

ISSUE  
Volume 3, Number 1



Features

Letter from the Editor .....1  
Commentary .....2  
In the News .....48  
Author Guidelines .....51

**3 Continuity in Family Constellation**

*Daniel Offer, MD, Marjorie Kaiz, BS, Eric Ostrov, PhD, David B. Albert*

**9 Older Adolescent Well-being and Authoritative Parenting**

*Ellen K. Slicker, PhD, Iris Thornberry, MA*

**20 Teen Tobacco Court: Preliminary Summary of The Relationship Between Family Factors and Tobacco Use Behaviors Among a Sample of Juvenile Tobacco Offenders**

*Lilly M. Langer, MPH, PhD, George J. Warheit, PhD, Gretchen Williams Torres, MPP*

**28 How Much Do Mentally Disabled Adolescents Know about Sex and Birth Control?**

*Mariah Mantsun Cheng, PhD, and J. Richard Udry, PhD*

**39 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*

*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.

[www.afhjournal.org](http://www.afhjournal.org)  
A Journal of the Institute for Youth Development

*Adolescent & Family Health* • P.O. Box 16560 • Washington, DC 20041

*Adolescent & Family Health*, the Journal of the Institute for Youth Development, is a peer-reviewed publication for objective, scientific research that focuses on the common factors influencing adolescent adoption or avoidance of alcohol, drugs, sex, tobacco, and violence. The Journal reports unpublished original research and evaluations of youth risk-avoidance program outcomes, particularly those that take a comprehensive approach to involvement of family and other significant influences that lead to avoidance or abandonment of risk behaviors.

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.

***Adolescent & Family Health***  
**A Journal of the Institute for Youth Development**

P.O. Box 16560 • Washington, DC 20041  
703/471-8750 (phone) • 703/471-8409 (fax)

[www.afhjournal.org](http://www.afhjournal.org)

# 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 (BR95sA) or the proportion of singles who are sexually active (Pop95sA/Pop95s). 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 (BR91M and BR95M), the birthrate to single teens (BR91s and BR95s) and the fraction of the population who are married (Pop91M / Pop91Total and Pop95M / Pop95Total). 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)**

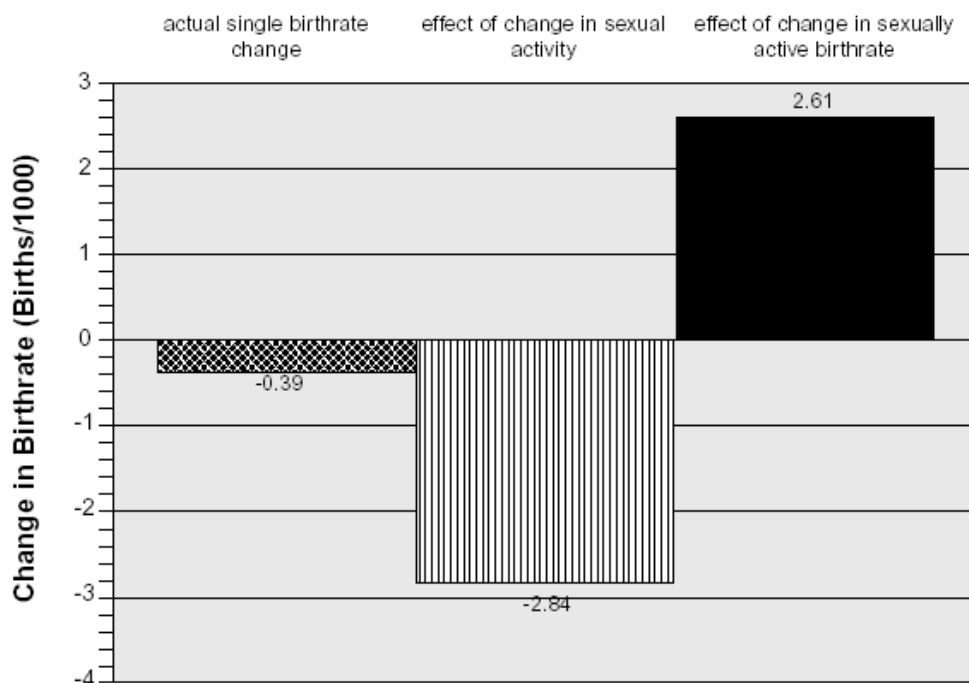


Figure 1: this is a presentation of the data regarding single teen birth rates from Table 1 showing the contributions made by the change in sexual activity (stripes) and birthrate to sexually active single teens (solid) to the observed decline in the single teen birthrate (dots).

