

participating in the program remained at more than twice that rate.<sup>44</sup>

Several years after the completion of the Denmark program, some researchers claimed that the study was flawed because a school nurse had been distributing condoms. In 1998 the U.S. Department of Health and Human Services, which funded the program, reiterated that the community intervention was designed from the onset and funded as abstinence-only and that an official HHS investigation was unable to attribute the decline in the pregnancy rate to the activities of the school nurse. The controversy raises an interesting question: Should the results of a contraceptive-based intervention be invalidated if it is later determined that an abstinence-only message existed within the intervention community?

### Conclusion

The evidence points to sexual abstinence, not increased contraceptive use, as the primary reason for the decline in teen pregnancy and birth rates throughout the 1990s. It appears possible that programs aimed at producing abstinent behavior have been more successful than programs aimed at increasing safer-sex practices in reducing unintended births to adolescents. Douglas Kirby, a noted sex education researcher, was prophetic in 1991 when he noted that "it may actually be easier to delay the onset of intercourse than to increase contraceptive practice."<sup>45</sup>

The increase in teen abstinence is likely due to a combination of factors -- the HIV/AIDS epidemic, the growth of abstinence-only programs, generational changes and increased cultural acceptance of abstinence.

The authors believe that the correlation between increased condom usage and higher out-of-wedlock birthrates among teens has significant public health policy implications. In 1997/98 a new federal program was implemented to promote an abstinence-only message. The timing of the federal Title V abstinence program seems well placed. Educational and youth programs should increase their emphasis on the abstinence-until-marriage message. Further research should be conducted into what components within an abstinence program contribute most to overall effectiveness.

<sup>1</sup> U.S. Department of Commerce, 1995. *Statistical Abstract of the United States*, Table 94, p 77.

<sup>2</sup> Centers for Disease Control (CDC). MMWR Abortion Surveillance, July 3, 1998. In 1972 females aged 19 and under accounted for 32.6% of the 586,760 reported abortions compared to 22.4% of the 1,429,577 reported abortions in 1990.

<sup>3</sup> "Teen Birth Rates Down in All States," Department of Health and Human Resources, HHS News, April 30, 1998."

<sup>4</sup> National Center for Health Statistics, Monthly Vital Statistics Report, Vol. 46, No. 11(S), June 30, 1998.

<sup>5</sup> CDC. The total number of abortions dropped from 1,429,577 in 1990 to 1,210,883 in 1995. The percentage of the total abortions accounted for by females aged 19 and under also dropped from 22.4% in 1990 to 20.1% in 1994.

<sup>6</sup> CDC. Data are weighted for 42 states and Washington DC.

<sup>7</sup> Abma, Joyce and Sonnenstein, Freya L., "Teenage Sexual Behavior and Contraceptive Use: An Update," paper presented at the American Enterprise Institute's Abstinence Education Grants and Welfare Reform Conference, April 28, 1998. Data from the National Survey of Family Growth and National Survey of Adolescent Males, 1988 and 1995.

<sup>8</sup> Ibid.

<sup>9</sup> Ibid.

<sup>10</sup> Santelli, John S., et al., "The Use of Condoms and Other Contraceptive Methods Among Young Men and Women," *Family Planning Perspectives*,

Vol. 29, No. 6, November/December 1997. Data weighted for adolescents aged 14 to 19.

<sup>11</sup> Abma and Sonnenstein.

<sup>12</sup> Piccinino, Linda J. and Mosher, William D., "Trends in Contraceptive Use in the United States: 1982-1995," *Family Planning Perspectives*, Vol. 30, No. 1, January/February 1998.

<sup>13</sup> Bachrach, Christine A., "Trends in Sexual Activity and Abstinence Among U.S. Men and Women," Paper presented at a seminar on Abstinence Education Grants and Welfare Reform, Washington DC, June 6, 1997. Data from National Survey of Family Growth, 1988 and 1995.

<sup>14</sup> "Choosing A Contraceptive," FDA Consumer Magazine, December 1993, Publication #94-1213.

<sup>15</sup> National Center for Health Statistics. The birthrate for 1976 of 24.6 was projected based on the assumption of a straight linear increase from the birthrates of 23.9 in 1975 to 27.5 in 1980.

<sup>16</sup> National Survey of Family Growth; Hofferth, Kahn and Baldwin, 1987.

<sup>17</sup> National Center for Health Statistics.

<sup>18</sup> National Survey of Family Growth; Kaufmann, Rachel B., et al., "The Decline in U.S. Teen Pregnancy Rates, 1990-1995," *Pediatrics*, Vol. 102, No. 5, November 1998.

<sup>19</sup> Piccinino and Mosher.

<sup>20</sup> Bachrach.

<sup>21</sup> CDC. Youth Risk Behavior Surveys, 1990-1997.

<sup>22</sup> Ibid.

<sup>23</sup> Sellers, Abbylin, "The Sexual Abstinence Message Causes Positive Changes in Adolescent Behavior: A Circumstantial Review of Relevant Statistics," Westmont College, July 1998; True Love Waits, 1998.

<sup>24</sup> Jemmott, John B. III, et al., "Abstinence and Safer Sex HIV Risk-Reduction Interventions for African American Adolescents," *Journal of the American Medical Association*, Vol. 279, No. 19, May 20, 1998.

<sup>25</sup> Kirby, Douglas, "No Easy Answers: Research Findings on Programs to Reduce Teen Pregnancy," The National Campaign to Prevent Teen Pregnancy: Washington, DC, March 1997, pp. 29-30.

<sup>26</sup> DeGaston, Jacqueline F., et al., "Teacher Philosophy and Program Implementation and the Impact on Sex Education Outcomes," *The Journal of Research and Development in Education*, Vol. 27, No. 4, Summer 1994.

<sup>27</sup> Schuster, Mark A., et al., "Impact of a High School Condom Availability Program on Sexual Attitudes and Behaviors," *Family Planning Perspectives*, Vol. 30, No. 2, March/April 1998.

<sup>28</sup> Abma and Sonnenstein.

<sup>29</sup> Ibid.

<sup>30</sup> Ku, Leighton, et al., "Understanding Changes in Sexual Activity Among Young Metropolitan Men: 1979-1995," *Family Planning Perspectives*, Vol. 30, No. 6, November/December 1998.

<sup>31</sup> Wirthlin Worldwide. September 1997. National randomized telephone survey of 4,980 adults, margin of error = +/-1.4%.

<sup>32</sup> "Teen-Age Poll Finds a Turn to the Traditional," *The New York Times/CBS News Poll*, April 30, 1998.

<sup>33</sup> Howard, Marion and McCabe, Judith Blamey, "Helping Teenagers Postpone Sexual Involvement," *Family Planning Perspectives*, Vol. 22, No. 1, 1990, p 22.

<sup>34</sup> "Many Young People Regret Sexual Activity," Roper-Starch study, 1994.

<sup>35</sup> "Parents of Teens and Teens Discuss Sex, Love and Relationships," International Communications Research Study, April 1998.

<sup>36</sup> Resnick, Michael D., et al., "Protecting Adolescents from Harm: Findings From the National Longitudinal Study on Adolescent Health," *JAMA*, Vol. 278, No. 10, September 10, 1997.

<sup>37</sup> Ibid.

<sup>38</sup> Oregon Health Policy Institute, STARS Evaluation Tool Kit, August 1998.

<sup>39</sup> "STARS recasts teen views on sex," *Portland Oregonian*, October 2, 1998.

<sup>40</sup> Division for Vital Records and Health Statistics, Michigan Department of Community Health; U.S. Department of Health and Human Services.

<sup>41</sup> Aseltine, Gwen P., B.A., M.A., Ph.D., "Research on Teen Pregnancies," Behavioral Sciences Research Associates, 1998.

<sup>42</sup> Rowberry, David R., Ph.D., "An Evaluation of the Washington, D.C., Best Friends Program," (Ph.D. diss., University of Colorado: 1995), p 184.

<sup>43</sup> Ibid.

<sup>44</sup> Vincent, Murray L., Ed.D., "Reducing Adolescent Pregnancy Through School and Community-Based Education," *Journal of the American Medical Association*, June 26, 1987, Vol. 257, No. 24.

<sup>45</sup> Kirby, D., et al., "Reducing the Risk: Impact of a New Curriculum on Sexual Risk-Taking," *Family Planning Perspectives*, Vol. 23, No. 6, November/December 1991.

**A Perspective on the Medical  
Implications of the  
Virginity Pledge among Teens**

**The Physicians Consortium**

**January 5, 2001**

*More than 2,000 physicians dedicated to bringing evidence-based medicine to the public health dialogue*

## A Perspective on the Medical Implications of the Virginity Pledge among Teens

John R. Diggs, Jr., M.D.; Hall Wallis, M.D.; Joanna K. Mohn, M.D.; and Kent Jones, M.D., Ph.D.  
The Physicians Consortium, January 5, 2001

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### Background

The January 2001 issue of the *American Journal of Sociology* published the results of an extensive research project on the effect of the virginity pledge in delaying sexual initiation among teens. The paper titled, "Promising the Future: Virginity Pledges as they affect the Transition to First Intercourse," is the result of research conducted by Dr. Peter S. Bearman, Director of the Institute for Social and Economic Research and Policy at Columbia University, and Dr. Hannah Brückner, Assistant Professor of Sociology at Yale University. The data examined by Bearman and Brückner came from the National Longitudinal Study on Adolescent Health (AddHealth)—the most-extensive-ever longitudinal research study of adolescent behavior and the factors that reduce risk-taking by teens.

AddHealth included a question on whether or not teens had ever taken a pledge of virginity. The answer to this question—as well as data gathered on familial, school and social contexts—made it possible for the authors to greatly extend the social scientific understanding of the relationship of the virginity pledge to teen sexual behavior.

The authors found the following:

- *"Adolescents who pledge, controlling for all of the usual characteristics of adolescents and their social contexts that are associated with the transition to sex, are much less likely than adolescents who do not pledge to have intercourse."*
- *"The delay effect is substantial and almost impossible to erase. Taking a pledge delays intercourse for a long time....Pledging decreases the risk of intercourse substantially and independently."*
- *"The pledge effect is not a selection effect. It is real and it is substantial."*

The authors found that the delay in sexual debut among pledgers is very long.

- The median age of transition for non-black female pledgers was 19.9 years, versus 16.7 years for their non-pledging counterparts. At age 19.6 years, only 25 percent of non-black male pledgers had experienced first intercourse. About 25 percent of male non-black non-pledgers had sex by the age of 17.1 years.
- According to the authors, *"For both black females and males, the difference in median age between pledgers and others is slightly above 2 years (27 months)."*

A delay in sexual debut among pledgers remained intact when the authors controlled for all of the usual determinants (factors) associated with the transition to first sex and the determinants associated with pledging. The authors also compared those pledgers and non-pledgers who were still virgin at the time of the second wave of the AddHealth study. Here too, the pledge effect was apparent—non-black pledgers delayed sex about one and a half years longer than did non-pledgers.

The pledge study authors did qualify the pledge effect in several respects.

- *"The pledge identity is relatively fragile and meaningful only in contexts where it is at least partially non-normative."*
- *"The pledge effect is strongly conditioned by age. Pledging does not work for adolescents at all ages. It works the most for younger adolescents."*

- *"The pledge identity is induced and sustained through interacting with other pledgers in the community who distinguish themselves from non-pledgers by their public pledge and commitment to the group. The pledge movement, in this sense, is an identity movement."*
- At first intercourse, pledgers are about one-third less likely to use contraceptives than non-pledgers. [We will discuss this finding below.]

### Introduction

At first glance, the finding that pledgers are one-third less likely to use contraception at first intercourse than are non-pledgers would seem to indicate that pledgers are less protected against the risks of unmarried teen childbearing and STDs. Does this decreased condom use among pledge-breakers put all pledgers, as a group, at statistically higher risk for STDs and childbearing? The answer is an unqualified no! As a group, pledgers are at far less risk than are non-pledgers. There are two reasons for this.

#### 1. Pledger-breakers are really not one-third less likely to use contraception at first intercourse.

The finding by the authors of the pledge that pledger-breakers are one-third less likely to use contraception at first intercourse than are non-pledgers might seem to indicate that pledger-breakers are more likely to experience unmarried teen childbearing and STDs.

Pledgers are people who have other characteristics that make them more likely to use contraception at first intercourse. In the complex research model used for the pledge study, the authors quite correctly "washed-out" these characteristics in order to isolate the effect of the pledge itself. So the finding that pledger-breakers are less likely to use contraception is true in what researchers call a "multivariate model." When these characteristics are not "washed-out," and the comparison is just contraception use by pledgers and non-pledgers at first intercourse, it cannot be said that pledgers are one-third less likely to use contraception. In fact, in this context pledgers may be more likely to use contraceptives.

#### 2. The delay in having first intercourse among pledgers has important health implications.

Pledgers experience sexual debut at a significantly older age than do non-pledgers. Whatever the reason for this delay—the pledge itself, certain factors in the lives of pledgers, or a combination of the two—the fact remains that pledgers, as a group, experience first intercourse at an older age. Research exists from which one can make certain inferences regarding the health risks associated with the age of sexual debut. This is the focus of the Consortium's review.

### The Perspective of the Physicians Consortium

As practicing physicians, we encounter the results of teenage sexual "experimentation" in the forms of unwed teenage parenthood, pregnancy scares, STDs and requests for abortion. Even many years later, the consequences can be as fatal as AIDS, as permanent as incurable herpes, and as heartbreaking as infertility.

Our conclusion is that it is best for teens to refrain from sexual involvement until marriage. This is not only the best choice from a health perspective, but also for the purpose of a successful marriage. A delay to just a "later age" of sexual initiation is not a satisfactory target for us. Nevertheless, the pledge study research identified a delay in the median age of sexual initiation by pledgers, and this has important health implications.

Teens who begin sex at an earlier age are at greater risk for STD infection for four reasons.

- A. An earlier age of first intercourse is linked to a greater number of sexual partners and a greater number of sexual partners is linked to greater STD risk.
- B. Condom use generally declines with length of sexual activity.
- C. The number of sexual acts unprotected against STDs and teen pregnancy is likely to be greater among teens who begin sex at an earlier age.
- D. Contraceptives do not provide significant protection against certain widespread STDs.

**A. Age of first intercourse and number of sexual partners.**

Age of sexual debut is correlated with number of sex partners. Table A compares the median age of sexual debut for pledgers with that of non-pledgers. At the median age, 50 percent of a group has had sex and 50 percent has not. The use of median age as a comparison point is somewhat arbitrary because it represents a slice in time. But, while the difference in the age of debut between pledgers and non-pledgers may be greater or less at different quartiles, the pattern would likely be similar. Pledgers have an older age of sexual debut at every point of comparison.

