495	59	469	49	
1950-1954	235	28	283	29	Not applicable
1955-1959	95	11	139	15	
1960+	20	2	70	7	
Marital status					
Never married	89	10	102	11	1
Married	581	69	658	68	0.8 (0.6-1.1)
Widowed, divorced, or separated	115	14	152	16	0.7 (0.4-1.0)
Living as married	60	7	49	5	1.3 (0.8-2.2)
Education, years completed					
≤12	255	30	278	29	1
13-15	284	34	353	37	0.9 (0.7-1.1)
16	193	23	215	22	1.0 (0.8-1.3)
≥17	113	13	115	12	1.0 (0.7-1.3)
Religion*					
None/Jewish/other	204	24	250	26	1
Catholic/Mormon/Seventh-day Adventist	158	19	168	17	1.1 (0.8-1.5)
Other Christian	481	57	542	57	1.0 (0.8-1.3)
Family history of breast cancer					
None	533	63	770	80	1
Second degree only	176	21	142	15	1.8 (1.4-2.2)
First degree	136	16	49	5	3.9 (2.7-5.5)
Age at menarche, y†					
7-12	442	52	436	45	1
≥13	402	48	525	55	0.8 (0.6-0.9)
Parous					
No	240	28	258	27	1
Yes	605	72	703	73	0.7 (0.6-0.9)
Age at first birth, y					
Never	240	28	258	27	1
13-17	38	5	46	5	0.7 (0.5-1.2)
18-19	78	9	99	10	0.6 (0.4-0.9)
20-24	245	29	278	29	0.8 (0.6-1.0)
25-29	158	19	183	19	0.7 (0.6-1.0)
≥30	86	10	97	10	0.7 (0.5-1.0)
No. of births					
None	240	28	258	27	1
1	147	17	184	19	0.7 (0.6-1.0)
2	285	34	347	36	0.7 (0.5-0.9)
≥3	173	21	172	18	0.8 (0.6-1.1)
Duration of breast feeding‡					
Never	183	30	177	25	1
< 1 y	265	44	322	46	0.9 (0.7-1.1)
≥1 y	157	26	204	29	0.8 (0.6-1.1)
No. of spontaneous abortions					
None	652	77	732	76	1
1	148	18	169	18	0.9 (0.7-1.2)
≥2	45	5	60	6	0.8 (0.5-1.2)
Body mass index§					
13.31-20.26	214	25	241	25	1
20.27-22.01	228	27	242	25	1.0 (0.8-1.3)
22.02-25.56	221	26	238	25	1.0 (0.8-1.3)
25.57-52.57	182	22	239	25	0.8 (0.6-1.0)

*Missing for two case patients and one control.
†One control with bilateral oophorectomy in early childhood excluded. Data missing for one case patient and one control.
‡Among parous women.
§Missing for one control; quartiles of quetelet index, calculated as weight in kilograms divided by height in meters squared.

Characteristic	No. controls	Induced abortion		Spontaneous abortion	
		% never had*	% ever h	% never had*	% ever had*
Age, y					
21-30	163	75.5	24.5	86.5	13.5
31-35	246	72.8	27.2	76.8	23.2
36-40	388	81.4	18.6	73.7	26.3
41-45	164	86.6	13.4	70.7	29.3
Birth year					
1945-1949	469	83.8	16.2	72.9	27.1
1950-1954	283	73.5	26.5	74.6	25.4
1955-1959	139	75.5	24.5	82.7	17.3
1960+	70	77.1	22.9	91.4	8.6
Marital status					
Never married	102	69.6	30.4	96.1	3.9
Married	658	82.5	17.5	74.5	25.5
Widowed, divorced, or separated	152	75.7	24.3	77.6	22.4
Living as married	49	63.3	36.7	53.1	46.9
Education, years completed					
≤12	278	80.2	19.8	74.1	25.9
13-15	353	75.9	24.1	73.7	26.3
16	215	80.5	19.5	81.9	18.1
≥17	115	83.5	16.5	78.3	21.7
Religion†					
None/Jewish/other	250	72.4	27.6	75.6	24.4
Catholic/Mormon/Seventh-day Adventist	168	87.5	12.5	75.0	25.0
Other Christian	542	79.5	20.5	76.8	23.2
Family history of breast cancer					
None	770	78.1	21.9	75.7	24.3
Second degree only	142	87.8	12.2	73.5	26.5
First degree	49	81.7	18.3	79.6	20.4
Age at menarche, y†					
7-12	435	79.5	20.5	76.7	23.3
≥13	525	78.7	21.3	75.6	24.4
Parous					
No	258	76.0	24.0	93.0	7.0
Yes	703	80.2	19.8	70.0	30.0
Age at first birth, y					
Never	258	76.0	24.0	93.0	7.0
13-17	46	76.1	23.9	58.7	41.3
18-19	90	77.8	22.2	74.7	25.3
20-24	278	84.2	15.8	66.9	33.1
25-29	185	77.6	22.4	74.3	25.7
≥30	97	78.4	21.6	71.1	28.9
No. of births					
None	258	76.0	24.0	93.0	7.0
1	184	69.6	30.4	74.5	25.5
2	347	81.3	18.7	73.2	26.8
3	172	89.5	10.5	58.7	41.3
Duration of breast feeding‡					
Never	177	79.7	20.3	67.2	32.8
< 1 y	322	79.5	20.5	72.7	27.3
≥1 y	204	81.9	18.1	68.1	31.9
No. of spontaneous abortions					
None	732	79.5	20.5	—	—
1	169	76.9	23.1	—	—
≥2	60	80.0	20.0	—	—
Body mass index†,§					
13.31-20.26	241	78.4	21.6	80.1	19.9
20.27-22.01	242	72.7	27.3	78.1	21.9
22.02-25.56	238	84.9	15.1	75.2	24.8
25.57-52.57	239	80.3	19.7	71.1	28.9
Oral contraceptive use					
Never or <1 y	778	80.3	19.7	71.1	28.9
≥1 y	733	78.7	21.3	77.8	22.2

*% is of those with this factor.
†Missing for one control.
‡Among parous women.
§Quartiles of quetelet index, calculated as weight in kilograms divided by height in meters squared.

Induced abortion history	Case patients (n = 689) No.	%	Controls (n = 781) No.	%	RR (95% CI*)
Never had induced abortion	479	69.5	580	74.3	1.0 —
Induced abortion, ever	210	30.5	201	25.7	1.5 (1.2-1.9)
1 only	150	21.8	142	18.2	1.5 (1.1-2.0)
2 or more	60	8.7	59	7.6	1.6 (1.0-2.4)
Age at first abortion, y					
<18	20	2.9	15	1.9	2.5 (1.1-5.7)
18-19	34	4.9	36	4.6	1.7 (1.0-3.0)
20-29	115	16.7	123	15.7	1.3 (1.0-1.7)
≥30	41	6.0	27	3.5	2.1 (1.2-3.5)
Gestational length of first aborted pregnancy					
1-8 weeks	129	18.7	136	17.4	1.4 (1.0-1.8)
9-12 weeks	64	9.3	48	6.1	1.9 (1.3-2.9)
≥13 weeks	16	2.3	17	2.2	1.4 (0.7-2.8)
Unknown	1	0.1			
Timing of first induced abortion					
Before first birth	69	10.0	76	9.7	1.4 (1.0-2.0)
After first birth	74	10.7	63	8.1	1.5 (1.0-2.2)
Never gave birth	67	9.7	62	7.9	1.7 (1.2-2.6)
Interval between first abortion and reference date, y					
0-9	69	10.0	83	10.6	1.4 (1.0-2.0)
10-14	82	11.9	69	8.8	1.7 (1.2-2.5)
≥15	59	8.6	49	6.3	1.4 (0.9-2.2)
Stage of disease at diagnosis†					
In situ and local	119	28.2	201	25.7	1.5 (1.1-2.0)
Regional and distant	88	33.7	201	25.7	1.6 (1.2-2.2)

*Risk relative to that of women with at least one pregnancy who never had an abortion; adjusted for age, family history of breast cancer, religion, and age at first pregnancy.
†Three case patients who had an induced abortion did not have stage of disease available.

41.2) (Table 4). Abortions at ages younger than 18 years that occurred earlier in gestation were associated with a far smaller increase in risk (RR = 1.3; 95% CI = 0.3-7.0) (Table 4). There was little variation in risk associated with the gestational timing of an abortion during a given pregnancy if the first abortion took place at 18 years of age or older. We obtained similar results when we analyzed the timing and duration of a woman's last induced abortion (for most women, the first abortion was also the last abortion).

In women with no family history of breast cancer, the overall size of the increased risk associated with a history of induced abortion was 1.4 (95% CI = 1.0-1.9) and varied little by the age at which the first induced abortion occurred (data not shown). In women with a positive family history (defined as a sister, mother, aunt, or grandmother with breast cancer), the overall risk was 1.8 (95% CI = 1.1-1.3) and was particularly strong for a first abortion that occurred prior to age 18 years (12 case patients and zero controls; RR = ∞; lower 95% CI of RR = 1.8) and at age 30 years or older (14 case patients and three controls; RR = 3.7; 95% CI = 1.0-13.4).

Among parous women who never nursed a child or had nursed less than 1 month, there were similar risks associated with a history of induced abortion whether or not it preceded their first delivery (Table 5). There was a suggestion that, among women who later nursed a child, the association with induced abortion was stronger the longer the interval from the time of the first abortion until the initiation of lactation. The association of induced abortion with breast cancer was also present if the first abortion did not occur until after a woman already had nursed a child (RR = 1.9; 95% CI = 1.1-3.1) (Table 5).