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

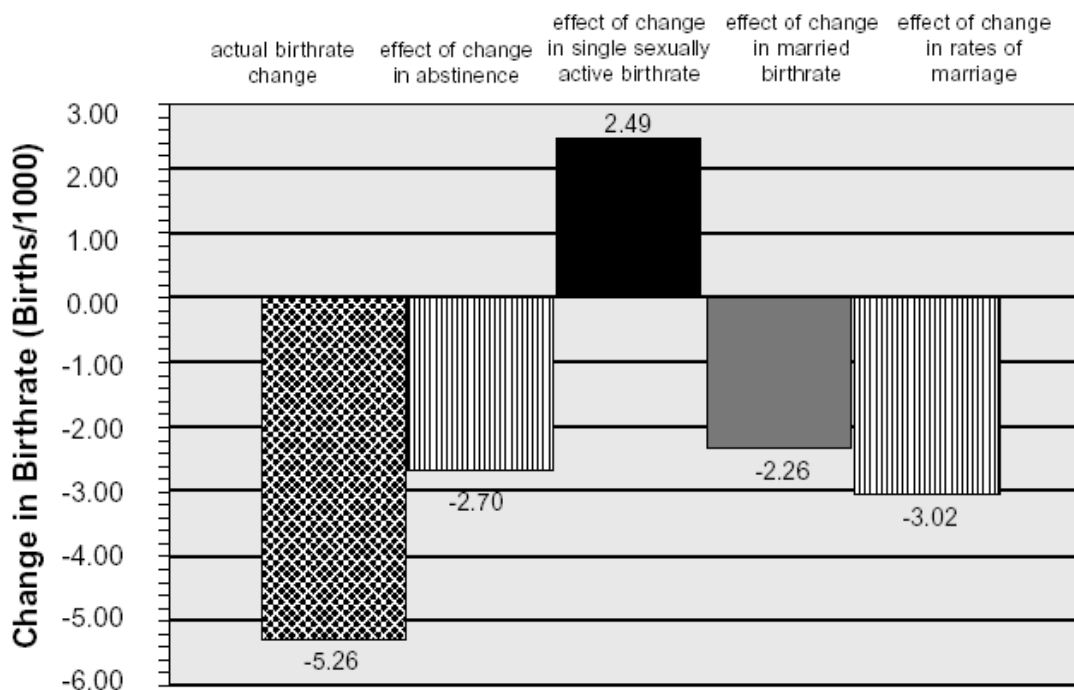


Figure 2: the actual decline in the overall teen birthrate from 1991 to 1995 is shown in the dotted bar. The contributing factors and the magnitude of their contributions as calculated in Table 1 are shown, with the striped bars representing population shifts, and the solid bars representing birth rate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

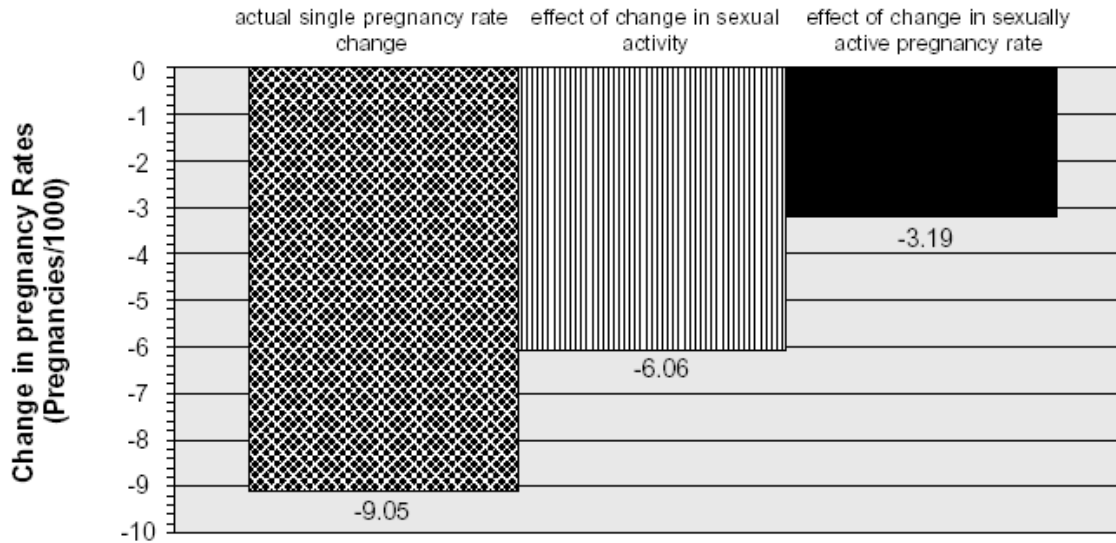


Figure 3: This is a presentation of the data regarding single teen pregnancy rates from Table 1 showing the contributions made by the change in the rate of sexual activity (striped) and pregnancy rate to sexually active teens (solid) to the observed decline in the single teen pregnancy rate (dotted).