		Pledgers (age in years)	Non-pledgers (age in years)
Females	Non-blacks†	19.9	16.7
	Blacks†	18.6	16.3
	All (weighted to pop.) ‡	19.7	16.6
Males	Non-blacks* 19.6 (lowest quartile)	20.5 (median age - estimated)‡	17.1 (lowest quartile)
	Blacks† 17.7	17.4 (median age - estimated)‡	15.4
	All (weighted to pop.) ‡ 20.1 (based on median ages)	17.1 (based on median ages)	

\*The pledge study authors compared the transition for non-black male pledgers and non-pledgers in the lowest quartile because fewer than 50 percent of non-black male pledgers had experienced sexual debut before age 20.  
 †Data from the pledge study.  
 ‡Data so noted represent calculations or estimates by the Consortium.

From a mature adult's perspective of the world, a teen is not always a rational decision-maker. Any person who has parented teens knows this to be true. For example, what 16-year-old high school sophomore girl does not think that the present love of her life will not always be the love of her life? But we know that high school romances are generally short-lived. Our experience is that many teens who begin sex at an early age will remain sexually active throughout all subsequent relationships. While the teen may view his or her behavior as monogamy (only having sex with someone they "love"), the medical description is nothing short of promiscuity.

Our experience is that teens who begin sex at an earlier age engage in riskier activities. There is research that supports our observation that an early age of debut is strongly correlated with the number of sexual partners. The number of sexual partners, in turn, is correlated with the risk of STD infection.

Non-pledgers, as group, transition to sex at a younger age. This means, for example, that on a median-age basis, non-pledging non-black females have more than three years of sexual experience before non-black female pledgers have their first intercourse. By age 20, non-pledgers are more likely than are pledgers to have had multiple partners.

Table B shows the probability of multiple partners based on age of sexual debut.

Age of sexual debut	Females - four or more sexual partners, past 12 months <sup>1</sup>	Females - six or more sexual partners, lifetime-to-date <sup>2</sup>
17 years (median age of sexual debut for female non-pledgers = 16.6 years, estimate by Consortium)	9.4%	31.9%
20 years (median age of sexual debut for female pledgers = 19.7 years, estimate by Consortium)	3.3%	10.5%

Females who began sex at age 17 were 2.8 times more likely to have had four or more partners in the previous year and three times more likely to have had six or more partners lifetime-to-date than were females who began sex at age 20. The data in Table B is for all females (pledgers and non-pledgers). Some pledgers transition to sex at an age earlier than the median age of debut for non-pledgers just as some non-pledgers transition to sex at an age later than the median age of debut for pledgers. The Consortium believes that the data in Table B might be considered an estimate for pledgers and non-pledgers, relative to their respective median ages of debut.

Table C provides a percent distribution of all 19-year-old teens, by number of lifetime-to-date sexual partners.

Number of lifetime partners	All males, age 19	All females, age 19
0 <sup>iv</sup>	15%	23%
1	16.4%	22.6%
2 to 3	25.1%	21.4%
4 to 5	10.8%	14.4%
6 or more	32.7%	18.6%

By age 20, about 50 percent of pledgers remain virgins. Contrast this figure with the data on Table C showing that only 15 percent of all males age 19 are virgins and 68.6 percent have had at least 2 partners. For all females age 19, only 23 percent are virgins and 54.4 percent have had at least 2 partners.

The probability of contracting an STD increases with the number of sexual partners. For example, consider chlamydia. Females who acquire an average of about one new partner per year, compared to those who acquire about one new partner every 10 years, are 16 times more likely to contract chlamydia.<sup>v</sup> This is a vitally important statistic given that there are four million new cases of chlamydia per year,<sup>vi</sup> and that chlamydia increases HIV transmission probability by between 3.6- and 6-fold.<sup>vii</sup> Chlamydia is also a major cause of infertility.

#### B. Condom use declines the longer a teen is sexually active.

We have experienced this time and time again in our practices. Teens are people who believe they will never die or even suffer consequences from bad decisions. They may be very conscientious about using contraception when they first have sex, but over time they tend to throw caution to the wind. The data confirm our observations. A number of research studies indicate that contraceptive use declines with increased sexual experience. One study showed that the proportion of sexually active men ages 17-22 who used a condom with their most recent partner declined from 53 percent the first time they had intercourse with that partner to 44 percent at the most recent episode.<sup>viii</sup> The same study showed that condom use declined in each successive relationship.

Another study showed the likelihood of contraceptive use among women of every age group declined as the number of lifetime partners rose.<sup>ix</sup>

It must be pointed out that only condoms—of all forms of contraception—offer any, albeit inadequate, protection against STDs. So the reduction in condom use over time is a pertinent consideration when determining the risk for STD infection. According to a study by the research firm Child Trends, condom use declines sharply following sexual debut. While 63 percent of females, ages 15-19, reported condom use at first sex, only 28 percent of sexually active females reported condom use at most recent sex.<sup>x</sup>

#### C. By beginning sex at a younger age, non-pledgers are likely to accumulate many more sexual acts as teens compared to pledgers.

Based on data included in a report by the Alan Guttmacher Institute, the Consortium calculated that the average teen female has about 218 acts of sex during her teen years.<sup>xi</sup> The low condom use at most recent sex means that non-pledgers are at far greater risk for STDs than are pledgers. Based on a rate of 28 percent for condom use at most recent sex, the average non-pledging teen female is likely to have about 157 acts of “unprotected” sex. Despite intensive and expensive campaigns to increase condom use among teens, the use rates are low.

#### D. Contraceptives do not provide significant protection against certain widespread STDs.

As physicians, we are greatly concerned that all of the talk about “safe sex” will give sexually active teens a false sense of security. Condoms have marginal effectiveness rates against genital herpes (HSV) and chlamydia, and little or no effectiveness against human papillomavirus (HPV). These are the three most common STDs. The sum of these three diseases dwarfs the number of cases of remaining STDs by several orders of magnitude. Consequently, condom use or, non-use, would not be expected to produce an appreciable difference in the occurrence of these STDs.

The major determinants of the acquisition of these diseases are the number of different sexual partners and the prevalence of the diseases within the population. Thus, for these three STDs, non-pledgers are at far greater risk because they begin sex at an earlier age and are more apt to have multiple partners.

#### Teen birthrates.

Chronologically, teen childbearing is only possible for a teen female who transitions to sexual debut prior to age 19.25 years. After this age, childbearing would occur beyond the teenage years.

According to the pledge study, only 50 percent of female pledgers had transitioned to first intercourse by this benchmark age. In contrast, a study released by the National Campaign to Prevent Teen Pregnancy showed that 77 percent of all 19-year old females were sexually experienced.<sup>xii</sup> Thus, not controlling for other factors (contraceptive use, frequency of sex, and the usual factors associated with transition to first sex and with pledging), non-pledgers, as a group, could be 52 percent more likely to experience unmarried teen childbearing.

#### Other risky behaviors.

When we find out that a teen patient is sexually active at an early age, often we discover that the teen is involved in additional risky behaviors, such as tobacco or alcohol use. Age of sexual debut is strongly associated with a variety of psychosocial risks. Sexually experienced adolescents are significantly more likely than virginal teens to engage in other risky behavior. For example, non-virginal girls were found to be 10.4 times more likely than were virginal girls to have used marijuana and 6.3 times more likely to have attempted suicide.<sup>xiii</sup> We are offended by the idea that sexually active teens should be given condoms and sent on their way. Not having instruction on and access to condoms are far from the most important things sexually active young people need. The real problem is teen sex, not the non-use of contraception.

#### Cumulative evidence.

The cumulative evidence is quite weighty: as a class, pledgers have a significantly lower risk for STDs and teen childbearing than do non-pledgers. This is because non-pledgers, as a group, begin sex at a far earlier age than pledgers, as a group. In our practices, we have observed that a teen who begins sex at an early age is very likely to contract an STD or become involved in a non-marital pregnancy.

#### Optimum Model for Sexual Health

Sexual activity among unmarried teens is a major problem in the United States. The twin epidemics of unwed pregnancy and sexually transmitted diseases (STDs) among teenagers carry enormous social, medical, educational and emotional costs. It is estimated that the direct and indirect cost to society of children bearing children exceeds \$29 billion per year.<sup>xiv</sup> Additionally, STDs carry a direct and indirect cost to society of \$16.6 billion annually.<sup>xv</sup> The precise proportion of the STD cost attributable to teens or older women who contracted an STD as teens is not known, but is likely sizable.

Teen sexual activity is a highly controversial topic, as might be expected of any major social problem (especially one with a strong moral component). Everyone recognizes the problem, but not everyone agrees about the solution.

Generally, there are two perspectives on addressing the problem. The first view, generically termed "abstinence plus safer-sex" believes that teens must be educated about and provided with condoms and other forms of contraceptives because the overwhelming majority of teens will experiment with sex before marriage.

The second view, called "abstinence until marriage," believes that teens should receive an unambiguous message that sex should be reserved for marriage.

As a group of more than 2,000 physicians who deal daily with the ravages of STDs and teen pregnancy, we see a simple solution: abstinence until marriage with an uninfected partner and monogamy thereafter. This is the lifetime prescription for optimum sexual health.

Our position on the matter of marriage is based on medical experience as well as science. Research overwhelmingly documents the fact that abstinence until marriage is the optimum medical model regarding sexuality. Individuals who remain sexually abstinent until marriage are better off medically, socially, educationally, economically and psychologically than those who have sex outside of marriage. Groups that attempt to discredit abstinence until marriage as a religious message apparently ignore a vast body of science. It is our opinion that those who oppose the concept of abstinence from a medical point of view have been greatly influenced by the fraudulent "research" of Alfred Kinsey, a zoologist who has been completely discredited by mainstream science. As physicians, we are concerned about the health of our patients. Abstinence until marriage to an uninfected partner, and monogamy thereafter, is the optimum health message. This fact is not altered because some people may choose not to marry or others do not believe that sex and marriage should be linked.

The challenge for medical professionals, parents, public health workers, educators and other youth leaders is to create a compelling vision for this goal and direct teens toward it.

There are several significant failings with basing a teen sexual health model on contraceptive and/or condom use.

1. Sexual monogamy, not contraceptive use, is the most direct path for optimum sexual health.
2. Condoms provide marginal protection against the three most prevalent STDs.
3. Condom use rates decrease with age and sexual experience.
4. Teens—by their very nature—are inconsistent and unreliable users of contraception.

#### The role of the virginity pledge

The Consortium identifies several components that contribute to the pledge's success.

1. The pledge acknowledges that sexual activity is controllable.
2. The pledge places the locus of control upon the individual.
3. The pledge requires a conscious, purposeful decision, in contrast to the "if it happens, it happens" outlook of many teens.

The questions, now, are straightforward. How can we extend the effect of the pledge as we move culture back towards the abstinence until marriage model? What types of programs or messages result in sexual postponement until marriage among teens and young adults?

Research on the virginity pledge is beginning to provide revealing answers.

The pledge of virginity study offers proponents of the abstinence movement much to cheer about. In fact, the entire public and private health community should be greatly encouraged by the pledge study.

Some groups may pronounce that pledgers would be better prepared for sex with more sex education and access to condoms. On the matter of sex education, pledgers presently receive the exact same classes as non-pledgers on such topics as human biology, STDs (including HIV/AIDS) and health. On the matter of condom instruction and availability, the opinion of the pledge study authors is that, *"It is hard not to imagine the dissonance that would arise if they [pledgers] were contraceptively prepared."* The Consortium recognizes that teens who abstain from sex need support to help them to continue to abstain until marriage, rather than having their resolve undermined by messages that may promote sexual activity.

Fans of the pledge movement must also recognize that the pledge study researchers found limitations of the pledge. The pledge effect is complex. Just getting a bunch of kids in a classroom to sign a pledge would ignore where the pledge gets its power. We believe that the pledge would be most effective when there is a supportive social structure. The vision for a successful marriage and family must be instilled by all components of society—parents, educators, youth workers, media, government and others.

All those concerned about teaching adolescents the optimum health model must view the pledge study as a starting point for understanding.

Editor's note: The quotations from the authors are from the draft submitted to the *American Journal of Sociology*. The published paper may be edited from the submitted draft.

<sup>i</sup> "Fertility, Family Planning, and Women's Health: New Data from the 1995 National Survey of Family Growth," National Center for Health Statistics, Series 23, No. 18, Table 27.

<sup>ii</sup> *Ibid*, Table 31.

<sup>iii</sup> John S. Santelli, et al, "Multiple Sexual Partners Among U.S. Adolescents and Young Adults," *Family Planning Perspectives*, Vol. 30, No. 6, November/December 1998, Table 2. The data from the study were recalculated by the Consortium to include virgin teens.

<sup>iv</sup> Kristin Anderson Moore, Ph.D., et al, "A Statistical Portrait of Adolescent Sex, Contraception and Childbearing," published by The National Campaign to Prevent Teen Pregnancy.

<sup>v</sup> *The Hidden Epidemic, Confronting Sexually Transmitted Diseases*, Institute of Medicine, 1997, p. 319.

<sup>vi</sup> *Ibid*, p. 31.

<sup>vii</sup> *Ibid*, p. 318.

<sup>viii</sup> Leighton Ku, et al, "The Dynamics of Young Men's Condom Use During and Across Relationships," *Family Planning Perspectives*, Vol. 26, No. 6, November/December 1994.

<sup>ix</sup> Dana A. Gleit, "Measuring Contraceptive Use Patterns Among Teenage and Adult Women," *Family Planning Perspectives*, Vol. 31, No. 2, March/April 1999.

<sup>x</sup> "Trends in Sexual Activity and Contraceptive Use Among Teens," Child Trends Research Brief, Figures 5 and 8.

<sup>xi</sup> "Why is Teenage Pregnancy Declining? The Roles of Abstinence, Sexual Activity and Contraceptive Use," Alan Guttmacher Institute (AGI), 1999. Calculations by the Consortium using the section titled "Average Frequency of Sexual Intercourse has Changed."

<sup>xii</sup> Moore, p. 3.

<sup>xiii</sup> D.P. Orr, et al, "Premature sexual activity as an indicator of psychosocial risk," *Pediatrics*, Vol. 87, Issue 2, February 1991.

<sup>xiv</sup> Rebecca A. Maynard, "Kids Having Kids," Robin Hood Foundation, 1998, p. 20.

<sup>xv</sup> *The Hidden Epidemic*, p. 59.

### About the Physicians Consortium

The Physicians Consortium is a network organization of nineteen state Physicians Resource Councils (PRCs). State PRCs represent over 2,000 physicians who bring their medical experiences into forums where public opinion is framed and public health policy is formed. Because the physician members have direct clinical care of their patients, they bring a unique and needed perspective to the debate on medically related health policies.

The Physicians Consortium was organized in 1999 to enable state PRCs to speak as one voice on public health issues of national significance.