Since some women may view induced abortion as an alternative to contraception, and may not consider having a full-term pregnancy at all, we performed one analysis comparing women who never had a pregnancy with women whose only pregnancy ended in an induced abortion. Sixty-three case patients and 53 controls in this subgroup had undergone an induced abortion, corresponding to an RR of 1.4 (95% CI = 0.9-2.2).

We also evaluated the relationship of spontaneous abortion to risk of breast cancer. Women who had a history of spontaneous abortion were older and were more likely to be currently married, to be living as married, or to have been married in the past than women who had not had a spontaneous abortion (Table 2). They were more likely to have had a first birth at a young age, to have had three or more live births, and to be heavier.

Among women who were parous (more than 90% of the case patients and controls with a history of spontaneous abortion), there was no overall increase in risk for breast cancer (Table 6); however, there was some indication that women whose first spontaneous abortion occurred at age 18 or 19 years might be at increased risk. In addition, among women who had a spontaneous abortion, those with breast cancer were more likely to have had the first spontaneous abortion occur at 9-12 weeks' gestation than at 1-8 weeks' gestation. Among women who had never delivered a child or had any other pregnancy outcome, there was no increase in breast cancer risk related to a history of

Age at birth or first induced abortion, y	Outcome of pregnancy	Case patients (n = 672)* No.	Case patients (n = 672)* %	Controls (n = 783)* No.	Controls (n = 783)* %	RR (95% CI)†
<18	Induced abortion at 1-8 wk	5	3.8	10	16.4	1.3 (0.3-7.0)
	Induced abortion at 9-24 wk	15	26.3	5	8.2	9.0 (2.0-41.2)
	Completed pregnancy	37	64.9	46	75.4	1
18-19‡	Induced abortion at 1-8 wk	16	12.3	16	10.5	1.4 (0.6-3.3)
	Induced abortion at 9-24 wk	17	13.1	20	13.2	1.3 (0.6-2.8)
	Completed pregnancy§	97	74.6	116	76.3	1
20-29	Induced abortion at 1-8 wk	77	14.5	88	14.6	1.2 (0.8-1.7)
	Induced abortion at 9-24 wk	38	7.2	35	5.8	1.4 (0.8-2.2)
	Completed pregnancy§	415	78.3	479	79.6	1
≥30	Induced abortion at 1-8 wk	31	15.0	22	9.2	2.1 (1.2-4.0)
	Induced abortion at 9-24 wk	10	4.9	5	2.1	3.3 (1.1-10.2)
	Completed pregnancy§	165	80.1	211	88.7	1

*Excludes women who were never pregnant or only had a pregnancy in the indicated time frame that did not result in either an induced abortion or a birth. The sum of the number exceeds the total, since a woman could have had a birth in an earlier age category and so could be included in more than one category

†Referent category is women who had a birth in the age category in question. RR adjusted for age, family history of breast cancer, religion, and age at first pregnancy.

‡One case patient who had an induced abortion of unknown gestational length excluded.

§Excludes women who had an induced abortion at an earlier age.

Table 5. Risk of in situ and invasive breast cancer in relation to history of lactation and induced abortion among parous women

Lactation, ≥1 mo	History of induced abortion	Case patients (n = 605) No.	Case patients (n = 605) %	Controls (n = 703) No.	Controls (n = 703) %	RR (95% CI)*	RR (95% CI)†
Never	No	166	78.7	163	80.3	1	—
	Yes, before first birth	15	7.1	12	5.9	1.4 (0.7-3.2)	—
	Yes, not until after first birth	30	14.2	28	13.8	1.2 (0.7-2.2)	—
Ever‡	No	296	75.7	401	80.7	0.8 (0.6-1.0)	1
	Yes, first abortion ≤5 y before lactating for first time	22	5.6	32	6.4	—	1.1 (0.6-2.1)
	Yes, first abortion 6-10 y before lactating for first time	17	4.3	24	4.8	—	1.5 (0.7-2.9)
	Yes, first abortion >10 y before lactating for first time	15	3.8	8	1.6	—	3.2 (1.3-8.0)
	Yes, not until after lactating for first time	41	10.5	32	6.4	—	1.9 (1.1-3.1)

*Risk relative to women without abortion and lactation, adjusted for age, family history, age at first full-term pregnancy, and religion.

†Risk relative to women without abortion who ever lactated, adjusted for age, family history, age at first full-term pregnancy, and religion.

‡Excludes three case patients and three controls who lactated after an abortion that followed a first birth without lactation.

spontaneous abortion (RR = 1.1; 95% CI = 0.4-2.6), based on 14 case patients and 12 controls who had a spontaneous abortion.

None of the foregoing results were materially influenced when we excluded from the analyses the 98 women with an in situ lesion only.

Discussion

We were able to interview only 83.6% of the breast cancer case patients and 78% of the controls. If those not interviewed differ from the interviewed women regarding history of induced abortion, our results would be biased. Olsson et al. (*14*) found that the breast tumors of women who had a spontaneous or induced abortion at a young age had a higher rate of cell proliferation and a higher frequency of aneuploid tumors compared with the tumors of other young women with breast cancer. These same investigators also found that early abortion was related to INT2 amplification (*15*). Since these tumor characteristics are related to a poor prognosis (*16*), it could be that those women with breast cancer whom we were unable to interview because of serious illness or death may have been more likely to have had an induced abortion than the women we did interview. If this bias were present, we would have underestimated the risk of breast cancer that is associated with induced abortion.

A second concern is the accuracy of reporting of induced abortion by case patients and controls. Our interviews took place from the mid 1980s through the early 1990s, a time when induced abortion was common and well accepted among U.S. women. We designed the study to focus largely on legal induced abortion by restricting our study subjects to women born after 1944, i.e., by including women in whom most or all of their reproductive years occurred after 1970 (the year in which induced abortion was legalized in Washington State). Of the 411 induced abortions reported by study participants, 371 (90.3%) took place in 1970 or later. Thirty of the 35 abortions (85.7%) reported as having occurred in women younger than 18 years of age were during the era of legalized abortion.

Spontaneous abortion history	No.	%	No.	%	RR (95% CI)*
Never had spontaneous abortion	432	71.4	492	70.0	
Spontaneous abortion	173	28.6	211	30.0	0.9 (0.7-1.2)
One only	133	22.0	154	21.9	1.0 (0.7-1.3)
Two or more	40	6.6	57	8.1	0.8 (0.5-1.3)
Age at first spontaneous abortion, y					
<18	7	1.2	13	1.8	0.7 (0.3-1.9)
18-19	26	4.3	19	2.7	1.6 (0.9-3.0)
20-29	106	17.5	139	19.8	0.9 (0.7-1.2)
≥30	34	5.6	40	5.7	0.8 (0.5-1.4)
Gestational length of first spontaneous abortion, wk					
1-8	85	14.1	127	18.1	0.7 (0.5-1.0)
9-12	55	9.1	51	7.3	1.2 (0.8-1.9)
≥13	30	5.0	33	4.7	1.1 (0.6-1.8)
Unknown	3		0		
Timing of first spontaneous abortion					
Before first birth	80	13.2	101	14.4	0.9 (0.6-1.3)
After first birth	93	15.4	110	15.6	1.0 (0.7-1.3)
Interval between first spontaneous abortion and reference date, y					
1-9	55	9.1	74	10.5	1.0 (0.7-1.5)
10-14	50	8.3	56	8.0	1.1 (0.7-1.6)
≥15	68	11.2	81	11.5	0.8 (0.6-1.2)

*Risk relative to that of women with at least one birth who never had a spontaneous abortion; adjusted for age, family history of breast cancer, age at first full-term pregnancy, marital status, and body mass index.

It is possible that a woman diagnosed with a life-threatening disease such as breast cancer might report a history of induced abortion more completely than a healthy control woman contacted at random. Lindefors-Harris et al. (*17*) evaluated this hypothesis by linking responses to interview questions on induced abortion from Swedish case patients and controls in a study of breast cancer to national registry data on abortions occurring in 1966-1974. Nineteen (79.2%) of 24 case patients listed in the national registry as having had an induced abortion reported it during the interview, in contrast to 42 (71.2%) of 59 controls. Complicating the interpretation of this difference was the fact that no national registry record of an abortion could be located for seven other case patients, but only one other control, who claimed to have had an abortion during 1966-1974. Lindefors-Harris et al. compared ORs for an induced abortion–breast cancer association using interview data alone and then data from the national registry alone and concluded that a spurious 50% increase in risk could be obtained from interviews. However, we believe it is reasonable to assume that virtually no women who truly did not have an abortion would claim to have had one, and thus to assume those study participants whose reported abortion could not be documented (*a*) were incorrect when stating that the year of their abortion was within the period 1966-1974 or (*b*) had undergone the abortion outside of Sweden. If these assumptions are correct, it is possible to calculate ORs obtained from interview data alone with those obtained using a positive statement of an induced abortion in either interview or registry data as the standard. When we calculate this OR, the size of the spurious increase in risk that arises from reporting differences between case patients and controls is only 16%.

To further examine the possibility of differential reporting, we assessed the risk of invasive cervical cancer associated with a history of induced abortion among 214 case patients in western Washington State who were younger than 45 years of age and 321 controls obtained through random digit dialing (unpublished data from a population-based case–control study). After adjusting for age at reference date, age at first intercourse, number of lifetime sexual partners, income, and smoking history, the RR of cervical cancer in relation to an induced abortion was 1.0 (95% CI = 0.7-1.6). Unless a history of an induced abortion were truly negatively associated with the incidence of invasive cervical cancer, this result argues against there being differential reporting of prior induced abortions by cancer case patients and controls among reproductive-age women in western Washington State.