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

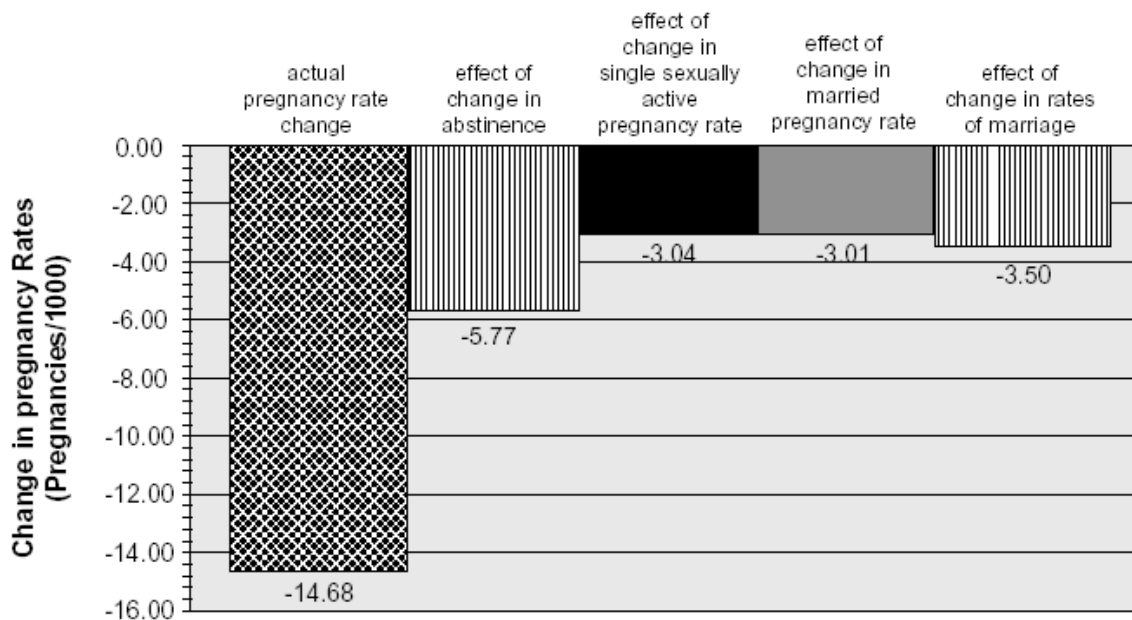


Figure 4: the actual decline in the overall teen pregnancy rate from 1991 to 1995 is shown in the dotted bar. the contributing factors and the magnitude of their contributions as calculated in Table 1 are shown with the striped bars representing population shifts, and the solid bars representing pregnancy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