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## New study shows that abstinence, not condom use, is the major reason for the decline in the birth and pregnancy rates among teens

April 2003

Dear colleagues:

Attached please find a copy of a study published this month in the journal *Adolescent and Family Health* (Volume 3, Issue 1). The title of the study is "An Analysis of the Causes of the Decline in Non-Marital Birth and Pregnancy Rates for Teens from 1991 to 1995." The principal researcher on the study was the Physicians Consortium's own Joanna Mohn, M.D., a board member from the New Jersey Physicians Resource Council.

As the name of the study implies, the research analyzes the decline in the birth and pregnancy rates among teens during the 1990s.

As you may know, in 1999 the Alan Guttmacher Institute (Guttmacher) released a report claiming that 25 percent of the decline in the teen pregnancy rate has been due to abstinence and 75 percent to the increased use of more effective contraception. These figures have been circulated widely by the mainstream media and by groups opposing abstinence education.

However, the study in the journal *Adolescent and Family Health* (AFH) is more sophisticated and compensates for the limitations of the Guttmacher study. These compensations include:

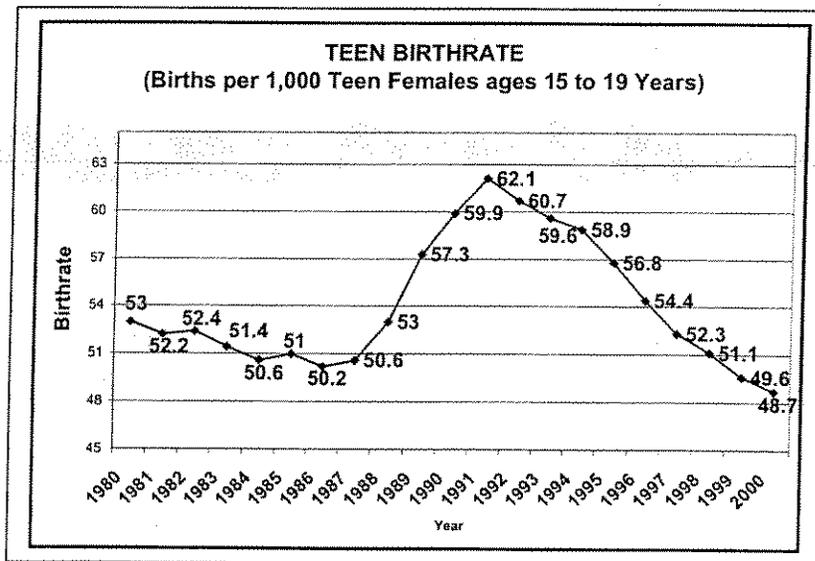
- The study was peer reviewed by the editorial advisory staff of AFH. The Guttmacher paper was apparently peer reviewed only by Guttmacher's own staff.
- The comparison years in the AFH study are 1991 and 1995 because 1991 was the peak year for the teen birthrate. In contrast, the Guttmacher study compared 1988 to 1995.
- In the AFH study, an important distinction is made between married

and unmarried teens. A 19-year-old teen attending college and married to a gainfully employed spouse would be considered by Guttmacher to be the equivalent of a 15-year old, unmarried, high school drop-out who relies on welfare support. The study published in AFH makes the necessary distinction between married and unmarried female teens.

- In the AFH study, a portion of the decline in birth and pregnancy rates is attributed to factors other than just changes in abstinence and contraceptive use. The AFH study does not necessarily consider teens to be at risk just because they were sexually active in the past. The Guttmacher study attributed to improved contraceptive use the entire portion of the pregnancy rate decline that was not clearly and unambiguously attributable to abstinence. For example, the study by Guttmacher defined all teens who had ever had sex as being “at risk for pregnancy,” not just those who were sexually active during the year studied. As a result, the lack of pregnancies to teens who were sexually experienced but had not had sex during the year studied was falsely attributed to the use of contraceptives by Guttmacher.

### Birthrate results

- Teen births decline. From 1991 to 1995, the birthrate among all teen girls ages 15 to 19 declined by 5.26 births per 1,000 (from 62.1 to 56.8 births).

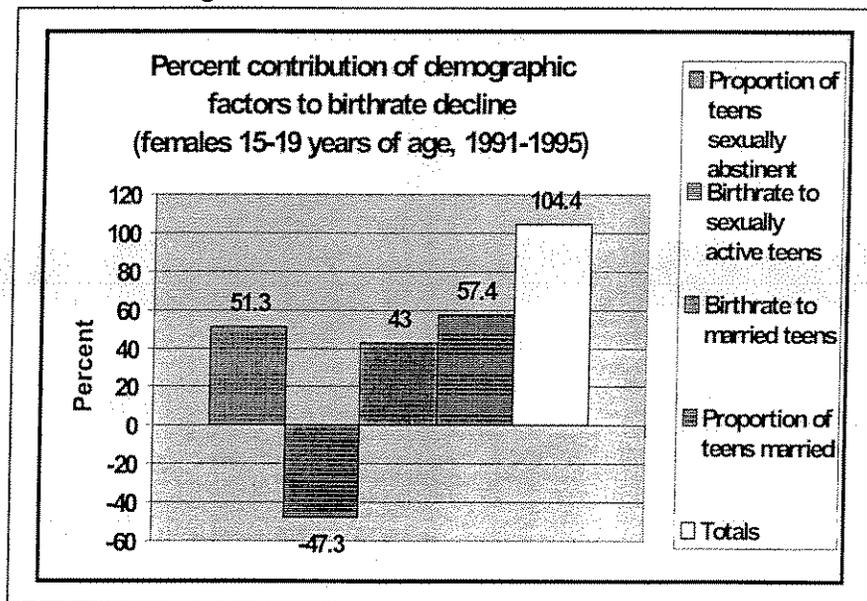


- More teens abstinent. The proportion of unmarried teen girls ages 15 to 19 who were abstinent (never had sex or hadn't had sex in the previous year) increased from 53.0 percent to 55.9 percent. It is safe to assume that the birthrate among abstinent girls is zero.
- Higher birthrate to non-abstinent teens. The birthrate to sexually active, unmarried teen girls ages 15 to 19 rose by 5.5 births per 1,000 (from

95.3 to 100.8 births per 1,000).

- **Fewer births to married teens.** The birthrate to married teen girls ages 15 to 19 declined by 48.0 births per 1,000 (from 410.4 to 362.4 births per 1,000).
- **Fewer married teens.** In 1991, 4.72 percent of all teen girls ages 15 to 19 were married (or 47.2 per thousand). By 1995, the proportion of teen girls who were married dropped to 3.89 percent (or 38.9 per thousand). This means that 8.3 fewer girls per thousand were married in 1995 than in 1991 (47.2 girls minus 38.9 girls).
- **Fewer married teens lowers overall birthrate.** The birthrate in 1995 was 362.4 per 1,000 married girls and 44.43 per 1,000 unmarried girls. Thus, the shift of 8.3 girls per 1,000 from the married status to the unmarried status represented a significant decrease in the number of births because married girls had a substantially higher birthrate than did unmarried girls. In fact, over 50 percent of the overall decline in the birthrate to all girls ages 15 to 19 was attributable to the decline in the proportion of girls who were married.

We can also look at the data in terms of the contribution each cohort made to the total change in the total teen birthrate.\*



\*(The total of the "percentage contributions" of the factors causing the change in teen birth and pregnancy rates slightly exceed 100%. This is because some of the change occurred simultaneously. Each percentage represents the fraction of the total change that *would have occurred* if that factor had been the only one to change. In fact, a very small proportion of the births were actually "prevented" by more than one of the factors.)

As can be seen on the chart above, an increase in the proportion of teen girls who did not have sex the previous year contributed 51.3 percent of the decline in the overall birthrate to girls ages 15 to 19.

A decrease in the birthrate to those teen girls who were married contributed 43 percent of the decline in the overall birthrate to girls ages 15 to 19. This decrease is likely due to the effective use of contraception among married teen girls. Thus, Guttmacher is correct in stating that the effective use of contraception was an important contributing factor to the decline in the teen birthrate – but this factor was most significant among married teens.

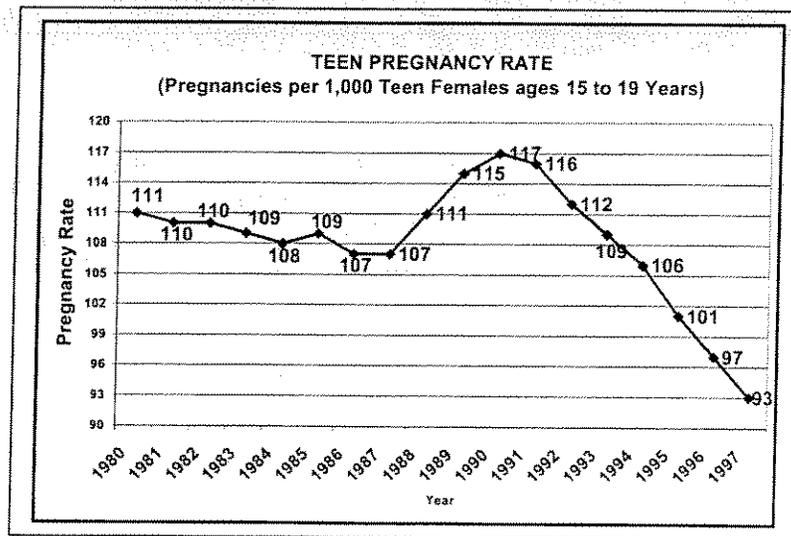
A decrease in the proportion of teen girls who were married contributed 57.4 percent of the decline in the overall birthrate to girls ages 15 to 19.

The birthrate to sexually active single girls increased, and thus had a **negative** contribution of -47.3 percent to the change in the birthrate to all teen girls. If the birthrate to the other groups had remained unchanged from 1991 to 1995, the overall birthrate would have increased.

### Pregnancy rate results

The research paper in the journal AFH also analyzes the decline in the pregnancy rates among teen girls. The data for pregnancies are not as firm as are the data for births because there is no national recording mechanism for abortions and miscarriages. But even with the inadequacies of the data, abstinence accounted for 67 percent of the decrease in the rate of pregnancies to single teen girls. See chart on following page.

- Teen pregnancy rate decline. From 1991 to 1995, the pregnancy rate among all teen girls ages 15 to 19 declined by 14.7 pregnancies per 1,000 (from 115.8 to 101.1 pregnancies per 1,000).

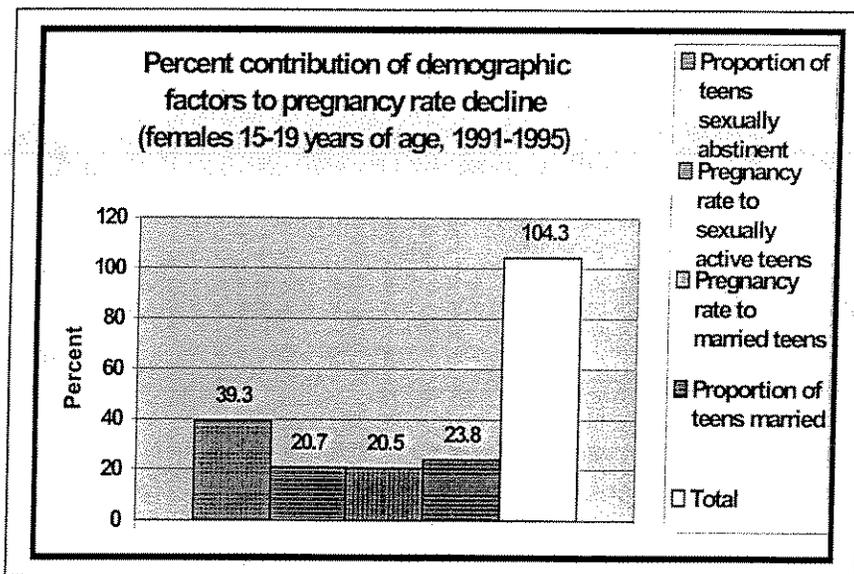


- More teens abstinent. The proportion of unmarried teen girls ages 15 to 19 who were abstinent (never had sex or hadn't had sex in the previous year) increased from 53.0 percent to 55.9 percent. It is safe to assume

that the pregnancy among abstinent girls is zero.

- Fewer pregnancies to married teens. The pregnancy rate to married teen girls ages 15 to 19 declined by 63.8 pregnancies per 1,000 (from 519.4 to 455.6).
- Fewer married teens. In 1991, 4.72 percent of all teen girls ages 15 to 19 were married (or 47.2 per thousand). By 1995, the proportion of teen girls who were married dropped to 3.89 percent (or 38.9 per thousand). This means that 8.3 fewer girls per thousand were married in 1995 than in 1991 (47.2 girls minus 38.9 girls).
- Fewer married teens lowers overall pregnancy rate. The pregnancy rate in 1995 was 455.6 per 1,000 married girls and 86.8 per 1,000 unmarried girls. Thus, the shift of 8.3 girls per 1,000 from the married status to the unmarried status represented a significant decrease in the number of pregnancies because married girls had a substantially higher pregnancy rate than did unmarried girls. In fact, nearly 25 percent of the overall decline in the pregnancy rate to all girls ages 15 to 19 was attributable to the decline in the proportion of girls who were married.
- Fewer pregnancies to non-abstinent single teens. The pregnancy rate to sexually active, unmarried teen girls ages 15 to 19 declined by 6.8 pregnancies per 1,000 (from 203.7 to 196.9 births per 1,000).

We can also look at the data in terms of the contribution each cohort made to the total change in the total teen pregnancy rate.\*



\*(The total of the "percentage contributions" of the factors causing the change in teen birth and pregnancy rates slightly exceed 100%. This is because some of the change occurred simultaneously. Each percentage represents the fraction of the total change that *would have occurred* if that factor had been the only one to change. In fact, a very small proportion of the pregnancies were actually "prevented" by more than one of the factors.)

As can be seen on the chart, an increase in the proportion of teen girls who did not have sex the previous year contributed 39.3 percent of the decline in the overall pregnancy to girls ages 15 to 19. This was the highest contribution of any category.

A decrease in the pregnancy rate to those teen girls who were married contributed 20.5 percent of the decline in the overall pregnancy rate to girls ages 15 to 19. This decrease is likely due to the effective use of contraception among married teen girls.

A decrease in the proportion of teen girls who were married contributed 23.8 percent of the decline in the overall pregnancy rate among girls ages 15 to 19.

The birthrate to sexually active single girls contribution 20.7 percent of the decline in the overall pregnancy rate among teen girls. Thus, the claim by AGI that the teen birthrate decline was due 75 percent to contraception and 25 percent to abstinence is terribly flawed and cannot be substantiated by a more complete and sophisticated analysis of the data.

### Condoms

The AFH research paper (attached) does not attempt to address the impact of condom use upon the change in the birth or pregnancy rates among teen girls. However, the Consortium feels obliged to do so for two reasons.