We were not able to validate the histories of induced abortion and had to rely solely on the respondents to provide information regarding the gestational length of incomplete pregnancies. However, we believe it is likely that the reporting of gestational length would be neither more nor less accurate for controls than for case patients. We were also unable to validate the histories of spontaneous abortion. We did ask at interview if the pregnancy that resulted in the spontaneous abortion was verified by a physician and/or a pregnancy test. Ninety percent of the case patients and 87% of the controls indicated the pregnancy had been so verified. Our results did not change when we restricted our analyses to verified spontaneous abortion.

The results of some epidemiologic studies (*2–4*), including this study, support the hypothesis that women who have undergone an induced abortion are at a 40%-90% increased risk of developing breast cancer later in life. However, other studies

mixed pattern of results is present whether the studies ascertained abortion status on the basis nterview or through records that documented the procedure.

We addressed the possibility that an elevated risk of breast cancer might be associated with only some induced abortions, perhaps those that occurred at a certain time in life, in a certain relationship to other events of reproductive life, or after a minimum gestational length. In doing so, we paid particular attention to the hypothesis that reproductive events occurring at the time of development of the breast affect the proliferation and hormonal regulation of the breast decades later (*19*). This hypothesis is supported, in part, by studies on experimental animals (*20*), indicating that chemically induced carcinogenesis is directly related to the rate of cell proliferation of the gland at the time of exposure to the carcinogen and that the rate of cell proliferation is highest in young nulliparous animals.

Russo et al. (*21*) have studied the effect of pregnancy interruption in the young rat. In the 7,12-dimethylbenz[*a*]anthracene (DMBA) model system, the hormonal changes of pregnancy accelerated tumor development in rats that mated after administration of DMBA, whereas a single pregnancy prior to feeding the carcinogen to the rat was protective against tumor development. However, when the rat's pregnancy was interrupted (by hysterectomy at midpregnancy), the differentiation of the mammary gland was not completed and these animals had nearly the same tumor response to subsequent DMBA administration as did virgin animals. They hypothesized that the incomplete differentiation of mammary gland cells during the first trimester may increase the subsequent susceptibility of breast tissue to carcinogenic agents (*22*).

The results of epidemiologic studies are in only partial accord with predictions based on these animal models. Our data suggest that abortions performed at a very early age are associated with an increased risk of breast cancer: women who underwent an induced abortion when younger than 18 years of age had a subsequent 2.5-fold increase in risk compared with women who have been pregnant and never had an induced abortion. While the only other study to examine the possible effect of early abortion (defined as occurring at younger than age 20 years and confined to nulliparous women) (*6*) found no increase in risk, the authors did not further divide this category to consider abortions done very early in reproductive life. Nonetheless, even in our own results, the association with induced abortion was not restricted to procedures performed during the teenage years, since we observed a 2.1-fold increase in risk among women whose first abortion did not occur until age 30 years or older.

A possible explanation for our observation of a variation in risk of breast cancer associated with induced abortion according to age at first induced abortion could involve the change in the distribution of breast lobule types with age. Russo et al. (*23*), using mammoplasty specimens from the breasts of women with various reproductive histories, characterized four different lobular structures in the breast. Lobules type 1 are the most undifferentiated ones and are the site of origin of preneoplastic lesions that evolve to ductal carcinoma in situ, with progression to invasive carcinoma. Lobules types 2, 3, and 4 are less likely to be the site of tumor development. The proportion by age of in women younger than 19 years, lowest in women aged 24-28 years, and thereafte reasing in frequency with age.

There are considerably more epidemiologic data to evaluate the possible influence of an induced abortion prior to a first pregnancy on the incidence of breast cancer, and here, too, the results are not completely in accord with the results in experimental animals. In our study, there was no appreciable difference in risk with regard to whether the first induced abortion occurred in the absence of a subsequent term pregnancy or prior to or following a term pregnancy. In this regard (although not necessarily in terms of the overall relationship of induced abortion to breast cancer), our results were similar to those obtained by Adami et al. (*7*), Yuan et al. (*9*), Harris et al. (*18*), and Parazzini et al. (*5*). Ewertz and Duffy (*4*) and Brinton et al. (*10*) observed a several-fold increase in breast cancer risk (based on a modest number of subjects) in nulliparous women who had undergone an induced abortion but no increase in risk in those whose abortion preceded or followed a subsequent term pregnancy. Finally, Pike et al. (*2*) found a several-fold increased risk associated with abortion (induced or spontaneous) in nulliparous women, a 1.8-fold increase if the abortion preceded a term pregnancy, and no increase if the abortion was followed by a term pregnancy.

Some epidemiologic studies of breast cancer in young women (*1,24,25*), as well as animal studies (*21,22,26*), indicate that breast-feeding protects against the development of breast cancer. If pregnancy interruption leaves undifferentiated structures in the breast, we hypothesized that a full-term pregnancy followed by lactation relatively soon after an induced abortion may push those cells to full differentiation. Our results offer some support for this hypothesis (Table 5) in that induced abortion was not associated with an altered risk of breast cancer in women who nursed a child during the 5 years following the abortion. However, the relatively small number of women with this history argues for a cautious interpretation.

During the first trimester of pregnancy, the breast is characterized by high mitotic activity and proliferation; only in midpregnancy to late pregnancy does cellular differentiation predominate (*27*). Therefore, it is plausible that those pregnancies that are not interrupted until the end of the first trimester could result in the breast containing a high number of undifferentiated cells, relative to the breasts of women whose abortion was induced early in pregnancy (or who had no abortion at all). Conceivably, these morphologic differences could be related to differences in the subsequent incidence of breast cancer as well. Unfortunately, there is but limited information from epidemiologic studies on breast cancer risk in relation to when during pregnancy an induced abortion had been performed. Neither Ewertz and Duffy (*4*) nor Pike et al. (*2*) observed any increased risk of breast cancer associated with a prior second-trimester abortion, but they did not address the issue of the impact of late first-trimester abortion. In the study of Howe et al. (*3*), the authors reported that prior abortions in breast cancer case patients occurred on average at 9.6 weeks' gestation, as opposed to 11.5 weeks in controls. While the difference is in the opposite direction of that predicted, the very short duration of

follow-up after the induced abortions in that study (1–10 years) severely limits its interpretation.

Prior studies of breast cancer in relation to spontaneous abortion have not yielded consistent results (*1*). We did not observe an increased risk of breast cancer among women who had a history of a spontaneous abortion. We can only speculate on why this result did not parallel that for induced abortion. We did observe that only 14.3% of women who had had an induced abortion nursed a child during the 5 years following the abortion compared with 46.3% of women with a spontaneous abortion. However, when we excluded from the analysis those case patients and controls who had experienced a spontaneous abortion and then nursed during the next 5 years, no excess risk of breast cancer associated with spontaneous abortion was seen (RR = 1.1; 95% CI = 0.8–1.5). Another possible explanation may be the relatively short gestational length of many pregnancies that end in spontaneous abortion. In their study of tissue from abortuses, Fantel and Shepard (*28*) estimated that, on the average, the majority of the fetuses that had spontaneously aborted had spent approximately 24 days in utero following the cessation of fetal growth.

The data from the present study suggest that induced abortion in the last month of the first trimester is associated with nearly a doubling of subsequent breast cancer risk (Table 3). While the difference in risk associated with an abortion prior to and following 2 months of gestation was particularly great when the abortion occurred at a very young age (Table 4), the relatively small number of subjects in that subgroup and the lack of a corroborating study argue against a firm conclusion at this time. For the same reasons, the particularly large case–control differences regarding very young or older age at first induced abortion in women with a positive family history of breast cancer should be viewed only as hypotheses worthy of subsequent testing.

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Notes

[1] *Editor's note:* SEER is a set of geographically defined, population-based central tumor registries in the United States, operated by local nonprofit organizations under contract to the NCI. Each registry annually submits its cases to the NCI on a computer tape. These computer tapes are then edited by the NCI and made available for analysis.

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"The Psycho social Outcome of Induced Abortion." J.R. Ashton, Department of Community Health, London School of Hygiene. British Journal of Obstetrics and Gynecology, December 1980, pp. 115-1122.

This study focused on the psycho-social outcome on women who had an induced abortion. About five percent of the women in the study had enduring, severe psychiatric disturbance following abortion. Nearly half of all abortion patients were affected by short-lived disturbances. Initial guilt and regrets and sensitivity to the comments of people around them which relate to abortion were among the symptoms of the short-lived disturbances.

"Ectopic Pregnancy and Prior Induced Abortion." Ann Aschengrau Levin, MS, Stephen C. Schoenbaum, MD, MPH, Phillip G. Stubblefield, MD, Susan Zimicki, MS, Richard R. Monson, MD, ScD, and Kenneth J. Ryan, MD. American Journal of Pubic Health, March 1982 p. 253.

An ectopic pregnancy can threaten a woman's life and future fertility. A relationship was found between the number of prior induced abortions and the risk of ectopic pregnancy. Induced abortion may be one of several risk factors for ectopic pregnancy, particularly for women who have had multiple abortions plus pelvic inflammatory disease.

"Associations of Induced Abortion with Subsequent Pregnancy Loss." Ann Aschengrau Levin, MS, The Journal of the American Medical Association, June 1980, pp. 2495-2499.