## References

- Adams, G., & Williams, R. C. (1990, September). *Sources of support for adolescent mothers*. Washington DC, Congressional Budget Office.
- Alan Guttmacher Institute. (1999, April). *Teenage pregnancy: Overall trends and state by state information*. New York: Author.
- Bearman, P.S., & Bruckner, H. (2001). Promising the future: Virginity pledges as they affect transition to first intercourse. *American Journal of Sociology*, 106, 859-912.
- Centers for Disease Control and Prevention. (1992, December 18). Selected Behaviors That Increase Risk for HIV Infection, Other Sexually Transmitted Diseases, and Unintended Pregnancy Among High School Students -- United States, 1991. *MMWR*, 41(50), 945-950.
- Darroch, J.E., & Singh, S. (1999). *Why is teenage pregnancy declining? The roles of abstinence, sexual activity, and contraceptive use*. Occasional Report (1), New York, The Alan Guttmacher Institute.
- Flanigan, C. (2001, February). *What's behind the good news: The decline in teen pregnancy rates during the 1990s*. National Campaign To Prevent Teen Pregnancy.
- Jones, J.M., Toffler, W., Reed, B., Mohn, J.K., Kelton, G., Weeldryer, R., Wallis, H., Suits, G.S., Diggs, J.R., Cox, H., & Jones, K. (1999, January). *The declines in adolescent pregnancy, birth and abortion rates in the 1990s: What factors are responsible?* A special report commissioned by the Consortium of State Physicians Resource Councils.
- Kann, L., Warren, C.W., Harris, W.A., Collins, J.L., Douglas, K.A., Collins, M.E., Williams, B.I., Ross, J.G., Kolbe, L.J., & State and Local YRBSS Coordinators. (1995). Youth risk behavior surveillance -- United States, 1993. in CDC Surveillance Summaries, *MMWR*, 44(SS-1), 1-55.
- Kann, L., Warren, C.W., Harris, W.A., Collins, J.L., Williams, B.I., Ross, J.G., Kolbe, L.J., & State and Local YRBSS Coordinators (1996) Youth risk behavior surveillance -- United States, 1995. in CDC Surveillance Summaries, *MMWR*, 45(SS-4), 1-83.
- Kann, L., Kinchen, S.A., Williams, B.I., Ross, J.G., Lowry, R., Hill, C.V., Grunbaum, J.A., Blumson, P.S., Collins, J.L., Kolbe, L.J., & State and Local YRBSS Coordinators. (1998). Youth risk behavior surveillance -- United States, 1997. in CDC Surveillance Summaries, *MMWR*, 47(SS-3), 1-89.
- Kann, L., Kinchen, S.A., Williams, B.I., Ross, J.G., Lowry, R., Grunbaum, J.A., Kolbe, L.J., & State and Local YRBSS Coordinators. (2000). Youth risk behavior surveillance -- United States, 1999. in CDC Surveillance Summaries, *MMWR*, 49(SS-5), 1-94.
- Kaufman, R.B., Spitz, A.M., Strauss, L.T., Morris, L., Santelli, J.S., Konnin, L.M., & Marks, J.S. (1998). The decline in US teen pregnancy rates, 1990-1995. *Pediatrics*, 102, 1141-1147.
- Maynard, R.A. (1997). *Kids having kids: A Robin Hood Foundation special report on the cost of adolescent childbearing*. New York: Robin Hood Foundation.
- Moore, K.A., Papillo, A.R., Williams, S., & Jager, J. (1999). *Facts at a glance*. Washington, DC: Child Trends.
- National Center for Health Statistics. (1995). *Vital statistics of the United States, 1991, Natality* (Vol. 1). Washington DC: Public Health Service.
- Orr, D.P., Beiter, M., & Ingersoll, G. (1991). Premature sexual activity as an indicator of psychosocial risk. *Pediatrics*, 87, 141-147.
- Saul, R. (1999). Teen pregnancy: Progress meets politics. *The Guttmacher Report on Public Policy*, 2.
- Terry-Humen, E., Manlove, J., & Moore, K.A. (2001, April). Births outside of marriage: Perception vs. reality. *Child Trends Research Brief*, Washington, Child Trends.
- U.S. Department of Health and Human Services. (1997). *National survey of family growth cycle 5: 1995*. Springfield, VA, U.S. Department of Commerce.
- Ventura, S.J., Martin, J.A., Curtin, S.C., & Matthews, T.J. (1997). Report of final natality statistics, 1995. Table 14. *Monthly Vital Statistics Report*, 45(11), supp. Hyattsville, MD: National Center for Health Statistics.
- Ventura, S.J. (2000, September 22). Personal e.mail correspondence, Division of Vital Statistics, National Center for Health Statistics.
- Ventura, S.J., Mosher, W.D., Curtin, S.C., Abma, J.C., & Henshaw, S. (2000). *Trends in pregnancies and pregnancy rates by outcome: Estimates for the United States, 1976-1996*. National Center for Health Statistics, Vital Health Statistics, 21(56).

## 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

## Acknowledgments

The authors gratefully acknowledge Child Trends for their assistance with collecting and establishing the data used in the calculations presented in this paper and for the funding provided by the Campaign to Promote Sexual Health.

*Joanna K. Mohn, MD is a member of The New Jersey Physicians Resource Council, Parsippany, NJ. Lynne R. Tingle, PhD, is an Assistant Professor at the University of North Carolina at Greensboro, School of Education, Department of Educational Research and Methodology, and Associate Director of the Center of Educational Research and Evaluation, Greensboro, NC. Reginald Finger, MD, is a physician in Colorado Springs, CO. Correspondence concerning this article should be addressed to Joanna K. Mohn, MD, The New Jersey Physicians Resource Council, PO Box 6011, Parsippany, NJ 07054 (e-mail: jkkmohn@sprynet.com).*

## 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.

## TO CONTINUE RECEIVING *A&FH* SUBSCRIBE TODAY

Subscriptions are \$55 per year (4 issues) and \$100 for 2 years (8 issues)  
for both print and online versions.

Subscribe today by signing up on the Journal website or send your check to *A&FH*.

***Adolescent & Family Health***  
**P.O. Box 16560 • Washington, DC 20041**  
**703/471-8750 (phone) • 703/471-8409 (fax)**  
**[www.afhjournal.org](http://www.afhjournal.org)**

**TO CONTINUE RECEIVING A&FH  
SUBSCRIBE TODAY**

Subscriptions are \$55 per year (4 issues) and \$100 for 2 years (8 issues)  
for both print and online versions.

Subscribe today by signing up on the Journal website or send your check to *A&FH*.

*Adolescent & Family Health*  
P.O. Box 16560 • Washington, DC 20041  
703/471-8750 (phone) • 703/471-8409 (fax)  
[www.afhjournal.org](http://www.afhjournal.org)

---