First, the AGI's miscalculation of "75 percent/25 percent" is so widely advertised as fact, primarily by groups opposed to federal funding of programs that offer an unambiguous abstinence message. Second, the current debate on sex education is hotly contested between those who promote a strong abstinence message and those who believe that all teens need to be educated about condom use. Funding of sex education will be taken up by the 108<sup>th</sup> Congress.

The question the Consortium attempted to answer was, "What role did condom use play in the decline in the teen birth and pregnancy rates from 1991 to 1995?"

Data from the scientific literature indicate that contraceptive use by sexually active teen girls increased during the 1990s.

(Continued on next page.)

**Table A**

Girls aged 15-19 on a given "central" date (August 15, 1990 and April 1, 1995)		
	1990	1995
Used any method at first sex, among teens who have had sex after menarche	66.10%	71.80%
Source: "What's Behind the Good News, The Decline in Teen Pregnancy Rates During the 1990s," National Campaign to Prevent Teen Pregnancy, February 2001		

As seen on Table A above, the proportion of girls ages 15 to 19 who used any method of contraception at first sex increased from 66.1 percent in 1990 to 71.8 percent in 1995. This represents a 9 percent increase ( $71.8 \div 66.1$ ).

**Table B**

	1991	1995
Percent of sexually active girls in grades 9-12 who reported condom use at last intercourse	38.00%	48.60%
Source: YRBS		

Table B shows the proportion of sexually active high school girls who reported that they or their partner used a condom at last intercourse increased from 38.0 percent in 1991 to 48.6 percent in 1995. This represents a 28 percent increase ( $48.6 \div 38.0$ ).

From 1991 to 1995, the birthrate among sexually active single girls increased from 95.3 to 100.8 births per 1000. This occurred despite an increase in condom use among the same cohort. Thus, any suggestion that condom use contributed to the overall decline in the teen birthrate is laughable (although contraceptive use does appear to have impacted the birthrate among married teens). Lower abortion rates may have contributed to the higher birthrate among sexually active single girls.

The decline in the pregnancy rate among sexually active single teen girls contributed 20.7 percent of the decline in pregnancy rate among all teen girls between 1991 and 1995 and only 35.3 percent of the birthrate decline among single girls. Here again, the claim that more effective use of contraceptives is responsible for 75 percent of the pregnancy rate decline is NOT scientifically correct. **Abstinence is the single largest contributor to the pregnancy rate decline, accounting for 67 percent of the decline among single teenage girls.**

### **Public health and policy implications**

The 107<sup>th</sup> Congress hotly debated reauthorization of the abstinence education provision of the Welfare Reform Act of 1997. The issue was not resolved and has reappeared in the 108<sup>th</sup> Congress. On one side of the

debate are those who believe that sex education should contain an unambiguous abstinence message. On the other side are those who believe that all teens (not just sexually active teens) must receive instruction about and access to contraception.

**The research study attached demonstrates that abstinence, not condom use, is the primary contributor to the lower birth and pregnancy rates among our nation's young people.**

###

For a complete copy of the research paper, "An Analysis of the Causes of the Decline in Non-Marital Birth and Pregnancy Rates for Teens from 1991 to 1995," visit [www.physconsortium.com](http://www.physconsortium.com). Click "Issues," click "AFH Journal."

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## Embargo until April 14, 2003

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## **New landmark study shows abstinence is the major reason for falling birth and pregnancy rates among single teens**

Growing numbers of teens saying no to sex is the major cause of plummeting pregnancy and birth rates among single teenage girls, according to a new scientific study released this month.

The study, published in the journal *Adolescent and Family Health*, is likely to generate controversy because it overturns most previous reports that linked the falling birth and pregnancy rates to the greater use of condoms and other forms of contraception.

The authors of the landmark study compared the drop in the birth and pregnancy rates between 1991 and 1995, the latest year for which detailed government data are available. In 1991, the teen birthrate was 62 births per 1,000 girls. By 1995 the rate dropped to 50 births per 1,000 girls. The pregnancy rate per 1,000 girls dropped from 116 to 93 during the same period.

The research paper, titled "An analysis of the causes of the decline in non-marital birth and pregnancy rates for teens from 1991 to 1994," analyzed birthrate statistics to determine which of four factors played a greater role in the decline – higher rates of abstinence, fewer births among married teens, a drop in the proportion of teens who were married and births to single girls.

"Our research was much more sophisticated than all previous research on

the subject,” said Joanna Mohn, a physician from New Jersey and the primary researcher of the study. “We took into account important statistics on girls who are married as well as those who had not be sexually involved for more than a year.”

The study determined that abstinence is the primary reason for the decline in births and pregnancies among teens. Among unmarried girls abstinence accounted for the entire decline in births and 67 percent of drop in pregnancies.

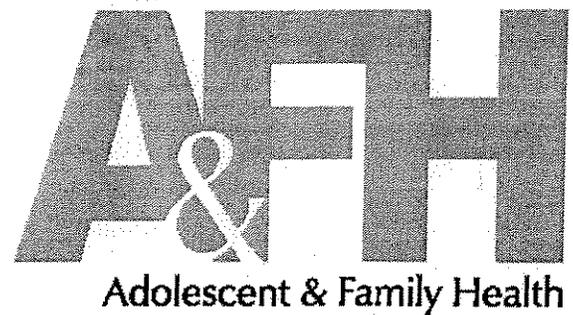
Previous research claimed that 75 percent of the pregnancy decline was due to the increased used of contraception, 25 percent to abstinence. “The decline in the number of teens who were married accounted for 24 percent of the decline in teen pregnancies,” Mohn explained. “This decline had previously been attributed to contraception, producing a significant source of error in earlier research.”

This research is being released as Congress prepares to debate federal funding of sex education. The Welfare Reform Act of 1996, which included \$50 million per year for abstinence-outside-of-marriage education directed toward teens, expired last year and must be renewed. Substantial lobbying has been directed toward Congress by groups that want a condom component added to the federal sex education program. This research may deter the efforts of the condom advocates.

###

For a copy of the study, go to [www.physconsortium.com](http://www.physconsortium.com). Click “Issues,” click “AFH Journal.”

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*Adolescent & Family Health* is a peer-reviewed quarterly publication for objective, scientific research that focuses on the common factors influencing adolescent youth risk behavior and risk avoidance.

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The mission of the Journal is to augment the scientific knowledge base regarding factors that influence youth health and have strong practical applications. The ultimate purpose of the Journal is to empower families, professionals, community organizations, and policy leaders to develop and enhance programs that protect America's youth and their families.

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# An Analysis of the Causes of the Decline in Non-marital Birth and Pregnancy Rates for Teens from 1991 to 1995

Joanna K. Mohn, MD, Lynne R. Tingle, PhD, Reginald Finger, MD, MPH

## Introduction

Births to single teens represent a significant cost to the mother, to the child, and to society (Maynard, 1997). Mothers under age 17, nearly all of whom are single, are 40% less likely to graduate from high school by age 30 (Maynard, 1997), and ultimately earn less income than their counterparts who did not bear children before age 17. Children of these mothers weigh less at birth, have more health problems, suffer

more physical abuse and neglect, and perform at a lower level in school than children born to mothers over age 20 (Maynard, 1997).

Historically, 77% of single teen mothers have required welfare assistance within five years after giving birth (Adams & Williams, 1990).

The National Center for Health Statistics documented a significant rise in teen pregnancies and births in the United States during the 1970s and 1980s. However, since 1991, single and overall teen pregnancy

and birth rates have declined steadily (Ventura, Mosher, Curtin, Abma & Henshaw, 2000). Birthrates can decline because of a demographic shift of teens into a group with a lower birthrate such as the abstinent population. Alternatively, a decline could be due to a decrease in the birth rate in a sexually active population. This could result from decreased frequency of sex, better use of contraception, or decreased fertility as a consequence of sexually transmitted diseases. The incidence of sexually transmitted disease is known to increase in association with high-risk behaviors prevalent among sexually active teens such as multiple sexual partners and early initiation of sexual activity.

Several authors have attempted to evaluate the factors driving the decline in total birth or pregnancy rates. Kauffman, et al. (1998) attribute the decrease to improved contraception and increased abstinence. Terry-Humen, Manlove, and Moore (2001) suggest economic factors, welfare reform, and the increased use of implantable and injectable contraceptives as possible causes. Jones et al. (1999) on the other hand, point to new but growing evidence that increased abstinence is making an impact. None of these studies attempt to quantify the roles of the various factors in reducing the teen pregnancy and birth rates.

Authors at the Alan Guttmacher Institute (AGI) attribute 80% of the decrease between 1988 and 1995 to increased use of contraceptives and the remaining 20% to increased teen abstinence (Saul, 1999). Christine Flanigan, in a report released by the Campaign to Prevent Teen Pregnancy, credited 50% to 80% of

## ABSTRACT

In the United States, the birth and pregnancy rates for single 15- to 19-year-old females declined by 0.4 births and 9 pregnancies per 1000 females from 1991 to 1995. The current study utilizes data from the National Vital Statistics Records, National Survey of Family Growth (NFSG-95), and the Alan Guttmacher Institute to determine the contribution of abstinence to the decline. In addition, the birthrate and population changes among the married teen population were evaluated for their contribution to the overall decline in teen birth and pregnancy rates.

The percentage of single teens that were abstinent increased from 53 to 56% from 1991 to 1995 reducing the total teen birthrate by 2.8 births and the pregnancy rate by 6.1 pregnancies per 1000 females. For sexually active single teens, the birth rate increased by 5.5 births/1000, increasing the single teen birth rate by 2.6 births/1000 females while the pregnancy rate decreased by 6.8 pregnancies/1000, reducing the single teen pregnancy rate by 3.2 pregnancies/1000 females. The number of married teens declined from 4.7 to 3.9%, reducing the overall birth and pregnancy rates by 3.0 births and 3.5 pregnancies per 1000 females. Among single 15-19 year-old females, the decline in the proportion engaging in sexual activity accounts for the entire decrease in birthrate and 67% of the decline in pregnancy rate.

The factors making the greatest contribution to the decline in overall 15-19 year-old birth and pregnancy rates were an increase in abstinence and a decrease in the percentage of married teens.

Key words: teenage pregnancy, teenage birthrates, adolescent sexuality, teen pregnancy rates, contraception, abstinence, adolescent health

*Adolescent & Family Health*, 2003, 3 (1): p. 39-47

the decrease in teen pregnancies to improved contraceptive use and 20% to 50% of the decline to abstinence (Flanigan, 2001). However, both of these studies are compromised by the fact that the peak year for the teen birthrate (1991) occurs in the middle of the study time frame. In addition, the authors define teens "at risk for pregnancy" as being those who had ever had sex, not just those who were sexually active during the year in question. They also treat the sexually active population as a homogeneous group, in spite of the fact that single and married teens have very different birth and pregnancy rates, and experience different educational and financial consequences.

The debate over the causality of the birthrate decline has significant implications for the direction of social policy. There are no studies that evaluate the changes in teen birth and pregnancy rates using the 1991 data and none have examined the role of changes in the single and married teen populations. The current study evaluates changes from 1991 to 1995 in the proportion of single 15 to 19-year-old females who are sexually active and the birthrate among that group to determine their contribution to the decrease in the single teen birthrate during that time period. This information is then analyzed along with trends in the marital teen population to identify the factors accounting for the overall decline in teen birth and pregnancy rates.

## Methods

### Population Breakdown

The change in birth and pregnancy rates between 1991 and 1995 was analyzed for single females between the ages of 15 and 19. Two groups were established: abstinent or sexually active. For this analysis, "sexually active" was defined as having had sex after menarche and within the past twelve months, since the focus is on those at risk for pregnancy. All

others were considered currently abstinent. Then the overall change in birth and pregnancy rates was analyzed by dividing the population into single and married females.

### Data Collection

Population figures and numbers of births were obtained from the National Center for Health Statistics (NCHS) Vital Statistics reports (Moore, Papillo, Williams & Jager, 1999; National Center for Health Statistics, 1995; Ventura, Martin, Curtin & Mathews, 1995; Ventura, personal communication, September 22, 2000). The pregnancy numbers were calculated from NCHS birth and AGI abortion rates for single and married teens (Darroch & Singh, 1999) with a correction factor to adjust for fetal loss due to spontaneous miscarriages, as has been done by other authors (Alan Guttmacher Institute, 1999):

$$\text{Pregnancies} = \text{births} * 1.2 + \text{abortion rate} * \text{population} / 1000 * 1.1$$

Estimates of the proportion of single teens who were sexually active were derived from the sexual behavior histories of the 1995 National Survey of Family Growth (NSFG) (U.S. Department of Health and Human Services, 1997). The NSFG data, collected by the National Center for Health Statistics, are designed to provide estimates of factors affecting the U.S. birthrate and the reproductive health of women of childbearing age. A total of 10,847 interviews were completed in 1995. Hispanic women were over-sampled in the survey; the NCHS has corrected for this through the incorporation of weighting factors in the data set. The 1995 interviews included extensive personal sexual histories spanning January 1991 to the interview date. In order to be as accurate as possible, the interviewee's relationships were plotted on a calendar, and the timing of changes in sexual prac-

tices were linked to those relationships. From the NSFG, two sub-populations were analyzed: females who were 15 to 19 years old at the date of the interview in 1995 (N = 1395) and females who were age 15-19 in 1991 in the month corresponding to the 1995 interview date (N = 1456).

Two sets of measures were created for never-married teens aged 15-19 in 1991 and 1995: (1) sexual experience, which measures the percentage who had any sexual intercourse since menarche; and (2) sexual activity in the past 12 months among those who were sexually experienced. The product of these two measures yielded the rate of sexual activity for single teens. The first measure estimates the percentage of single teens who were sexually experienced after menarche. This measure was created based on the respondent's interview date and the date of first sex, and it provides a weighted proportion of single teens aged 15-19 who reported they had ever had voluntary sexual intercourse after menarche. Sexual experience is measured after menarche in order to present information on the population of teen females who were at risk of a teen pregnancy and birth. Only voluntary sexual intercourse is measured in order to be compatible with the measure of recent sexual activity, which is reported only for voluntary sexual activity.

The second measure of sexual activity estimates whether the teen had sexual intercourse in the past 12 months. This measure is based on reported dates of non-intercourse between January 1991 and the interview date in 1995. The 1995 measure provides a weighted proportion of 15-19 year old teens who had sexual intercourse in the 12 months prior to their interview. Because retrospective event history data in the NSFG are available only after January 1991 and therefore not a full 12 months prior to the 1991 date cor-

responding to the interview month, the 1991 measure is extrapolated, based on measures for 1992 through 1995 and a 3-month estimate for 1991. This extrapolation was tested against a graph of yearly measures of sexual activity for 1992 through 1995 and found to be linear. Teens not sexually active were considered abstinent for this analysis. Finally,

1991 and 1995 birth and pregnancy rates for the 15 to 19 year-old population were calculated for the total population, single teens, married teens and single sexually active teens.