This study suggests that there is a direct relationship between number of prior induced abortions and subsequent risk of having pregnancy loss. Women who have had two or more prior induced abortions have a progressively greater risk of subsequent pregnancy

loss. Prior induced abortions may cause cervical trauma that result in cervical incompetence. Cervical incompetence could explain the increased risk of mid-trimester missed abortion and first-trimester incomplete abortion.

"Does Abortion Increase the Risk of Breast Cancer?" Scott W. Somerville Journal of the Medical Association of Georgia, April 1994 pp. 209-210.

Numerous studies in this article suggest that abortions before the first live birth increase the risk of breast cancer. A study in 1989 at the New York State Department of Health found that women who had induced abortions were 1.9 times more likely to get breast cancer than were those with no abortion history.

More research in the areas of biology, epidemiology, and demographics is pointing to abortion as the missing link to the mystery of breast cancer. This research supports the hypothesis that abortion before the first live birth increases the risk of breast cancer.

"Risk of Breast Cancer Among Young Women: Relationship to Induced Abortion." Janet R. Daling, Ph.D.. (Fred Hutchinson Cancer Research Center) Journal of the National Cancer Institute. Vol. 86. No. 21 November 2, 1994. pp. 1044-1592.

Among women who had been pregnant at least once, the risk of breast cancer in those who had experienced an induced abortion was 50% higher than among other women. This increased risk did vary according to the age at which the abortion occurred and the duration of that pregnancy. Highest risks were observed when the abortion was done at ages younger than 18 years -- particularly if it took place 8 weeks' gestation.

The data from this study supports the hypothesis that an induced abortion can adversely influence a woman's subsequent risk of breast cancer.

"Induced Abortion As An Independent Risk Factor for Breast Cancer: a Comprehensive Review and Meta-Analysis." Joel Brind, Department of Natural Sciences, Vernon M. Chinchilli, Center for Biostatistics and Epidemiology, Walter B. Severs, Department of Pharmacology, Joan Summy-Long, The Milton S Hershey Medical Center. Journal of Epidemiology and Community Health, 1996 vol. 50 pp. 481-496.

The results of this study support the inclusion of induced abortion among significant independent risk factors for breast cancer.

"The Relationship Between Induced Abortion and Outcome of Subsequent Pregnancies," Shai Linn, MD, American Journal of Obstetrics & Gynecology. May 1983 pp. 136-140.

This article analyzes the relationship between prior history of induced abortion and subsequent late pregnancy outcomes. Women with a history of two or more induced abortions are more likely to have complications such as bleeding in the first and third trimesters, abnormal presentations and premature rupture of the membranes, fetal distress, low birth weight, short gestation, and major malformations.

"A Study on the Effects of Induced Abortion on Subsequent Pregnancy Outcome," Carol Madore, MA. American Journal of Obstetrics & Gynecology, March 1981, pp. 516-521.

In this study, Dr. Madore concludes that women with a history of previous induced abortion have a statistically significant increase of subsequent pregnancy failure.

A scientific perspective on the Danish abortion study
published in the 1/9/97 New England Journal of Medicine (NEJM)

MYTHS AND FACTS. Prepared by Joel Brind, Ph.D., Professor of endocrinology, Department of Natural Sciences, Baruch College, City University of NY, 1/13/97

Myth 1

The Danish study's lead author, Dr. Mads Melbye, told the Wall Street Journal (1/9/97):

"I think this settles it. Definitely—there is no overall increased risk of breast cancer for the average woman who has had an abortion."

Dr. Patricia Hartge of the National Cancer Institute, in a NEJM Editorial accompanying the Danish study, echoed "the clear central finding that there is no overall risk", and concluded: "In short, a woman need not worry about the risk of breast cancer when facing the difficult decision of whether to terminate a pregnancy."

Fact

Said Dr. Karin Michels of Harvard Medical School, as quoted in the 1/9/97 Wall Street Journal: "You should never end a debate with one study and say this is the definitive study"

In fact, this one study from Denmark is the 30th separate study published since 1957 to report specific data on induced abortion and breast cancer. It is only the sixth one not to show an overall increased risk, compared to 24 that do show an increased risk, 18 of which are statistically significant on their own.

Contrary the implication of most current media reports, the Brind study, the comprehensive review and meta-analysis, published in the October, 1996 Journal of Epidemiology and Community Health the epidemiology journal of the British Medical Association, is not one of the 30 studies: It is a compilation of the entire worldwide literature, which pooled the results of the 23 separate studies available at the time of its preparation. This study of studies found a statistically significant, 30% overall risk increase.

Myth 2

The Danish study is different. One reason it is definitive is its enormous size, including over 1.5 million women (most Danish women), over 280,000 of whom had one or more induced abortions. Moreover, the study includes over 10,000 women with breast cancer.

Fact

The enormous size of the Danish study is enormously misleading, because this is a cohort study, in which an entire population (or cohort) of women is followed for many years, to track exposures to the alleged risk factor (induced abortion) and the incidence of the disease in question (breast cancer). Consequently, most of the women in the cohort (over 1.2 million of the 1.5 million) have neither the exposure nor the disease in question, but their presence in the cohort inflates the size of the study.

Myth 3

Even so, the number of women with abortion and breast cancer is very large, which gives this study unusually large statistical power. According to Dr. Hartge, in her NEJM editorial:

"In this cohort of 1.5 million women, 1338 cases of breast cancer were diagnosed in women who had

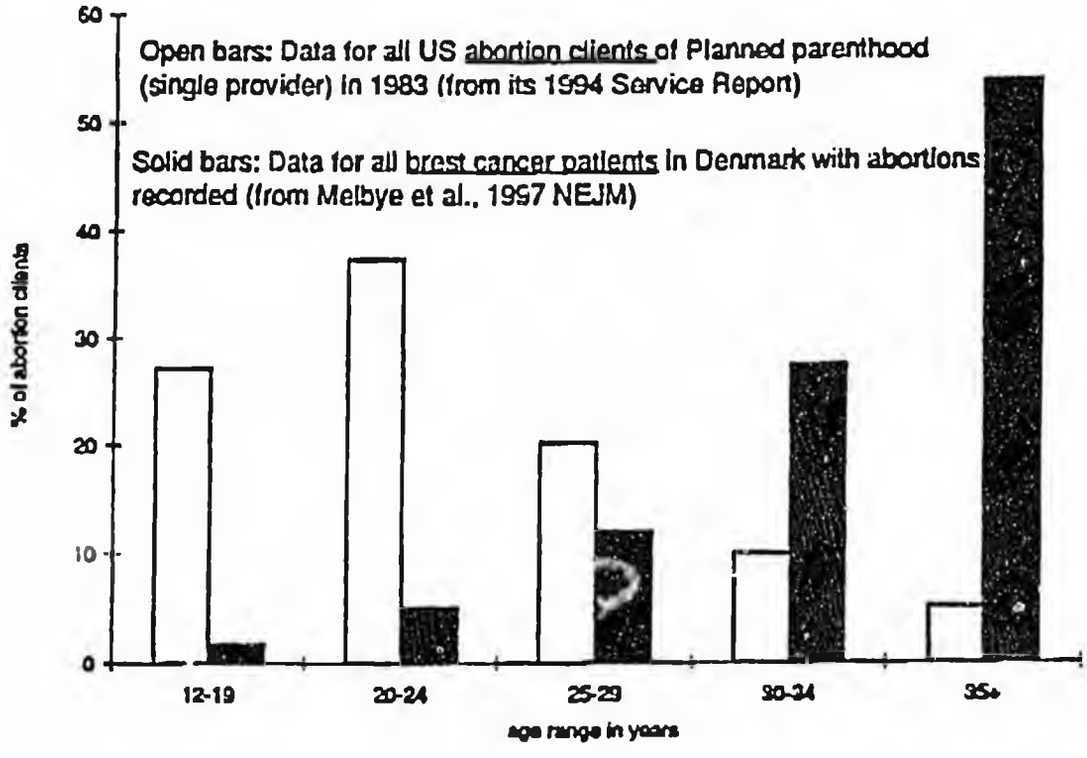
terminated pregnancies. By comparison, large case-control studies in the United States each have included 200 to 300 cases of breast cancer in women who had abortions."

Fact

The selection of such a large part of the Danish population (i.e., women born back to 1935), yields a data base which is very distorted because only abortions occurring since 1973 are on record. Consequently, the majority of breast cancer patients in the Danish study who are on record as not having had any abortions (8,908 women) were in their 30's when abortion data were first collected. Consequently, their abortion history is largely unknown. Keep in mind that we are speaking of a very small proportion of the entire cohort— but the majority of breast cancer victims—since breast cancer is found overwhelmingly among the oldest members of the cohort.

Among the 1338 breast cancer patients whose abortions are on record, the majority of them are on record as having had abortions only at age 35 or over. In fact, over 81% of them have abortions recorded only at age 30 or over!

The egregious distortion of the age distribution of abortion clients is best illustrated by a graphic comparison with US data for the average year (1983) for which the abortions are recorded:



From the above graph, it is easily seen that the Danish (Melbye) study is therefore considerably weaker than its authors and proponents indicate: The statistical power of the study relies largely on a database which is questionable for three reasons:

1) It consists mostly of women too young for cancer to develop (those who had abortions and did get breast cancer having had their abortions when they were atypically old);

2) The abortion histories of the oldest women in the cohort (which includes most of the women who did get breast cancer) before their fourth decade of life are largely unknown.

3) Concerning the fate of women who have abortions at younger ages—particularly in their teens—the study has almost no statistical power. That is why, even though it shows a 29% risk increase for women who had any abortions as teenagers (the same magnitude of the overall risk increase calculated for women in the Brind meta-analysis), the figure is not statistically significant:

The database only contains a total of 23 cases of breast cancer among women with teenage abortions, and a grand total of only 252 cases of breast cancer for all women who had abortions before the age of 30. That puts the study's real statistical power in the same range as the American studies Dr. Hartge refers to in her editorial.

Unfortunately, the effect of including all the older women (who have most of the breast cancer, but a relatively small portion of the recorded abortions) and all the younger women (who have most of the abortions, but almost none of the breast cancer), is to dilute the statistics, making the calculated relative risk appear lower and at the same time, more precise than it really is. (The summary finding of the Melbye study is an overall relative risk of 1.00 [i.e., no risk increase with induced abortion], and a 95% confidence interval of 0.94-1.06.)

Myth 4

Even though the sample size for women with abortion at younger ages is limited, the Danish data should show some sort of trend, if there were a real risk increase due to abortion. But there is no trend, Dr. Melbye arguing "the oldest women have exactly the same (relative) risk as the younger women."

Fact

As noted above, women who got abortions in their teens showed a 29% higher risk of breast cancer. This was, in fact, noted in the text of the results section (but interestingly, not in the discussion or the abstract):

"Age at the time of the induced abortion did not significantly influence the overall risk, but there was a tendency toward a higher risk of breast cancer among women in the lowest age category—between 12 and 19 years of age (relative risk, 1.29; 95% confidence interval, 0.80 to 2.08)." The lack of significance and lack of effect on observed overall risk is a direct consequence of the lack of statistical power of this supposedly definitive study.

Myth 5

The credibility of the overall finding of no increased risk in the Melbye study is supported by previous research. According to the first paragraph of the authors' Discussion section: "This result is very much in line with the results of previous retrospective cohort studies 9,10,15,16".

Fact

This statement is a flat-out misrepresentation of the medical literature: Three of the four studies cited (as footnotes) to back it up are entirely irrelevant. Two concern spontaneous abortion (miscarriage) exclusively 9,16 and one concerns spontaneous abortion mostly, and does not present any data relating specifically to induced abortion.10

Myth 6 (The "Loch Ness Monster")

It isn't just the statistical power of the study that's important, but the fact that the data are collected

prospectively (i.e., at time of abortion) means they do not depend on the accuracy of study subjects' own reporting of past, personally sensitive events. According to Dr. Hartge, in her NEJM editorial:

"By relying on uniformly collected data on abortion in Danish registries, Melbye et al. avoided the major problem that has plagued case-control interview studies: differential reporting of abortions (response bias)".

Melbye et al. used this argument to attack the Brind meta-analysis directly: "However, since almost all 23 studies included in the analysis were case-control studies, it is not unreasonable to assume that many of them were inherently biased, making the pooled conclusions biased as well."

Fact

Many scientists insist that this potential source of error is responsible for the result whenever a study shows that abortion is associated with increased breast cancer risk. In fact, this is the third time in a little over two years that the National Cancer Institute has used the response bias argument, via medical journal editorials, to attack such research. Like the famous mythological Loch Ness Monster, they insist that it is there. But every time a study actually looks for evidence of its presence, the only credible evidence they can ever find is against it.

When comparing the abortion histories of breast cancer patients with those of healthy women, a finding of more abortions among the patients will show up statistically as an increased risk. The argument is essentially this: If the cancer patients report more of their abortions than the healthy women do, then their breast cancer risk will appear artificially increased, due to this response bias (bias meaning difference between the two groups).

Melbye et al. are less than forthright in their Danish study in their attack on the Brind meta-analysis: One could hardly tell from their discussion that the meta-analysis spent over 1,000 words of text meticulously analyzing the alleged evidence of such bias. Yet still, they hark back to a 1991 Swedish study which compared computer prospective cohort data with case control interview-based data on the same population of Swedish women. That study claimed statistically significant evidence of underreporting of previous induced abortions among controls relative to overreporting among cases. In other words, the significance of the finding was largely dependent upon the belief that the seven breast cancer patients who reported having had abortions of which the computer registry had no record, had overreported them, i.e., had made them up!

Until the Danish study's appearance in the 1/9/97 NEJM, the most recent citing of the monster was in the 12/4/96 Journal of the National Cancer Institute (JNCI). That issue of the JNCI contained a Dutch case-control study which attributed the 90% increased risk it found among women with abortions to response bias. However, a careful reading of the study reveals the authors found significant evidence of response bias between healthy women from different regions of Holland, but no bias between breast cancer patients and healthy women at all. That didn't stop NCI editorialists from hyping these results and unleashing the monster: . . . a Swedish study . . . show(ed) that healthy women consistently and widely underreport their history of induced abortion.

Meanwhile, strong evidence against the response bias argument has surfaced repeatedly: 1) A 1989 New York State computerized registry study found a 90% increased breast cancer risk among women with induced abortions; 2) A 1994 Seattle, Washington study found a 50% increased risk and used cervical cancer data to test specifically for response bias among these women—and found none; 3) A 1995 study among Greek women found a 51% increased risk, and cited other studies among Greek women in drawing their conclusion that healthy women in Greece report reliably their history of induced abortion.

Myth 7

According to a 1/10/97 New York Times editorial: The only uncertainty in the Melbye study) was a suggestion that women who had abortions in the second or third trimester did have an increased risk of breast cancer, but the number of women in this category was too small to warrant firm conclusions.

The falsehood of the first phrase is obvious to anyone familiar with any epidemiological study: All findings are subject to varying degrees of uncertainty. The rest of the statement is a masterpiece of under statement. Consider the actual relevant part of the Results section of the paper: With each one-week increase in the gestational age of the fetus, however, there was a three percent increase in the risk of breast cancer. In fact, the relative risk rose from a 19% (non-significant) risk decrease for women whose abortions occurred at less than seven weeks gestational age, to a significant 89% risk increase for women with post 18-week abortions. Moreover, a risk elevated above the norm started showing up for women with late first trimester abortions (11-12 weeks).

In fairness to the New York Times, however, the authors themselves de-emphasized the finding, failing even to mention it among the "Conclusions" in the paper's abstract. Thankfully, this error of omission did not go unnoticed, drawing sharp criticism from Dr. George Bonney, Chairman of Biostatistics at the Fox Chase Cancer Center in Philadelphia, who told the Washington Post: "This is a powerful group (Melbye et al.), that should know better".

Yet the most important aspect of this finding of significantly increased risk with increasing gestational age at abortion is that Melbye et al. acknowledged it as supporting the biological basis of abortion as a breast cancer risk factor. That is, growth promotion of primitive (and potentially cancer forming) breast cells by surging estrogens during pregnancy may increase breast cancer risk if the pregnancy is aborted. Theoretically, the longer the exposure to this hormonal stimulus, the greater the risk increase. Although other studies have not found a consistent difference in early v. late first trimester abortions, this one did, and the authors call this finding to be "in line with the hypothesis".

Concluding Remarks

Ample evidence has been presented above to show that the authors' "Conclusions: Induced abortions have no overall effect on the risk of breast cancer." is, to say the least, a gross oversimplification. But there are additional concerns: First, a great deal of information about the effects of other variables is missing from the paper, as well as the unadjusted relative risk calculations. In fact, the unadjusted overall relative risk can be calculated at 1.44—a 44% risk increase. Of course, this figure doesn't mean much without adjustment, but how it manages to decrease to 0% increased risk is a disturbing mystery. Dr. Melbye (personal communication) says that they had to shorten the paper considerably for publication, but then one wonders why there is then so much redundancy in it: most of the data in the paper's only table is repeated in the text.

Second, it must be noted that one of the variables adjusted for in this (and most other) studies, is age at first full term pregnancy. That's because delaying the first full term pregnancy is universally recognized to increase breast cancer risk. Induced abortion surely increases risk when performed on young childless women, since it delays the full term delivery that would otherwise naturally have occurred. This increase, being specifically subtracted out, does not show up in any study (including the Brind meta-analysis) that is looking for the specific effect of induced abortion on breast cancer risk.

Finally, it must be acknowledged that computerized cohort data are generally of better quality than interview-based data, all other things being equal. The difficulty with computerized data on the risk of a disease like breast cancer is that it takes years—perhaps 5 to 50 years— for cancer to show up in exposed women. And abortion registries are not generally that old. Computerized registry data are most useful when the outcome in question does not require such a long follow up period. A perfect example is a 1996 study using the Finnish abortion registry. In the British Medical Journal paper, Dr. Mika Gissler et al. found a very reliable, almost sixfold (4888) increase in the rate of suicide by women who had had an induced abortion in the previous year, compared to women who had a baby.

STATISTICS FOR PARENTAL INVOLVEMENT INFLUENCE IN THE STATE OF NEBRASKA

The State of Nebraska, during the year 1991, enacted a protective parental involvement law. This law required that one parent, of a minor girl seeking an abortion, **MUST** be notified or the minor must obtain a judicial bypass. The most recent evidence shows the effects of passing just such protective legislation.

I. Number of abortions of those aged 17 and under:

1990 708
1991 596
1992 459
1993 427

* This is a decrease of 39.7% from 1990 to 1993. Bear in mind that Parental Notification became effective in 1991.

II. Estimate of the number of live births in Nebraska for given year:

1987 ..... 24,087.17
1988 ..... 24,266.67
1989 ..... 24,513.57
1990 ..... 24,625.53
1991 ..... 24,195.31
1992 ..... 23,707.79
1993 ..... 23,196.--

These tables not only show a reduction in abortions after protective parental involvement legislation is enforced, but they also give witness to the reduction in live births. This is evidence that with protective laws in place, minors not only seek fewer abortions, but that they avoid becoming pregnant in the first place.