### Calculations

As has been done by other authors (Saul, 1999; Flanigan, 2001),

we calculated the impact of changes in each variable on the overall teen birth and pregnancy rates, while holding the other factors constant. In reality, the factors change simultaneously so the sum of the calculated percent changes is slightly more or less than 100%. The formula used for these calculations is derived as follows:

For a total population composed of 2 sub-populations A and B:

$$\text{Births}_{\text{total}} = \text{Births}_A + \text{Births}_B \quad (1)$$

However, we are interested in birthrates, not absolute birth numbers. Birthrate (BR) for a given population (Pop) is defined as follows:

$$\text{BR} = (\text{Births}/\text{Pop}) * 1000 \quad (2)$$

By rearranging we get:

$$\text{Births} = \text{BR} * \text{Pop}/1000 \quad (3)$$

By substituting this for the 3 groups: Total, A and B in equation (1) we derive:

$$\text{BR}_{\text{total}} * \text{Pop}_{\text{total}}/1000 = \text{BR}_A * \text{Pop}_A/1000 + \text{BR}_B * \text{Pop}_B/1000 \quad (4)$$

When we multiply both sides of the equation by 1000 and divide by PopTotal the result is:

$$\text{BR}_{\text{total}} = \text{BR}_A * \text{Pop}_A/\text{Pop}_{\text{total}} + \text{BR}_B * \text{Pop}_B/\text{Pop}_{\text{total}} \quad (5)$$

Thus, the total birthrate is the sum of the birthrates of the various sub-populations multiplied by the fraction of the total population that each sub-population represents.

The change in the birthrates from 1991 to 1995 is:

$$\begin{aligned} \text{BR}_{95\text{total}} - \text{BR}_{91\text{total}} = \\ (\text{BR}_{95A} * \text{Pop}_{95A}/\text{Pop}_{95\text{total}} + \text{BR}_{95B} * \text{Pop}_{95B}/\text{Pop}_{95\text{total}}) - \\ (\text{BR}_{91A} * \text{Pop}_{91A}/\text{Pop}_{91\text{total}} + \text{BR}_{91B} * \text{Pop}_{91B}/\text{Pop}_{91\text{total}}) \end{aligned} \quad (6)$$

In the first analysis, only the single population (S) is considered, so the birthrate for singles is employed as the total birthrate, and sub-population A represents the sexually active singles (SA) while sub-population B represents the abstinent singles. Since the abstinent population, by definition, has a birthrate of zero, the resulting equation becomes:

$$\text{BR}_{95s} - \text{BR}_{91s} = (\text{BR}_{95sa} * \text{Pop}_{95sa}/\text{Pop}_{95s}) - (\text{BR}_{91sa} * \text{Pop}_{91sa}/\text{Pop}_{91s}) \quad (7)$$

Thus, the birthrate can change from the 1991 baseline due to change in either the birthrate to sexually active singles (BR<sub>95sa</sub>) or the proportion of singles who are sexually active (Pop<sub>95sa</sub>/Pop<sub>95s</sub>). To determine the contribution of these variables to the change in the single teen birthrate from 1991 to 1995, one was held constant at the 1991 level while the 1995 values of the other variable were used to calculate the respective single teen birth rates. Our second analysis includes the entire 15-19 year old teen population, and sub-populations A and B represent the single and married teens respectively. Thus, the formula becomes

$$\begin{aligned} \text{BR}_{95\text{total}} - \text{BR}_{91\text{total}} = \\ (\text{BR}_{95s} * \text{Pop}_{95s}/\text{Pop}_{95\text{total}} + \text{BR}_{95m} * \text{Pop}_{95m}/\text{Pop}_{95\text{total}}) - \\ (\text{BR}_{91s} * \text{Pop}_{91s}/\text{Pop}_{91\text{total}} + \text{BR}_{91m} * \text{Pop}_{91m}/\text{Pop}_{91\text{total}}) \end{aligned} \quad (8)$$

This analysis contains three variables: the birthrate to married teens (BR<sub>91m</sub> and BR<sub>95m</sub>), the birthrate to single teens (BR<sub>91s</sub> and BR<sub>95s</sub>) and the fraction of the population who are married (Pop<sub>91m</sub>/Pop<sub>91total</sub> and Pop<sub>95m</sub>/Pop<sub>95total</sub>). Again, to determine the contribution of these variables to the change from 1991 to 1995, two were held constant at their 1991 levels while the 1995 values of the other variable were used to calculate the respective 15-19 year old teen birth rates. Similar calculations were made using pregnancy rate in place of birthrate. Table 1 shows the estimates used in the calculations.

**TABLE 1**

**Calculations Using Birthrates**

	1991	1995	Absolute change**	Calculated Effect on Single Birthrate*	Contribution to Absolute Change in Single Birthrate	Calculated Effect on Total Birthrate*	Contribution to Absolute Change in Total Birthrate
Total birthrate*	62.1	56.81	-5.26				
Single teen birthrate*	44.82	44.43	-0.39			-0.37	7.1%
Proportion of single teens who are sexually active	47.0%	44.1%	-2.9%	-2.83	726.0%	-2.70	51.3%
Birthrate to sexually active single teens*	95.3	100.8	5.5	2.61	-668.2%	2.49	-47.3%
Married teen birthrate*	410.4	362.4	-48.0			-2.26	43.0%
% teens married	4.72%	3.89%	-0.83%			-3.02	57.4%

\*birthrates are births/1000 15-19 year old females  
 \*\*births/1000 15-19 year old females or % of population

**Calculations Using Pregnancy Rates**

	1991	1995	Absolute change**	Calculated Effect on Single Pregnancy Rate*	Contribution to Absolute Change in Single Pregnancy Rate	Calculated Effect on Total Pregnancy Rate*	Contribution to Absolute Change in Total Pregnancy Rate
Total pregnancy rate*	115.8	101.1	-14.7				
Single teen birthrate*	95.8	86.8	-9.0			-8.62	58.7%
Proportion of single teens who are sexually active	47.0%	44.1%	-2.9%	-6.06	67.0%	-5.77	39.3%
Pregnancy rate to sexually active single teens*	203.7	196.9	-6.8	-3.19	35.3%	-3.04	20.7%
Married teen pregnancy rate*	519.4	455.6	-63.8			-3.01	20.5%
% teens married	4.72%	3.89%	-0.83%			-3.50	23.8%

\*pregnancies/1000 15-19 year old females  
 \*\*pregnancies/1000 15-19 year old females or % of population

**Results**

**Birthrate**

*Single 15-19 year old females.*  
 Between 1991 and 1995, the birthrate for single 15- to 19-year-old females declined by 0.4 births (from 44.8 to 44.4 births) per 1000. Change in the single teen birthrate can be produced by changes in either of two factors: the proportion of single teens who are sexually active and the birthrate among that sub-population. The reduction in the single teen birthrate was driven by a decrease in the proportion of teens who were sexually active, or conversely an increase in the teens who were abstinent from 53 to

56% of the population ( $p < 0.02$ ). Taken by itself, this increase in abstinence is calculated to reduce the total birthrate by 2.8 births per 1000 teens or 7 times more than was actually observed. However, during the same time period, the birthrate among sexually active single teens increased from 95.3 to 100.8 births per 1000. By holding the size of the sexually active population at the 1991 proportion, the birthrate to single teens is calculated to increase by 2.6 births/1000. (Figure 1). This increase in the sexually active teen birthrate largely offsets the decline in the single teen birthrate attributable to abstinence.

*Total 15-19 year old females.* The overall teen birthrate decreased from 62 births/1000 teens in 1991 to 56.8/1000 in 1995. Changes in the overall teen birthrate reflect changes occurring in the single population, as discussed above, as well as changes in the married population which is caused by two factors: the married teen birthrate, the proportion of teens who are married. Each must be considered individually when attempting to understand the overall change. The married teen population, in contrast to single teens, experienced a significant decrease in birthrate, from 410.4 births/1000 in 1991 to 362.4

**FIGURE 1 Change in Single birthrate From 1991-1995 and Factors Contributing to the Decrease (15-19 Year Old Females)**

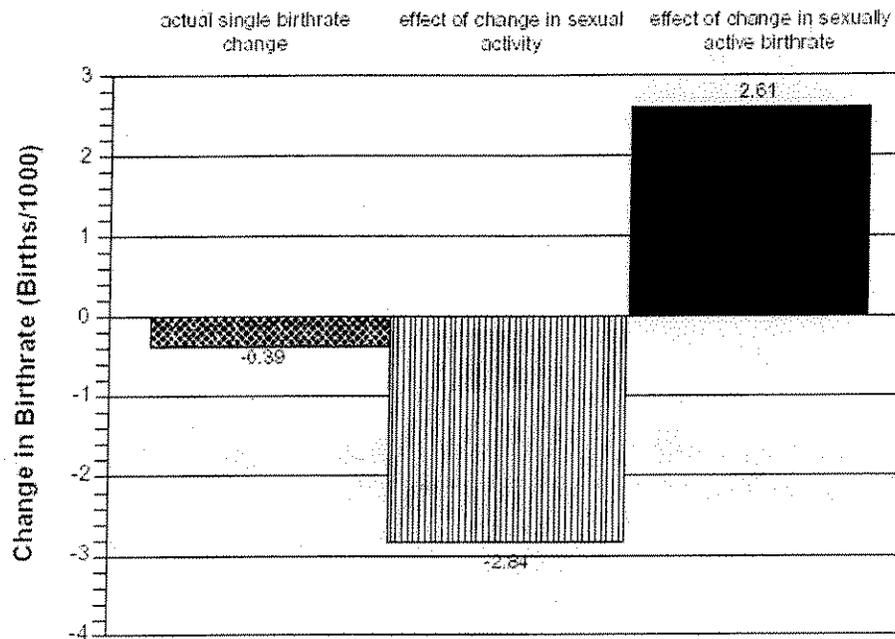


Figure 1: this is a presentation of the data regarding single teen birth rates from Table 1 showing the contributions made by the change in sexual activity (stripes) and birthrate to sexually active single teens (solid) to the observed decline in the single teen birthrate (dots).

**FIGURE 2 Change in Total Birthrate From 1991-1995 and Factor Contributing to the Decrease (15-19 Year Old Females)**

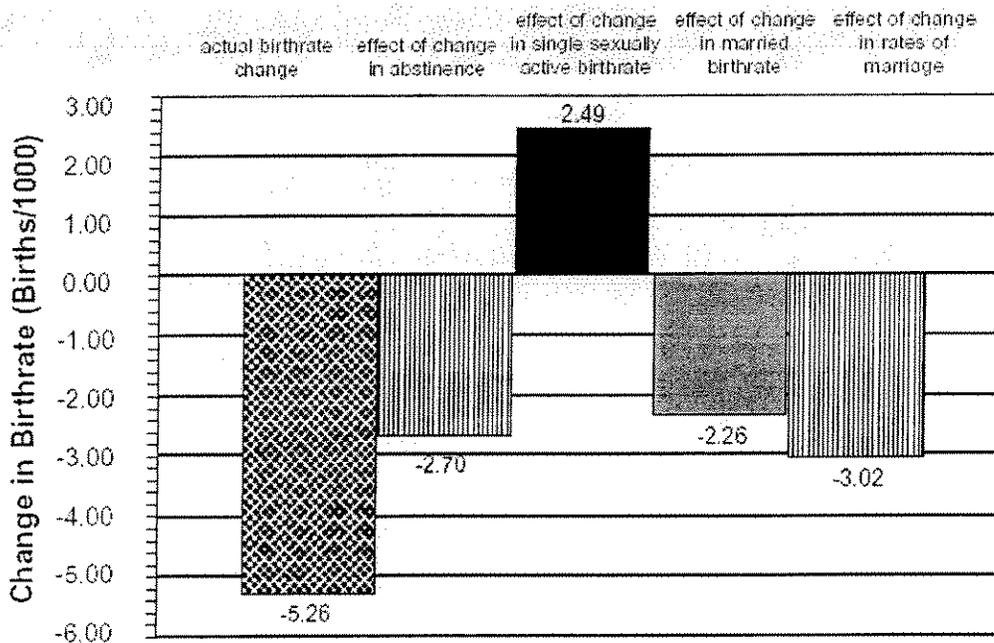


Figure 2: the actual decline in the overall teen birthrate from 1991 to 1995 is shown in the dotted bar. The contributing factors and the magnitude of their contributions as calculated in Table 1 are shown, with the striped bars representing population shifts, and the solid bars representing birth rate changes within those populations.

**FIGURE 3 Change in Single Pregnancy Rate and Factors Contributing to the Change From 1991-1995 (15-19 year Old Females)**

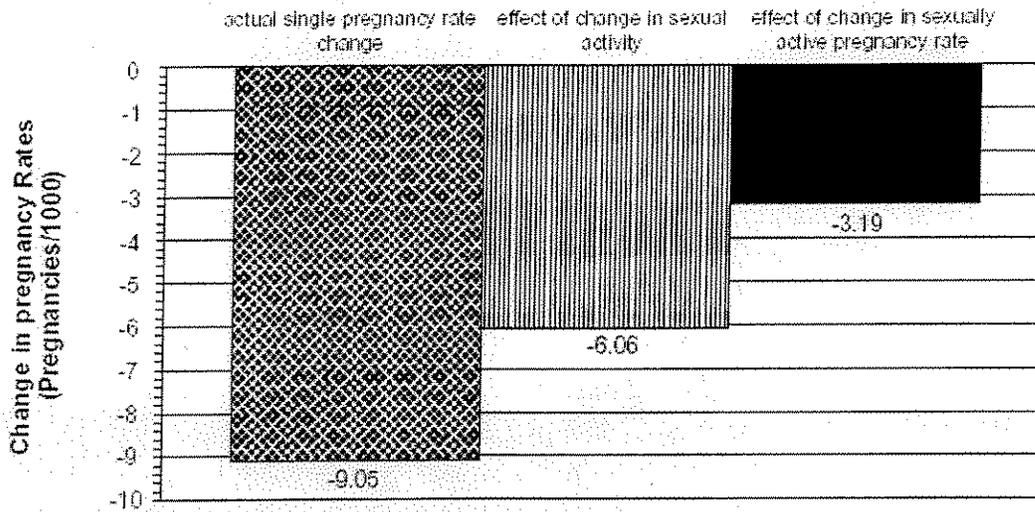


Figure 3: This is a presentation of the data regarding single teen pregnancy rates from Table 1 showing the contributions made by the change in the rate of sexual activity (striped) and pregnancy rate to sexually active teens (solid) to the observed decline in the single teen pregnancy rate (dotted).

**FIGURE 4 Change in Total Pregnancy Rate and Factors Contributing to the Decrease from 1991-1995 (15-19 Year Old Females)**

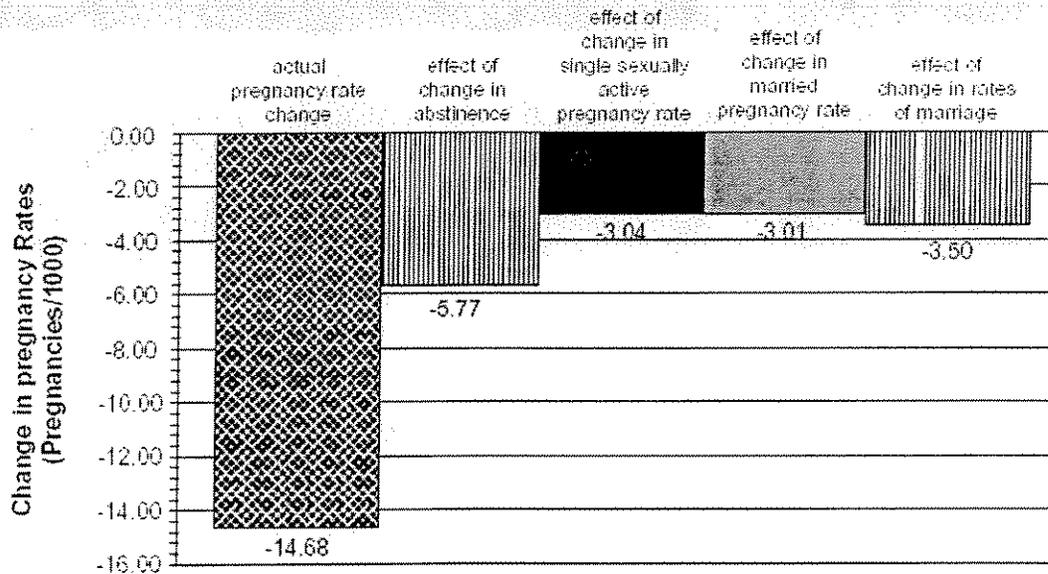


Figure 4: the actual decline in the overall teen pregnancy rate from 1991 to 1995 is shown in the dotted bar, the contributing factors and the magnitude of their contributions as calculated in Table 1 are shown with the striped bars representing population shifts, and the solid bars representing pregnancy rate changes within those populations.

births/1000 in 1995. During this time period, the proportion of teens who were married also declined (4.7% in 1991 to 3.9% in 1995). The influence of these four factors, two from the single and two from the married populations, on the decline in the overall teen birthrate from 1991 to 1995 is summarized in Figure 2.

### *Pregnancy Rates*

#### *Single 15-19 year old females.*

The pregnancy rate for single 15- to 19-year-old females decreased from 95.8/1000 in 1991 to 86.8/1000 in 1995; a reduction of 9 pregnancies per 1000. This trend was influenced by changes in the proportion of teens who were abstinent and in the pregnancy rate among sexually active single teens. As reported above, the abstinent sub-population increased from 53% in 1991 to 56% in 1995. This change is calculated to reduce the single teen pregnancy rate by 6.1 pregnancies/1000 teens, 67% of the reported decline. During the same time period, the pregnancy rate among sexually active single teens decreased from 203.7/1000 in 1991 to 196.9/1000 in 1995. This change is calculated to reduce the overall single teen pregnancy rate by 3.2 pregnancies/1000 teens (Figure 3), or 35.3% of the observed decrease of 9 pregnancies/1000 single teens.

*Total 15-19 year old females.* As with birthrates, there are four factors contributing to the change in the teen pregnancy rate: the proportion of singles who are sexually active, the pregnancy rate among sexually active singles, the proportion of teens who are married, and the married teen pregnancy rate. The contribution of each of these factors was assessed individually to determine their role in the overall decrease in teen pregnancy rate from 115.8/1000 in 1991 to 101.1/1000 in 1995. The married teen populations contributed to the overall reduction in the teen pregnancy rate through a decrease in the

married teen pregnancy rate during the study period (519.4/1000 in 1991 to 455.6/1000 in 1995) and a reduction in the proportion of the teen population who were married (4.7% in 1991 to 3.8% in 1995). As shown in Figure 4, the reduction in overall teen pregnancy rates reflects shifts toward reduced pregnancies in all four contributing factors.

### *Discussion*

This study demonstrates that the higher proportion of teen females abstaining from sex accounted for most of the reduction in single teen births and 67% of the decrease in single teen pregnancies from 1991 to 1995. These findings support the significance of the growing movement of teens choosing to abstain from sex.

The contribution of abstinence to the reduction in pregnancy rates is different from its contribution to reduced birthrates because abortion rates decreased during this period. If accurate pregnancy rates were available, a decrease in the abortion rate would cause an increase in the birthrate, assuming everything else remained constant. Because abortions are performed after a pregnancy occurs, pregnancy rates are unaffected. Therefore, the pregnancy rate analysis should be the best indicator of the effect of changes in teen sexual behavior. But in reality, we have very accurate birthrate data, but pregnancy rate data that is only calculated from birth and abortion rates. Because an abortion is not a reportable vital event, statistics are far less accurate than for births. The Alan Guttmacher Institute abortion data used in this study are the most complete available.

The birthrate analysis is included as another indication of trends in the teen population since the pregnancy rate data are less reliable. During the time period of this study, the reported decrease in the abortion rate would have caused a relative increase

in the birthrate for sexually active teens. This could obscure other factors that may have caused a decrease in the birthrate to sexually active teens, such as improved contraceptive use and decreased frequency of sexual activity.

One limitation of this study is its reliance on a retrospective survey method to assess sexual behavior of teens in 1991. However, this is the only method available for evaluating trends in 1991, the year the teen birthrate peaked. The trend of decreasing teen sexual activity observed in the NSFG data is mirrored in the Youth Risk Behavior Survey (YRBS) which showed a decline in rates of sexual experience and sexual activity (past 3 months) in every survey from 1991 to 1999, except for a rise in 1995 (Centers for Disease Control and Prevention, 1992; Kann, et al., 1995, 1996, 1998, 2000). The YRBS, which is administered to public high school students in odd years, does not represent the total cohort of 15-19 year old females since it excludes high school graduates, private school students and those who have dropped out. Since the downward trend in teen birthrate has continued up to the time of this writing, it will be possible to compare the 1995 NSFG with future survey data to further establish the validity of the findings reported here.

The findings of this study are unique due to the focus on the decline in the birthrate and pregnancy rate to single teens. However, the factors responsible for the decline in the overall pregnancy rate can be compared to the two other papers that performed a similar analysis. In this study, the two factors contributing to the greatest decline in the overall teen pregnancy rate are the increase in single teens abstaining from sex and the decrease in the proportion of teens who were married. Increased abstinence accounts for 39.3% of the total teen pregnancy rate reduction. This is comparable to

the findings of others: the decline in the pregnancy rate attributed to abstinence by Saul (1999) was 20%, and by Flanigan (2001), between 20 and 50%. However, a major difference between this study and the others is in the attribution of the decline not due to abstinence. Saul (1999) and Flanigan (2001) attributed all of the remaining decline to improved use of contraceptives. However, in reality other factors cause pregnancy rates to decline. For example, the decrease in the teen marriage rate accounted for 23.8% of the reduction in the total pregnancy rate. By separating the married and single populations, the current study demonstrates that half of the decrease in pregnancy rates among sexually active teen—the decrease that is possibly attributable to contraception use—occurred in the married population. Only 20.7% of the decline in pregnancy rates is due to a reduction among sexually active single teens, the population in which teen births incur the greatest societal cost. However, even this decrease may be due to less frequent sexual activity as well as improved contraception. Primarily however, this study demonstrates the important role of increased sexual abstinence in reducing the single teen and overall teen pregnancy rates.

The increase in teen abstinence has been attributed to the fear of HIV/AIDS and STDs, and to the rise of abstinence-only sex education. Empirical studies are beginning to reveal effectiveness of the abstinence-only approach. For example, Bearman & Bruckner (2001) found that teens who took a pledge to abstain from intercourse until marriage, delayed their transition to first intercourse by an average of 27 to 38 months. The end result from teens abstaining, as this study demonstrates, is fewer births to single teenage women. The fact that more teens are abstaining also means that fewer teens are at risk for sexually

transmitted diseases and for other risk-taking behaviors that correlate with teen sexual activity (Orr, Beiter & Ingersoll, 1991). The positive societal impact will continue to increase if, as suggested by the continuing decline in teen births, the trend toward increased abstinence continues into the future.

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### Editor's Note

Since 1991, teen pregnancy and birth rates have declined. Different authors have used different research methods to identify the cause (increased use of effective contraception? a decrease in sexual activity? increasing numbers of teens remaining abstinent?) of this decline. Mohn and her colleagues look specifically at differences in teen pregnancy and birth rates among single and married teens—two very distinct groups. Additionally, their analysis differentiates between teens that have previously been sexually active from those who were sexually active at a time when they became pregnant. Their conclusion: "...the higher proportion of teen females abstaining from sex accounted for most of the reduction in single teen birth and 67% of the decrease in single teen pregnancies from 1991-1995." Regardless of one's perspective on the issue of teen sexual abstinence, when properly implemented, abstinence will reduce teen pregnancy. If we desire to decrease the number of single teen pregnancies and births, the unresolved question remains, "What can be done to consistently and effectively increase the number of sexually abstinent youth?"

— CCS

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### Disclaimer

Lynne R. Tingle, PhD, one of the authors of this article is Associate Editor for *Adolescent & Family Health*. Dr. Tingle recused herself from any involvement in the review process, and in fact did not participate in any aspect of the review process for this article.

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# THE ECONOMICS OF FAMILY PLANNING AND UNDERAGE CONCEPTIONS

(published in the *Journal of Health Economics*, 2002, 21, 2 (March), 27-45)

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*Abstract:* This paper examines whether improved access to family planning services for under sixteens is likely to help in achieving the aim of reducing underage conceptions. A simple model of rational choice is introduced which suggests that family planning increases rates of underage sexual activity and has an ambiguous impact on underage conception and abortion rates. The model is tested on panel data on regions within the UK using two approaches. The first test is whether the 1984 Gillick Ruling had a differential impact on two groups: under sixteens for whom access to family planning was restricted by the Ruling and older teenagers who were not affected. Secondly, attendance by under sixteens at family planning clinics, suitably instrumented, is used as a proxy for access to family planning. With both approaches, no evidence is found that the provision of family planning reduces either underage conception or abortion rates. Socio-economic variables such as children in care rates and participation rates in post-compulsory education are found to be significant predictors of underage pregnancies.

**Keywords:** family planning; underage conceptions; abortion; risk; panel data.

**JEL Classifications:** J13, I18.

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*Parents - the primary sex educators*

**Parents want more say in teens' reproductive health**

NEW YORK (Reuters Health) - Two thirds of parents are unaware that teens can give consent for sexually transmitted disease treatment, and nearly half do not know their children can obtain contraception without parental involvement, according to a survey conducted in Minnesota and Wisconsin.

What's more, 71 percent of parents would not object to a mandatory parental notification policy, which includes a five-day delay for access to contraception.

"Many parents are uninformed about what their kid can and cannot do," said Dr. Michael Resnick of the University of Minnesota in Minneapolis. "I suppose this is no surprise because when you look at studies of healthcare providers, well over half of them are quite misinformed about what these confidentiality laws permit."

When parents were asked about potential consequences of changing the laws, parents mentioned positive consequences -- they believed more teens might decide to not have sex, and requiring parental consent would encourage more discussion between parents and their teens.  
(Reuters Health, 3/21/03)

## **The Declines in Adolescent Pregnancy, Birth and Abortion Rates in the 1990s: What Factors Are Responsible?**

By Jeffrey M. Jones, M. D., Ph.D., William Toffler, M.D., Reed Bell, M.D., Joanna K. Mohn, M.D., Gaylen Kelton, M.D., Robert Weeldreyer, M.D., Hal Wallis, M.D., G. Steven Suits, M.D., John R. Diggs, Jr., M.D., Harold Cox, M.D. and Kent Jones, M.D.

**Background:** During the 1990s the rates of pregnancy, birth and abortion among adolescents in the United States have declined. Taken in composite, these declines are the first in several decades. The question remains: What factor or factors are most responsible for the declines?

**Approach:** The data on adolescent pregnancy and birth rates, abortion, contraceptive use, and sexual behavior and attitudes were analyzed in order to ascertain correlation and possible cause-and-effect relationships.

**Findings:** The specific factors and the exact interrelationship of the factors responsible for the decline in teen pregnancy, birth and abortion rates cannot be precisely determined. However, the contention that these declines are due to increased contraceptive use by teenagers does not withstand critical analysis and review. Out-of-wedlock birthrates to sexually experienced female teens rose 29% from 1988 to 1995, despite a 33% increase in the use of condoms at last intercourse.

Decreased rates of pregnancy, abortion and births among the entire adolescent cohort seem to correlate with a corresponding decrease in teenage sexual activity. Because of the difficulty in precisely determining the cause of these positive trends, the issue as to why adolescents have become increasingly involved in abstinent behavior should be the subject of further study.

**Summary:** Abstinence and decreased sexual activity among sexually active adolescents are primarily responsible for the decline during the 1990s in adolescent pregnancy, birth and abortion rates. Attributing these declines to increased contraception is not supported by the data. Intervention programs focused on abstinence may have significantly contributed to the decline in sexual activity, but further research is needed to test this hypothesis.

### **Background**

Beginning in the 1960s and 1970s, various statistical measures confirmed a dramatic increase in sexual activity by adolescents as reflected by the consequences.

- The birthrate among unmarried females aged 15 to 19 years increased 90% from 22.4 per 1,000 in 1970 to 42.5 per 1,000 in 1990.
- The abortion rate among females aged 10 to 19 years rose 94% from 9.7 per 1,000 in 1972 to 18.8 in 1990.

With few period-to-period exceptions through the late 1980s, these consequential statistics reflected a steady increase in teens having sex. However, in recent years the trend in the measures of these consequences has begun to moderate and even reverse.

The birthrate declined 4.2 percent for unmarried female teens and 11.9 percent for all female teens from 1991 to 1996 (Table A).

Table A	1991	1996	% change
Birthrate per 1,000 females aged 15 to 19			
Total	62.1	54.7	-11.9%
Unmarried	44.8	42.9	-4.2%

Abortions were not responsible for the drop in the birthrate. In fact, rate of abortions for teens dropped during a similar period (Table B).

Table B	1990	1995	% change
Abortion rate per 1,000 females aged 10 to 19 years	18.8	13.5	-28.2%

Correspondingly, the rate at which teenagers became pregnant fell 9.1 percent between 1992 and 1995 (Table C).