These statistics have been compiled
by Michael Hussey, B.A. in Mathematics
rec'd of St. Louis University
from the data prepared by
Nebraska Department of Health
Division of Health Data Systems

Impact of the Minnesota Parental Notification Law on Abortion and Birth

James L. Rogers, PhD, Robert F. Boruch, PhD, George B. Stoms, BA, and Dorothy DeMoya, DNSc

ABSTRACT

Background. The impact of the Minnesota Parental Notification Law on abortion and birth was examined.

Methods. Using linear models, outcome parameters were compared before and after enactment of the law. Time by age group interactions also were examined.

Results. The pre-enactment to post-enactment change in the Minnesota abortion rate reflected a greater decline for minors (≤17 years old) than for 18–19 year-olds (who were not under the law). An increase in abortion rate occurred for women ages 20–44. The law appeared to have had no impact on birth rate in minors. Following the enactment of the law, the rate of early abortions (≤12 weeks) declined among minors more than the rate of late abortions (>12 weeks). This resulted in a pre-enactment to post-enactment increase in the ratio of late-to-early abortions among minors.

Conclusions. These data suggest that parental notification facilitated pregnancy avoidance in 15–17 year-old Minnesota women. Abortion rates declined unexpectedly while birth rates continued to decline in accordance with a long-term trend. (*Am J Public Health* 1991;81:294–298)

Introduction

Laws requiring parental consent or parental notification prior to legal induced abortion for minor women, collectively called parental involvement laws, exist or have been proposed in numerous states. As of July 1990, laws in the United States requiring parental consent were in effect in Alabama, Indiana, Louisiana, Massachusetts, Missouri, North Dakota, and Rhode Island. Laws requiring parental notice were in effect in Arkansas, Idaho, Utah, and West Virginia; and parental involvement statutes were under challenge in Arizona, California, Georgia, Illinois, Kentucky, Mississippi, Nevada, Pennsylvania, and Tennessee. National attention focused on these laws when statutes from Minnesota and Ohio were heard by the US Supreme Court during its October 1989 term resulting in a decision largely supporting these laws. The present paper concerns the Minnesota law, enacted in August 1981 and enjoined in March 1986. This law required a minor woman to notify both parents at least 48 hours prior to an abortion or else seek court approval.

Few empirical studies have evaluated the impact of parental involvement statutes on minor women. Cartoof and Klerman[1] determined that abortions to minors in Massachusetts declined dramatically (43 percent) following the enactment of a parental consent law. However, during this time an approximately equal number of women migrated to surrounding states to obtain abortions. Blum[2] found that under parental notification in Minnesota, communication with parents about a minor's planned abortion occurred more often than had been reported by Clary[3] in a Minneapolis/St. Paul study predating the law. But Blum found that patterns of communication differed little from those among teenagers simultaneously surveyed in the neighboring state of Wisconsin (without such a law).

Common negative claims about parental involvement laws are that they force minors to leave the state to obtain abortions (as in Massachusetts), and that they result in increased birth rates, late abortions and medical complications. These effects are presumably related to a minor's reluctance to discuss her pregnancy with parents.[4] Positive claims about these laws are that they promote responsibility (by encouraging teenagers to "think before they act"), foster parent-child communication, facilitate mature decision making, and may reveal medical history information that would otherwise remain unknown to the physician.[5,6]

Empirical evaluation of assertions like these will necessitate multiple studies under a variety of circumstances and localities. The Cartoof and Klerman study[1] was conducted in Massachusetts, located in close proximity to states without parental involvement laws. This made it possible for minors to avoid the law altogether by crossing state lines. In Minnesota, the distance from out-of-state abortion facilities appears to have worked against mi-

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gration. Blum determined that "[i]n counterdistinction to the Massachusetts data, there is little evidence to indicate large numbers of Minnesota youths are leaving the state for abortion (data available on request to author)."[5] It cannot be assumed that findings characterized by one set of background factors, such as proximity to out-of-state abortion facilities, will generalize to other settings.

In this study, the statewide impact of the Minnesota Parental Notification Law upon the incidence rate of abortion and birth, as well as upon the ratio of abortions to births and the ratio of early to late abortions, is examined.

Methods

Data

Abortion and birth incidence data were provided by the Minnesota Center for Health Statistics (MCHS). The data exclude all observations of unknown age and are restricted to residents of Minnesota. Live births to Minnesota residents are included regardless of whether the birth occurred inside or outside of Minnesota. Induced abortions reflect only those occurring in Minnesota.

Population estimates by age and gender are provided by the Minnesota Center for Health Statistics that computed them using a modified version of the cohort-component method for all years following the 1980 census.[7]

Throughout this report "birth(s)" and "abortion(s)" will refer to live birth(s) and induced abortions(s), respectively.

Outcome Measurements

The report utilizes six outcome measurements: four rates and two ratios.

- The abortion rate, the late abortion rate (>12 weeks), the early abortion rate (≤12 weeks) and the birth rate refer to the number of reported abortions (or births) in one year divided by the population estimate of females, in thousands, for that same year.
- The abortion-to-birth ratio refers to the number of abortions in a year divided by the number of births. Alternatively, this may be thought of as the abortion rate divided by the birth rate for a given year.
- The late-to-early abortion ratio refers to the number of late abortions in a year divided by the number of early abortions. Again, this may be thought of as the late abortion rate divided by the early abortion rate for a given year.

Measures of Effect

Each rate and ratio was examined using a linear model.[8,9] Serving as a dependent variable, the rate (or ratio) was modeled as a function of age category (≤17, 18–19 or 20–44 years old), the year of occurrence (1975 through 1987), and the age by year interaction.

First, each model was employed to determine whether a given rate (or ratio) three years before and four years after enactment of the Minnesota Parental Notification Law differed within each age category. Because the modeling was performed in the log scale, the pre-enactment (1978 to 1980) and post-enactment (1982 to 1985) values represent the geometric mean of the individual values comprising the pre-enactment and post-enactment periods. (The antilog of the arithmetic mean of log values corresponds to the geometric mean of the same measurement in the original scale. That is, anti-ln [ln a + ln b]/2 = $\sqrt{[ab]}$.)

Second, three additional contrasts were constructed to detect the presence of any age group by time interaction that might exist for a given rate or ratio. These contrasts reflect whether the pre-enactment to post-enactment *change* was different among minors than among 18–19 year-olds, or 20–44 year-olds, or among 18–19 year-olds than women 20–44 years old. It was assumed that a change due to the law, rather than to general factors operating in all age groups, would be most pronounced among women 17 years of age or younger; less evident among 18 and 19 year-old women who would have recently been, but would not presently be under the law (pregnancy at age 17 may mean birth at age 18); and least present among older women not subject to the law for at least two years.

Models

The mechanics underlying the linear models[8,9] used to construct the six contrasts described above were as follows. The model parameters, representing age category (two parameters capturing three age classifications), year (12 parameters capturing 13 years), and the age by year interaction (24 parameters reflecting the cross-product of age and year), were regressed against the *natural log* of the rate or ratio under question. Rows of each model's design matrix were combined to form the six contrasts. When the abortion rate, late abortion rate, early abortion rate, or birth rate served as the dependent variable, weighted least squares estimates and asymptotic variances for the estimates were obtained. When the abortion-to-birth ratio or late-to-early abortion ratio served as the dependent variable, maximum likelihood was used to obtain estimates and asymptotic variances. PROC CATMOD of Version 6.03 of the Statistical Analysis Software (SAS)[10] was employed to fit the models.

For ease of interpretation, the authors elected to display each contrast effect as a quotient (contrast ratio) in the original scale rather than a difference in the log scale. For any given contrast, this means that rather than presenting in tables the difference between two natural log values, it is the antilog of this difference that has been presented. It is evident that the difference between two identical log values will be "zero" while the corresponding contrast ratio will be unity (one). That is, (ln A) − (ln A) = 0 implies that the antilog is unity. Thus, contrast ratios equal to unity imply equivalence between the contrasted values.

Results

Table 1 contains the outcome measures examined in this study. For each outcome measure, Table 2 contains the contrast ratios that compare the pre-enactment and post-enactment periods. Contrast ratios greater than unity imply an increase in the outcome measure (abortion rate, birth rate, etc.) after enactment of the law and contrast ratios less than unity imply a decrease. Similarly, Table 3 contains ratios that reflect the age by time interactions. Here, a contrast ratio less than unity indicates a greater pre-enactment to post-enactment decline in the younger age group of the two being compared; a contrast ratio greater than unity indicates a greater increase.

Abortion Rate

Deviations from unity for the contrast ratios that compare pre-enactment and post-enactment periods (Table 2) are substantial in all age groups. Whereas the yearly abortion rates after the law's enactment increased for women 20–44 years old (who were substantially removed from its impact), abortion rates declined in both 15–17 and 18–19 year-olds during this same period. The pre-enactment to post-enactment decline was substantially greater for 15–17 than 18–19 year-old women, and for 18–19 year-old women than 20–44 year-old women (Table 3).