Table C	1992	1995	% change
Teenage pregnancy rate per 1,000 females	99.7	90.6	-9.1%

### **An Increase in Contraception?**

Immediately after the data above were released in May and June of this year, advocates of safer-sex programs pointed to increased condom use by teens as a principle reason for the declines in pregnancy and birth rates. Consider the following:

*"Contributing to this decline in [birthrates] are indications that... sexually active teenagers are more likely to use contraception." Centers for Disease Control*

*"Those [teens] who do have sex are using contraceptives more reliably."*

*Washington Post*

*"Their [female teens] likelihood of pregnancy has decreased. Increases in contraceptive use by adolescent females contribute to this change."*

*HHS*

*"Increased contraceptive use-especially condoms- was a major factor in the decline of unintended pregnancies." NARHP*

And their claims were not without some statistical support. After all, condom use at last intercourse increased significantly by both teenage males (+21%) and females (+33%) from the late 1980s through the mid 1990s (see Table D). Condom use increased even more among specific high-risk teenage demographic groups, such as black females, a cohort that also experienced a significant increase in the use of Norplant and Depo-Provera.

The decline in pregnancy and birth rates and increase in condom use led to the premature conclusions that total contraception rates increased and were responsible for the declining birthrates. But, in matters of statistical and behavioral research, formulating conclusions during the initial review of data is a careless practice.

### Contraception-Use Rates Have Not Increased

A more complete review of sexual practices by teenagers from 1988 to 1995 is not compatible with the view that contraception-use rates increased. Total contraception-use rates not only did not increase- the data indicate that they may have actually declined slightly (Table D).

Table D Contraceptive use during last intercourse by sexually active teens	1988			1995			Change in combined contraceptive use, '88 to '95
	Condoms	Oral	Combined	Condoms	Oral	Combined	
Males, 15-19 (and partner)	53%	37%	90%	64%	28%	92%	+2.2%
Females, 15-19 (and partner)	27%	42%	69%	36%	23%	59%	-14.5%

In order to compare 1995 with 1988, the data for oral and condom contraceptive use was added in Table D to yield combined contraceptive use at last intercourse. This calculation includes only oral and condom contraceptives for two reasons. First, these two methods represent the dominant contraception of choice by teens in both comparison years. Second, data for injectable and implantable contraception is not available for 1988.

The combined data show that while condom use did increase, the rise was more than offset by a decrease in the use of oral contraceptives. From 1988 to 1995, sexually active adolescents females increased their use of condoms at last intercourse by 33 percent (36% vs. 27%), but decreased their use of oral contraceptives by 45 percent (23% vs. 42%).

Thus, these females were 14.5 percent less likely to use condoms or oral contraception in 1995 compared to 1988. This fact led Joyce Abma from the National Center for Health Statistics and Freya L. Sonenstein from the Urban Institute to make the following statement:

"Between 1988 and 1995 there has been little change in the proportion of currently sexually active teens reporting that they used no method of contraception at the last intercourse."

This combined calculation ignores two factors that could influence the data on the proportion of female teens protected against pregnancy.

The first factor is that the combined calculation assumes no dual use. But, dual use at last intercourse among never-married young people aged 14 to 19 is relatively small at 5.8 percent of females and 4.1 percent of males. Further, the combined calculation was performed in the same manner for both 1988 and 1995. Therefore, combined data without an adjustment for dual use is valid as a relative comparison of contraceptive use in 1995 to 1988.

The second factor is that injectables/implantables are not included in the combined calculations. However, even if the use of injectable/implantable contraception was included for this cohort on Table D ( 7% usage rate at last intercourse in 1995), total contraception use still fell.

The decline in the use of contraception by female teens has been confirmed in other research literature. In the January/February 1998 issue of Family Planning Perspectives ("Trends in Contraceptive Use In the United States: 1982-1995," Table 1 ), authors Piccinino and Mosher included data that indicate a slight drop from 1988 to 1995 in the proportion of sexually experienced U.S. females aged 15-19 reporting use of any method of contraception. The data on Table E show that the use of any method of contraception (including injectables and implantables) by sexually experienced female teens dropped from 61.0 to 60.1 percent.

Table E	1988	1995
A. Percent of all females aged 15 to 19 currently using any contraceptive method	32.1%	29.8%
B. Percent of females aged 15 to 19 who are sexually experienced	52.6%	49.6%
C. Proportion of sexually experienced females aged 15 to 19 who are using any method (C=A/B)	61.0%	60.1%

Safer-sex advocates may claim that even without a net increase in contraceptive use teens are better protected against the risk of pregnancy because of the effectiveness of injectables/implantables. But it is important to note that the sizable shift from oral contraception to condoms represents a shift to less efficacious protection against pregnancy.

It is possible to statistically calculate the change in protection from pregnancy among female teens by the switch from oral contraception to condoms and injectables/implantables. To make this calculation it is necessary to factor the percentage

of teens using different methods of contraception by the accepted levels of effectiveness for each method.

Table F provides a risk-adjusted contraceptive protection index. For example, in 1988, 69 percent of sexually active females aged 15 to 19 used condoms and/or oral contraception at last intercourse. But adjusted for method effectiveness, the percentage index dropped to 65 percent. Using the same formula for 1995, the percent of the cohort using contraception (including I/I) dropped from 66 percent to 61 percent after the adjustment for effectiveness.

Table F Sexually Active Females 15-19	1988				1995			
	Condom	Oral	I/I	Total	Condom	Oral	I/I	Total
A. % usage at last intercourse	27%	42%	N/A	69%	36%	23%	7%	66%
B. Method effectiveness	85%	99%			85%	99%	99%	
C. Hypothetical Protection Index (C=AxB)	23%	42%		65%	31%	23%	7%	61%

Thus, the use of injectable/implantable contraception in 1995 did not offset the reduced protection represented by the switch from birth control pills to condoms. This is yet another reason why contraception would not account for reduced pregnancy and birth rates.

In summary, based on lower reported contraceptive use and a switch to a less effective prevention method (condoms vs. oral), sexually active adolescent females in 1995 were less protected against pregnancy than in 1988. The claim that the drops in pregnancy, birth and abortion rates are due to increased contraceptive use is inconsistent with the data.

### **Non-Marital Birthrates Among Sexually Experienced and Active Teens Have Risen Sharply**

The out-of-wedlock birthrates to sexually experienced female teens (have ever had sex) and sexually active teens (sex in past 3 months) have increased sharply during the 1990s.

To calculate the birthrate among adolescents, the government uses the total number of births by female teens as the numerator and the total number of female teens

as the denominator. This formula is misleading because it does not recognize that abstinent female teens do not become pregnant.

The convention of reporting on birthrates within the entire cohort of 15 to 19 year-old females has masked the steady increase in the out-of-wedlock birthrate among sexually experienced and sexually active teens.

A more revealing way to consider the data is to calculate the out-of-wedlock birthrate among sexually experienced and sexually active female teens. This calculation would allow researchers to more accurately determine the impact of national interventions aimed at reducing non-marital births.

Table G shows the out-of-wedlock birthrate to sexually experienced females aged 15 to 19. The birthrates per 1,000 unmarried females, aged 15 to 19, are from the National Center for Health Statistics. The percent of females 15 to 19 who have had premarital sex is from the National Survey of Family Growth. See footnote (a) for a more complete discussion on calculating birthrates to sub-groups of teens.

This calculation shows that the long-term trend of out-of-wedlock birthrates to sexually experienced female teens has increased substantially during the 1990s. Based on this data, the out-of-wedlock birthrate to sexually experienced females aged 15 to 19 increased 41.8 percent from 1976 to 1995 and 29.3 percent from 1988 to 1995.

Year	Birthrate per 1,000 unmarried females aged 15 to 19	% of females 15 to 19 who have had premarital sex (sexually experienced)	Non-marital birthrate per 1,000 sexually experienced females 15 to 19
1976	24.6	39.0%	63.1
1982	28.7	45.2%	63.5
1988	36.4	52.6%	69.2
1995	44.4	49.6%	89.5
Percent change '76 to '95			+41.8%
'88 to '95			+29.3%

a) *The calculation of non-marital birthrates to sexually experienced female teens was performed by using the total out-of-wedlock birthrate to females aged 15 to 19 as the numerator and the proportion of female teens who reported premarital sex as the denominator. For example, the non-marital birthrate of 89.5 per 1,000 sexually experienced female teens in 1995 was calculated by dividing 496 (number of female teens per 1,000 who reported premarital sex) into 44.4 (births per 1,000 unmarried females aged 15 to 19).*

*The birthrate to sexually active female teens were calculated in the same manner.*

*For a more complete discussion on calculating birthrates by adolescent sub-groups, see the discussion in the article "The Decline in US Teen Pregnancy Rates, 1990-1995," Pediatrics, Vol.102, No.5, November 1998.*

*The Pediatrics article concluded that the pregnancy, abortion and birthrates among sexually experienced and sexually active teens have held steady or declined significantly since the 1980s. However, authors Kaufmann, et al. used data for all teen births. The calculation of out-of-wedlock birthrates among sexually experienced and sexually active teens, as shown herein, leads to a dramatically different conclusion.*

Table H shows the same analysis for sexually active females, aged 15 to 19.

Table H Year	Birthrate per 1,000 unmarried females aged 15 to 19 (Entire teen female cohort)	% of females 15 to 19 who are sexually active (sex in past 3 months)	Non-marital Birthrate per 1,000 sexually active females 15 to 19
1988	36.4 (53.0)	42.7%	85.2
1995	44.4 (56.8)	39.7%	111.8
Percent change '88 to '95			+ 31.2%

Based on this data, the out-of-wedlock birthrate to sexually active females aged 15 to 19 increased 31.2% from 1988 to 1995.

The increases shown in Tables G and H occurred despite sharply higher condom usage, as illustrated in Graph 1.

From 1982 to 1995, the out-of-wedlock birthrate per 1,000 sexually experienced females aged 15 to 19 increased 40.9 percent, from 63.5 to 89.5 (Table G).

During the same time span the proportion of teenage females who reported using contraceptives increased their use of condoms 76 percent (from 21% to 37%). The implications of the data in Table G and H and Graph 1 should not be minimized- out-of-wedlock birthrates have increased among sexually experienced and sexually active female teens despite an increased use of condoms.

It should be noted that the proportion of female teens who reported premarital sex was used as a proxy for unmarried female teens in Table G. It is possible that some females who reported having had premarital sex were married at the time of reporting.

However, the authors believe that the use of specific data limited to never-married female teens would not significantly alter the results shown. This is because (1) the proportion of married teens in this age category is low (4.5% in 1995 NSFG), and (2) the proportion of never-married female teens who have ever had sex is not much different than the proportion of all teens who have ever had sex.

For example, in 1995, 48.1 percent of never-married female teens reported having had sex compared to 50.4 percent of all teens. So while the exact calculations of out-of-wedlock birthrates to sexually experienced and sexually active female teens might change if a pure data set limited to never married teens was used, the pattern of the results would remain the same. The authors encourage other researchers to further expand the study of out-of-wedlock birthrates.

### Declining Sexual Activity Rates

Obviously, programs in safer-sex education and condom distribution have not reduced out-of-wedlock birthrates among sexually experienced teens. On the other hand, there has been a decrease in the overall teen birthrate. The following data suggest reasons why. Tables I and J confirm that more teens are choosing abstinence.

Table I % teens 15-19 who have ever had sex	1988	1995	% change '95 vs. '88
Never-married Males-NSAM	60.4%	55.0%	-8.9%
Females-NSFG	52.6%	49.6%	-5.7%

Table J % high school teens 15-19 who have ever had sex	1990	1997	% change '97 vs. '90
Males-YRBS	60.8%	48.9%	-19.6%
Females-YRBS	48.0%	47.7%	-.6%

Sexually experienced teen males have become less sexually active and have fewer partners (Table K).

Table K % H.S. teens	1990	1995	1997	% change '97 vs. '90
Had intercourse in past 3 months	39.4%	37.9%	34.8%	-11.7%
Males	42.5%	35.5%	33.4%	-21.4%
Females	36.4%	40.4%	36.5%	+.3%
Had four or more partners-	19.0%	17.8%	16.0%	-15.8%
Males	26.7%	20.9%	17.6%	-34.1%
Females	11.8%	14.4%	14.1%	+19.5%

A very strong trend is reflected in Tables I, J and K. The positive correlation between the reductions in teen sexual activity and teen pregnancy rates may be mostly due to more abstinent behavior by male, rather than female, adolescents. From 1990 to 1997 there was a 19.6 percent decline in the proportion of adolescent males who have ever had sex compared to a .6 percent decline among adolescent females (Table J). From 1990 to 1997 there was a 21.4 percent drop in the proportion of adolescent males who have had sex in the past three months compared to a .3 percent increase among adolescent females (Table K). And, from 1990 to 1997 there was a 34.1 percent decline

in the proportion of adolescent males who have had four or more partners compared to a 19.5 percent increase among adolescent females (Table K). So while the percent of all female teens who have ever had sex has declined, those females remaining sexually active have become increasingly promiscuous. A discussion of this phenomenon is not within the scope of this paper, but should be the subject of further study.

### **Promotion of Abstinence**

Tables I, J and K show that there has been a significant overall decline in teen sexual activity from 1988 to 1995 and beyond, simultaneous with an overall decline in teen pregnancy, birth and abortion rates (Tables A, B, and C). Increased condom use has been invoked to explain the latter, yet increased condom use is outweighed by a shift away from using more efficacious oral contraceptives. Tables G and H show that the non-marital birthrate to sexually experienced and sexually active female teens actually increased sharply from 1988 to 1995.

Thus we find it more reasonable to suggest reduced sexual activity as the hypothesis capable of explaining reduced pregnancy, birth and abortion rates. In fact, the decline in the overall birthrates among adolescents females during the 1990s is due primarily to teens that have never had sex or are not currently having sex.

Abstinence-only programs may be playing an increasing role in bringing about reduced teen sexual activity. In the remainder of this publication, therefore, we present: 1.) Observations on the history and nature of abstinence programs; 2.) Societal factors that support the choice of abstinence; and 3.) Promising preliminary results of abstinence-only programs.

### 1. History and Nature of Abstinence Programs

Abstinence component of comprehensive sexuality programs. In the early 1990s comprehensive sexuality programs began emphasizing abstinence as the preferred choice for teenagers. Such programs are called "abstinence-based" While abstinence-only advocates accuse abstinence-based education of sending a confusing dual message, it is likely that the abstinence component has influenced some adolescents. All of this raises a very interesting question: If comprehensive sexuality education has contributed to the decline in teen pregnancy, might it be due primarily to the abstinence component? This is a very real possibility since, as shown earlier in this research study, contraceptive use is not associated with reduced unintended out-of-wedlock births.

Abstinence-only programs. There has been an explosive growth in privately funded abstinence-only programs during the 1990s. An indication of that growth is shown in Table L.

Table L Abstinence-only category	# of students reached 1986	# of students reached - 1989	# of students reached- 1997
Pledge card based	0	0	750,000
Crisis pregnancy centers	12,164	69,918	620,250
Private curriculum/speakers	234,950	572,656	1,676,032
Total	247,114	642,574	3,046,282

As a result, there has been a 12-fold increase in the number of teens reached by privately funded abstinence programs in the span of a decade.