TABLE 1—Outcome Measures and Population Estimates for Minnesota Women, 1978 to 1987*

Outcome Measure	Age (years)	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Abortion Rate†	15–17	12.36	16.50	18.60	18.25	19.24	19.57	16.06	14.25	12.80	13.03	14.54	14.42	15.46
	18–19	20.47	28.92	31.27	35.71	38.72	40.26	38.37	36.45	33.06	35.05	34.07	31.89	30.83
	20–44	7.32	9.55	11.48	12.36	13.41	14.13	14.00	13.96	13.11	14.21	14.48	14.29	14.17
Birth Rate†	15–17	20.94	19.64	19.62	17.80	17.71	17.48	17.36	16.54	14.56	16.00	15.01	15.52	15.03
	18–19	58.11	52.98	55.10	55.80	57.00	59.48	59.33	56.57	48.76	48.86	47.18	42.65	43.68
	20–44	74.00	72.48	75.79	76.14	78.05	79.80	79.43	78.13	75.18	75.57	75.92	74.00	72.67
Abortions/ Births	15–17	0.59	0.84	0.95	1.03	1.09	1.12	0.93	0.86	0.88	0.81	0.97	0.93	1.03
	18–19	0.36	0.55	0.57	0.64	0.68	0.68	0.65	0.64	0.68	0.72	0.72	0.75	0.71
	20–44	0.10	0.13	0.15	0.18	0.17	0.18	0.18	0.18	0.17	0.19	0.19	0.19	0.19
Early Abortion Rate†	15–17	10.22	12.81	14.73	14.97	15.73	15.34	12.93	11.37	9.66	9.68	11.24	11.38	12.05
	18–19	17.61	24.01	25.89	30.46	33.31	33.56	32.58	30.92	27.63	28.42	28.13	26.04	26.23
	20–44	6.62	8.45	10.23	11.24	12.19	12.71	12.74	12.66	11.87	12.89	13.04	12.86	12.84
Late Abortion Rate†	15–17	2.16	3.69	3.88	3.28	3.51	4.23	3.13	2.89	2.94	3.36	3.30	3.04	2.80
	18–19	2.86	4.91	5.39	5.25	5.41	6.69	5.76	5.53	5.44	6.53	5.94	5.85	4.56
	20–44	0.70	1.10	1.25	1.11	1.23	1.42	1.27	1.31	1.24	1.53	1.44	1.44	1.31
Late/Early Abortions	15–17	0.21	0.29	0.26	0.22	0.22	0.28	0.24	0.25	0.30	0.35	0.29	0.27	0.22
	18–19	0.16	0.20	0.21	0.17	0.16	0.20	0.18	0.18	0.20	0.23	0.21	0.22	0.17
	20–44	0.11	0.13	0.12	0.10	0.10	0.11	0.10	0.10	0.10	0.12	0.11	0.11	0.10
Population	15–17	115684	117102	116317	115722	115202	113600	106143	103981	104371	100131	100912	101172	101846
	18–19	85[illegible]	86626	86110	85525	85047	83964	79663	76766	77004	73784	74295	74375	74768
	20–44	662309	683089	700327	722182	747058	761269	779081	797136	799912	811683	819042	821954	828167

*Raw data provided by the Minnesota Center for Health Statistics.
†Abortion, birth, early abortion and late abortion rates are expressed as the number of abortions or births per 1000 women.
NOTE: Early abortions: ≤12 weeks; Late abortions: >12 weeks.

Birth Rate

Birth rates decreased in all age categories following enactment of the law (Table 2). However, the decline was most pronounced in 15–17 and 18–19 year-old women. Table 3 reveals that the pre-enactment to post-enactment change among 15–17 and 18–19 year-old women was similar, with both age groups evidencing a substantially greater decline than found among women ages 20–44.

Ratio of Abortions to Births

A marked drop in the abortion-to-birth ratio occurred after the law in 15–17 year-old women when compared to both 18–19 year-old women and 20–44 year-old women (see Tables 2 and 3). In Figure 1, the abortion rate and birth rate are plotted separately for 15–17 year-old women along with the abortion-to-birth ratio (abortion rate/birth rate) in order to examine the relative importance of abortions and births to the markedly declining abortion-to-birth ratio in this age group. It is evident that birth rates continue a modest and nearly linear decline, apparently unaffected by the law ($r = -0.89$ between birth rate and year). On the other hand, the abortion rate falls dramatically after the enactment of the law in August 1981. Together, these facts indicate that the drop in the 15–17 year-old abortion-to-birth ratio is due to a disproportionately greater decrease in the abortion rate (numerator).

Early and Late Abortions

The early abortion rate closely tracks the overall abortion rate (Tables 2 and 3). The pre-enactment to post-enactment late abortion rate substantially declines for women of 15–17 years, increases for women of 20–44 years, and remains nearly constant for women of 18–19 years (Table 2). The pre-enactment to post-enactment change in the late abortion rate, when compared between age groups, evidences a greater decline in late abortions for 15–17 than for either 18–19 or 20–44 year-old women (Table 3).

The late-to-early abortion ratio increased after the enactment of the law in all age groups (Table 2). However, the increase was greater among 15–17 year-old women than 20–44 year-old women (Table 3). Figure 2 reveals that a steep decline in early abortions, not an increase in late abortions, accounts for the increased late-to-early abortion ratio in 15–17 year-old women.

Discussion

Data presented in this study are compatible with the hypothesis that, initially, parental notification facilitated pregnancy avoidance in 15–17 year-old Minnesota women. Abortion rates fell markedly in this age group relative to older women. Birth rates also fell, but only in keeping with a long-term trend established before enactment of the law. One possibility is that when minor women are restricted from abortion without notifying parents or seeking court approval, and are geographically prohibited from easy access to out-of-state abortions,[2] they are more likely to take measures to avoid pregnancy.

Although the data are compatible with this hypothesis, other explanations are possible. For example, a growing concern over human immunodeficiency virus infection, and/or awareness and availability of birth control may explain in part or in full these findings. However,

TABLE 2—Contrasts Between Pre- and Post-Enactment Periods*

Outcome Measures	Age (years)	Pre-Enactment**	Post-Enactment†	Contrast Ratio (Post/Pre) With 95% CI
Abortion Rate††	15–17	19.012	13.835	0.717 (0.692, 0.743)
	18–19	38.181	34.638	0.907 (0.883, 0.932)
	20–44	13.280	13.931	1.049 (1.034, 1.064)
Birth Rate††	15–17	17.863	15.510	0.878 (0.848, 0.909)
	18–19	57.338	50.213	0.876 (0.857, 0.895)
	20–44	77.982	76.191	0.977 (0.971, 0.983)
Abortions/ Births	15–17	1.076	0.879	0.817 (0.777, 0.859)
	18–19	0.666	0.690	1.036 (1.000, 1.074)
	20–44	0.170	0.183	1.074 (1.057, 1.091)
Early Abortion Rate††	15–17	15.343	10.507	0.685 (0.658, 0.713)
	18–19	32.413	28.749	0.887 (0.861, 0.914)
	20–44	12.032	12.554	1.043 (1.027, 1.059)
Late Abortion Rate††	15–17	3.653	3.114	0.852 (0.788, 0.921)
	18–19	5.750	5.867	1.020 (0.952, 1.093)
	20–44	1.247	1.375	1.103 (1.052, 1.157)
Late/Early Abortions	15–17	0.238	0.296	1.245 (1.140, 1.359)
	18–19	0.177	0.204	1.150 (1.067, 1.241)
	20–44	0.104	0.110	1.058 (1.008, 1.112)

*Raw data provided by the Minnesota Center for Health Statistics.
**Geometric mean, years 1978–80, Table 1.
†Geometric mean, years 1982–85, Table 1.
††Abortion, birth, early abortion and late abortion rates are expressed as the number of abortions or births per 1000 women.
NOTES: 1) Early abortions: ≤12 weeks; Late abortions: >12 weeks.
2) Pre-enactment (1978–80) to post-enactment (1982–85) means are compared (post/pre) in the form of contrast ratios. A contrast ratio of one implies no pre-enactment to post-enactment change.

TABLE 3—Age by Time Interactions*

Outcome Measures	Age Group Comparison	Post- / Pre-enactment Ratios** Younger	Post- / Pre-enactment Ratios** Older	Contrast Ratio (younger/older) with 95% CI
Abortion Rate	15–17 vs 18–19	0.717	0.907	0.791 (0.756, 0.827)
	15–17 vs 20–44	0.717	1.049	0.684 (0.658, 0.710)
	18–19 vs 20–44	0.907	1.049	0.865 (0.839, 0.892)
Birth Rate	15–17 vs 18–19	0.878	0.876	1.003 (0.982, 1.045)
	15–17 vs 20–44	0.878	0.977	0.899 (0.867, 0.931)
	18–19 vs 20–44	0.876	0.977	0.896 (0.876, 0.917)
Abortions/Births	15–17 vs 18–19	0.817	1.036	0.788 (0.741, 0.839)
	15–17 vs 20–44	0.817	1.074	0.761 (0.722, 0.802)
	18–19 vs 20–44	1.036	1.074	0.966 (0.928, 1.003)
Early Abortions	15–17 vs 18–19	0.685	0.887	0.772 (0.735, 0.812)
	15–17 vs 20–44	0.685	1.043	0.656 (0.629, 0.685)
	18–19 vs 20–44	0.887	1.043	0.850 (0.822, 0.879)
Late Abortions	15–17 vs 18–19	0.852	1.020	0.836 (0.753, 0.927)
	15–17 vs 20–44	0.852	1.103	0.772 (0.705, 0.846)
	18–19 vs 20–44	1.020	1.103	0.925 (0.850, 1.006)
Late/Early Abortions	15–17 vs 18–19	1.245	1.150	1.082 (0.983, 1.215)
	15–17 vs 20–44	1.245	1.058	1.177 (1.064, 1.302)
	18–19 vs 20–44	1.150	1.058	1.086 (0.994, 1.191)

*Raw data provided by the Minnesota Center for Health Statistics.
**Post- / pre-enactment ratios are from Table 2.
NOTES: 1) Early abortions: ≤12 weeks; Late abortions: >12 weeks.
2) Post-enactment to pre-enactment ratios (Table 2) are compared across age groups (younger/older) to examine age by time interactions. A contrast ratio of "one" implies equivalent post- / pre-enactment ratios for both age groups (no interaction).

the abrupt nature of the change in abortion rate, a phenomenon found also in Massachusetts by Cartoof and Klerman,[1] makes these rival hypotheses less tenable. In any event, the data argue against Clary's[1] concern that more minors might carry pregnancies to term as an indirect effect of the parental notification law. If such were the case, it seems unlikely that birth rates would have continued to decline in 15–17 year-olds along the linear trend line established prior to the law, or that the decline in birth rates would be nearly identical between 15–17 and 18–19 year-old women.

The pre-enactment to post-enactment increase in the proportion of late (>12 weeks) to early (≤12 weeks) abortions was greater for 15–17 than for 20–44 year-old women. At least two hypotheses may explain this finding. First, the law may have been more successful in preventing pregnancy among minors who would have had early abortions than among minors who would have had late abortions. A second possibility is that the law caused delays for a greater percentage of a declining number of minors seeking abortions. Regardless, the claim that the law caused more minors to obtain late abortions is unsubstantiated. In fact, the reverse is true. For ages 15–17 the number of late abortions per 1,000 women decreased following the enactment of the law. Therefore, an increased medical hazard due to a rising number of late abortions was not realized.

In this paper no effort has been made to confront the philosophical and legal issues surrounding parental involvement laws. Rather, the authors have pursued a limited task, that of empirical evaluation within a framework of defined outcome parameters. This study is consistent with the hypothesis that conception among minor women may be reduced immediately following enactment of parental notification legislation when migratory abortion across state lines is not a viable alternative. However, generalizations to other states must be made cautiously, as Minnesota is a unique state with a low minority population and a low pregnancy rate even before the parental notice legislation. The authors emphasize that replication in states other than Minnesota will be required to sustain the hypothesis. □

Acknowledgments

The authors wish to thank the Minnesota Center for Health Statistics, particularly James Wiggington and Carol Vargas for their consid-

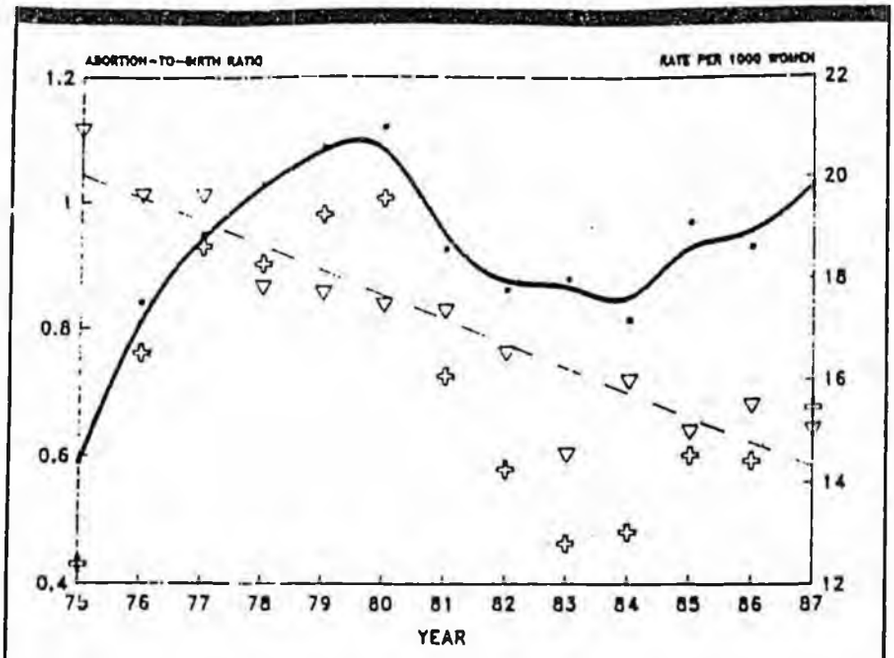

FIGURE 1—Abortion and Birth Rates per 1000 15–17 Year-Old Women and Abortion/Birth Rate Ratio, 1975–87
—Abortion/Birth Ratio
Abortion Rate
Birth Rate

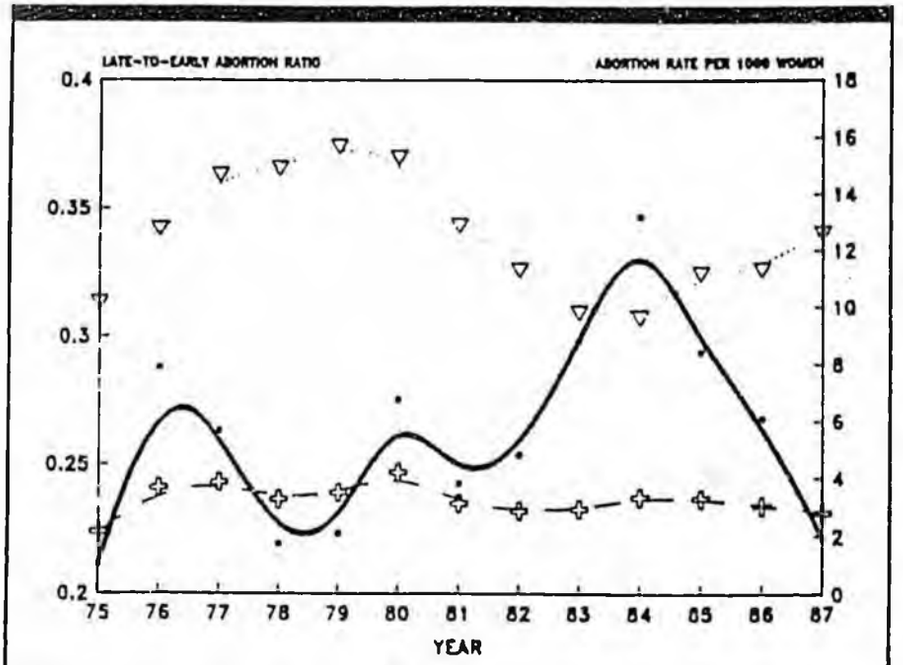

FIGURE 2—Early and Late Abortion Rates per 1000 15–17 Year-old Women and Late/Early Abortion Rate Ratio 1975–87
—Late/Early Ratio
Early Abortion Rate
Late Abortion Rate

erable work in providing these data in a form suitable for the current analysis. The authors also thank Americans United for Life for purchasing the data from the Minnesota Center for Health Statistics and providing it to the authors. Preparation of this study was supported in part by an Aldeen Grant from Wheaton College.

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LEGAL SERVICES

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MEMORANDUM February 3, 1997

SUBJECT: Parental Consent for Minors' Activities (Work Order No. 20-LS0465)

TO: Senator Johnny Ellis
Attn: Noelle

FROM: Terri Lauterbach
Legislative Counsel

You have asked if state law requires parental consent before a minor's ear can be pierced, before a minor may go on a school field trip, before a minor may attend certain types of movies, and similar situations.

While there are some state laws that require parental consent in other situations, I have not found a state law requiring parental permission in the specific situations you have described. When parental permission is required in a commercial situation, such as ear piercing or to attend a movie, it is usually merely a business practice of the proprietor. The proprietor may require permission for any of several reasons, among them the following: to avoid a suit by the parent for injury to the minor, as a way of ensuring that the item or service will be paid for by an adult, or as a practice to maintain the good will of the parents or to uphold voluntary industry standards. When parental permission is required for a school function, liability and goodwill are probably the main concerns of the school district.

My review of the Alaska Statutes has found the following situations where parental consent **is required** for an activity of or relating to a minor:

(1) possession of a firearm if under 16 (AS 11.61.220(1)(3));

(2) marriage if 16 but under 18 (AS 25.05.171);

(3) testimony if the minor is a victim of a domestic violence crime, unless the court determines that the minor is capable of waiving the privilege not to testify (AS 25.35.100);

(4) informal treatment of delinquency charges (AS 47.10.020);

(5) to be absent from parental custody (AS 11.51.130(a)(4));

(6) to be evaluated for placement in special education classes, but a hearing can be held to determine whether the minor should be tested if the parent fails or refuses to consent (AS 14.30.193(a));

(7) transfer of an exceptional child outside the school district (AS 14.30.285(f));

(8) photographing a minor being evaluated for mental health treatment, except for internal identification purposes (AS 47.30.840(a)(1));

(9) being in or viewing an indecent photograph if under 16 (AS 11.61.123(a)).

State law specifically provides that parental consent **is not required** in the following situations:

(1) medical and dental services for a minor if the parent won't give an answer or cannot be contacted (AS 25.20.025);

(2) medical and dental services to a minor parent and for the minor's parent's child (AS 25.20.025);

(3) diagnosis, prevention, and treatment of pregnancy or venereal disease (AS 25.20.025);

(4) relinquishment of parental rights by a minor parent; (AS 25.23.180(b));

(5) to be interviewed at school by DHSS or law enforcement personnel when an allegation of abuse has been filed (AS 47.17.027(a));

(6) to be x-rayed or photographed when an allegation of abuse has been filed (AS 47.17.064(a)).

Please let me know if you have further questions about this matter or if I can be of other assistance.

TML:glc
97-050.glc