Opponents of abstinence-only programs point out that the effectiveness of such programs has not been documented. This may be based more on philosophical opposition to the abstinence-only message than on an objective consideration of all the facts. Accordingly, four observations are worthy of note.

First, very little research has been conducted on abstinence-only programs. Douglas Kirby in his booklet "No Easy Answers" stated that "more research should be done on these programs...very few such programs have been well evaluated, and, thus there is little evidence to determine whether or not abstinence-only programs can delay intercourse." In other words, the jury is still out.

Second, the abstinence-only programs that have been evaluated in peer-reviewed research journals have been very narrowly defined in scope and low in intensity. An example is an abstinence program in Philadelphia recently declared as ineffective in JAMA. The entire abstinence message therein studied was delivered during just two Saturday sessions. Researchers have concluded that any intervention program, in order to be effective, must be multifaceted and of adequate intensity and duration.

Third, some of the abstinence programs that have been evaluated do not meet the standards set by abstinence-only education experts. An example is Education Now and Babies Later (ENABL), the well publicized program in California. ENABL was a limited scope program. But more importantly, ENABL was never fully endorsed by abstinence-only education experts. From the onset, abstinence-education advocates did not acknowledge ENABL as a true abstinence program because of its limited duration, use of values-clarification methods and reliance on teachers who were not trained in or did not philosophically agree with an abstinence-only message.

Philosophical buy-in by teachers to a message correlates highly with the impact of the message upon students. In a 1994 study researchers reported "that teachers are a vital and important ingredient in the successful implementation of these programs [meaning] that an abstinence sex education program may succeed or fail not simply because of the merit of the program but because of the lack of either teacher commitment to implementation or support for the program objectives or both.

Finally, abstinence-only advocates also claim that a much higher standard of research protocol is applied to abstinence-only programs than to comprehensive sexuality programs. One example of this apparent double standard is the research on condom

availability in Los Angeles area high schools. In that study there was a 41 percent pre-to-post test participant-dropout rate due to parental opposition.

Another example of the double standard is the Center for Disease Control's "Programs That Work" initiative. "Programs That Work" features five interventions that CDC claims are quite effective. Not one of the five has data measuring a reduction in teen pregnancy or STD rates. Yet, these programs were developed to reduce pregnancy and STD rates.

## 2. Societal Factors That Encourage Abstinence

A number of societal factors also encourage abstinence.

HIV/AIDS Education. Perhaps not since the polio crisis of the 1950s has the national consciousness on a medical issue been so raised as it has been for HIV/AIDS. Almost all teens now receive instruction on HIV/AIDS: 92 percent of males and 94 percent of females. The HIV/AIDS scare has likely impacted the sexual behaviors of many adolescents, in favor of abstinence.

Instruction on Refusal Skills. As equally common among females as HIV/AIDS information is instruction on how to say "no" to sex. In fact, 93 percent of adolescent females received instruction on refusal skills in 1995. Three quarters of adolescent males received similar instruction.

Generational Changes in Attitudes. There are several theories of generational sociology. One view holds that generational history is seamless-each new generation simply builds upon the foundation established by its predecessors. Another view holds that generational history is cyclical- attitudes abandoned by one generation often reappear after a skip of two or more generations. If the latter theory is true, then the recent declines in teen sexual activity may, in some part, be due to generational factors. Teenagers today could be rejecting the view of sexual behavior held by their baby-boomer parents (who are widely credited with the sexual revolution of the 1960s and 70s) in favor of the traditional view held by today's more senior citizens. If this observation is valid, then an unambiguous abstinence message should be quite well received by the next few generations.

A recent article in Family Planning Perspectives confirms the link between more conservative attitudes among teens and declining sexual activity rates. In the article, "Understanding Changes in Sexual Activity Among Young Metropolitan Men: 1979-1995," authors Ku, et al. state "More permissive attitudes about premarital sex were far less likely to have had sex recently than were those who approved of it." The study also demonstrates that "religiosity is part of reason for the shift in attitudes."

The article suggests that these attitudinal "changes reflect a growing trend and not merely a unique fluctuation in the sexual beliefs of American youth."

Generational Societal Attitudes. There have been a number of studies in recent years showing that society in general has embraced an abstinence-until marriage viewpoint.

A survey of nearly 4,980 people by Wirthlin Worldwide found that 71 percent of the national respondents believe couples should wait to have sex until marriage. A New York Times poll found that nearly half of teens polled said sex before marriage is always wrong. In an Emory University survey of 1,000 sexually active teen girls, 84 percent said they would like to learn how to say no to sex. In a 1994 Roper-Starch study, 54 percent of students who have already tried sex indicated they should have waited. In a study commissioned by the National Campaign to Prevent Teen Pregnancy, 95 percent of both adults and teens stated that it is important for high school students to be given a strong abstinence message from society.

### 3. Promising Results of Abstinence-Only Programs

There is increasing evidence that an unambiguous abstinence message shows promise in changing the behavior of teens.

Add Health Study. The September 10, 1997 issue of JAMA published an article on the first wave of findings from the National Longitudinal Study on Adolescent Health (Add Health)-the most extensive study on adolescent risk behavior ever conducted. The study showed that the factor most strongly associated with a delay in the onset of sexual activity was a pledge of abstinence. In fact, the pledge of abstinence was three times more strongly associated with a delay in sex than the next most positively correlated factor. A pledge of abstinence is the cornerstone of a program popular among many church youth groups called True Love Waits. Nearly 16 percent of all female teens and 10 percent of all male teens have signed pledge cards and joined peer support groups through True Love Waits and similar programs.

Simply signing a pledge of abstinence-in and of itself-is probably not the sole reason signers significantly delay sexual activity. There are likely a number of familial, religious and personal risk-protective factors that lead an adolescent to sign the pledge. Nevertheless, the signing itself does represent a point of decision and commitment, which the Add Health data show is highly significant as a singular risk-protective factor. Further research is needed to more thoroughly understand the dynamics of the abstinence pledge.

Other factors reported by Add Health as significantly associated with a delay in the age of sexual debut are parental disapproval of adolescent contraception and parental disapproval of adolescent sex.

STARS. "Students Aren't Ready for Sex" began in 1994 as a pilot project in Multnomah County, Oregon in four middle schools that served about 1,000 students. In 1998/99 STARS will reach all but five of Oregon's 36 counties and serve more than 33,000 students through its peer-mentoring abstinence program. In December 1997 the Oregon STARS Foundation contracted with the Oregon Health Policy Institute to evaluate STARS. The evaluation concluded in July 1998. Among the results:

- 70 percent of students said STARS helped them decide to abstain from sex.
- 77 percent of students said the program helped them understand their personal rights to set limits.

-Rates of sexual involvement among participating middle school students surveyed dropped from 9.7 percent before to 5.3 percent after STARS.

The Michigan Abstinence Partnership. In the early 1990s the State of Michigan began a major campaign called "The Michigan Abstinence Partnership." The partnership has provided communities with technical assistance, education materials and promotional items. Each participating community has developed a coalition which develops and implements unique abstinence activities, such as youth rallies, educational sessions for parents, abstinence curricula, family activity days, recreational events and peer education sessions.

Importantly, the partnership has had a goal of making teen abstinence the culturally accepted norm. The result has been a decline in teen birthrates far exceeding the national average. From 1991 to 1996 the teen birthrate in Michigan declined 19.1 percent from 58.7 to 47.5 births per 1,000 females aged 15 to 19. This compares to a national decline of only 11.9 percent during the same period (see Table A).

Tennessee Study. Of the 10 largest counties in Tennessee with statistics on pregnancy broken-down among black and white adolescents, research indicates that teen pregnancies in the three that taught abstinence-only in schools declined between 14 and 38 percent from 1991 to 1996. By comparison, the four that taught safer-sex education or had no system-wide sex education experienced a maximum decline of only 7 percent.

Table M. Teen Pregnancy Rates in Counties with Populations over 50,000 and Black and White Statistics, 1991 to 1996

County	Sex Ed	1991 (per 1,000)	1996 (per 1,000)	% change
Madison	Abstinence	79.9	49.3	-38.3%
Hamilton	Abstinence	69.6	52.1	-25.1%
Shelby	Abstinence	92.1	79.1	-14.1%
Davidson	Community initiatives	74.3	64	-13.9%
Knox	Mixed Message	46.2	40.5	-12.3%
Sumner	Teachers guide	49.2	44.5	-9.6%
Williamson	Safer-sex education	23.9	22.2	-7.1%
Montgomery	Safer-sex education	47.8	45.3	-5.2%
Rutherford	No systematic sex ed	41.0	39.9	-2.7%
Wilson	No systematic sex ed	36.3	36.5	+0.5%

Best Friends. The Best Friends mentoring and abstinence education program in Washington, D.C. has been highly effective. Only 10 percent of Best Friends girls reported having sexual intercourse compared to 37 percent of D.C. middle school girls.

Best Friends girls also were found to have a one-percent pregnancy rate, compared to a 26-percent rate among all high school-aged D.C. girls. Graph 2 reports on other aspects of the effectiveness of Best Friends.

Denmark, SC Community Program. Between 1982 and 1987, a program was implemented in Denmark, SC. The community-based program had multiple components- classroom abstinence education, adult education, motivational speakers, newspaper articles, intensive teacher training, and faith community and civic leadership involvement. Prior to the implementation of the program, the area had an adolescent pregnancy rate of 61 out of every 1,000 adolescent girls aged 14 to 17. In the second and third years of the program, the adolescent pregnancy rate dropped to 25 out of every 1,000 girls, while comparison schools not participating in the program remained at more than twice that rate.

Several years after the completion of the Denmark program, some researchers claimed that the study was flawed because a school nurse had been distributing condoms. In 1998 the U.S. Department of Health and Human Services, which funded the program, reiterated that the community intervention was designed from the onset and funded as abstinence-only and that an official HHS investigation was unable to attribute the decline in the pregnancy rate to the activities of the school nurse. The controversy raises an interesting question: Should the results of a contraceptive-based intervention be invalidated if it is later determined that an abstinence-only message existed within the intervention community?

### **Conclusion**

The evidence points to sexual abstinence, not increased contraceptive use, as the primary reason for the decline in teen pregnancy and birth rates throughout the 1990s. It appears possible that programs aimed at producing abstinent behavior have been more successful than programs aimed at increasing safer-sex practices in reducing unintended births to adolescents. Douglas Kirby, a noted sex education researcher, was prophetic in 1991 when he noted that "it may actually be easier to delay the onset of intercourse than to increase contraceptive practice.

The increase in teen abstinence is likely due to a combination of factors- the HIV/AIDS epidemic, the growth of abstinence-only programs, generational changes and increased cultural acceptance of abstinence.

The authors believe that the correlation between increased condom usage and higher out-of-wedlock birthrates among teens has significant public health policy implications. In 1997/98 a new federal program was implemented to promote an abstinence-only message. The timing of the federal Title V abstinence program seems well placed. Educational and youth programs should increase their emphasis on the abstinence-until-marriage message. Further research should be conducted into what components within an abstinence program contribute most to overall effectiveness.

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Condom Effectiveness  
Summary of the 2001 NIH Report

STD	Incidence (est. no. of new cases yearly)	Prevalence (est. no. of people infected)	Condom Effectiveness
HIV/AIDS	63,900**	900,000**	85% risk reduction
Gonorrhea	650,000****	359,000****	Women: no clinical proof of effectiveness Men: risk reduction shown*
Chlamydia	3 million***	2 million***	No clinical proof of effectiveness*
Trichomoniasis	5 million***	Not available	No clinical proof of effectiveness*
Chancroid	1,000****	Not available	No clinical proof of effectiveness*
Syphilis	70,000***	6,000****	No clinical proof of effectiveness*
Genital herpes	1 million***	45 million***	No clinical proof of effectiveness*
Human papillomavirus	5.5 million***	20 million***	No clinical proof of effectiveness*

\* "Workshop Summary: Scientific Evidence on Condom Effectiveness for Sexually Transmitted disease (STD) Prevention," June 12-13, 2000, Hyatt Dulles Airport, Herndon, Virginia.

Summary report was prepared by the National Institute of Allergy and Infectious Diseases, National Institutes of Health, Department of Health and Human Services, July 20, 2001.

(<http://www.niaid.nih.gov/dmid/stds/condomreport.pdf>)

\*\* "HIV/AIDS Surveillance Report, U.S. HIV and AIDS cases reported through December 2000," Department of Health and Human Services/Centers for Disease Control, Vol. 12, No. 2.

\*\*\* "Sexually Transmitted Diseases in America: How Many and at What Cost?" Prepared for the Kaiser Family Foundation by: American Social Health Association, December 1998.

([http://www.kff.org/content/archive/1445/std\\_rep.html](http://www.kff.org/content/archive/1445/std_rep.html))

\*\*\*\* "Sexually Transmitted Disease Surveillance, 2000," Centers for Disease Control and Prevention, Atlanta, GA, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, September 2001 (actual numbers rounded to nearest hundredth).

(<http://www.cdc.gov/std/stats/TOC2000.htm>)

The workshop on condom effectiveness was held because of a new Federal law requiring that programs sponsored by Federal dollars provide accurate and complete information about condom effectiveness.

Representative wording from the workshop report:

Gonorrhea:

“Several of the available studies on effectiveness demonstrated a protective effect of condoms for men, although they were limited either by retrospective design, inadequate measures of condom use, or sample sizes. The panel deemed, however, that the collective strength of these studies demonstrates that correct and consistent condom use would reduce the risk of gonorrhea for men. The available epidemiologic literature does not allow for accurate assessment of the degree of protection against gonorrhea infection in women offered by correct and consistent condom use.”

Chlamydia:

“The one study employing a prospective design found a protective effect of condoms against female-to-male transmission of chlamydia. Other studies in men and women demonstrated either no or some protection and are inconclusive. Taken together, the available epidemiologic literature does not allow an accurate assessment of the degree of potential protection against chlamydia offered by correct and consistent condom usage.”

Syphilis:

“While most studies suggest a protective effect, all are hampered by design limitations. Due to these limitations, the panel found no rigorous assessment of the degree of reduction in the risk of syphilis transmission offered by correct and consistent condom use could be made.”

Herpes:

“The limitation in epidemiologic study designs and the lack of primary outcome measurements found in the above studies prevented the panel from forming any conclusion about the effectiveness/ineffectiveness of correct and consistent condom usage in reducing genital herpes infection.”

Human Papillomavirus:

Results of 10 studies on the role of condoms in preventing cervical dysplasia or neoplasia were examined. Six showed some risk reduction, ranging from 39 to 80%. Two found risk reduction which was not statistically significant and two found no risk reduction at all.

“The HPV data were evaluated separately for the various outcomes of interest (HPV infection, genital warts, and cervical neoplasia). There was no evidence that condom use reduced the risk of HPV infection, but study results did suggest that condom use might afford some reduction in risk of HPV-associated diseases, including genital warts in men and cervical neoplasia in women.”