

Education and Labor Market Consequences of Teenage Childbearing: Heterogeneous Effects Across Socioeconomic Status and Race

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The teen birth rate in the United States is the highest of any developed country. These births are concentrated among minority groups and those from low socioeconomic status and are often cited as one cause of the poor education and labor market outcomes that these teens face. While early literature suggests large associations between teen births and negative outcomes (Waite and Moore, 1978), more recent studies using miscarriages to evaluate the causal impact of teen childbearing finds that teen childbearing is associated with modest if any adverse consequences (Hotz, McElroy, and Sanders, 2005; Ashcraft and Lang, 2006; Fletcher and Wolfe, 2009; Ashcraft, Fernandez-Val, and Lang, 2013). This line of research suggests that policies aimed at reducing teen births may have small pay-offs.

However, the literature has not examined whether there are heterogeneous impacts of teen childbearing across socioeconomic status and race.¹ The high teen birth rate among low socioeconomic and minority groups may not be the cause of poor outcomes but instead reflect the fact that individuals in poor circumstances simply face lower costs, or even benefits, of childbearing. In contrast, low teen birth rates among other groups may reflect high costs of teen childbearing. It is important to understand whether and how the effects of teen childbearing vary in order to assess whether policies focussed on reducing teen childbearing for all teens are actually helping the popu-

lations they intend to serve.

This paper extends previous work that utilizes miscarriages as a natural experiment to put bounds on the causal effect of teen childbearing (Hotz, McElroy, and Sanders, 2005; Ashcraft and Lang, 2006; Fletcher and Wolfe, 2009; Ashcraft, Fernandez-Val, and Lang, 2013) by examining heterogeneity across socioeconomic status and race. Analyses across socioeconomic status indicate that teen childbearing is detrimental to educational attainment and labor market outcomes for those from counties with more education or higher income. However, teen childbearing has no negative impacts and some positive impacts for those from less advantaged areas. Across race, the impacts of teen childbearing have the largest negative impacts for white teens, very little impact for black teens, and some positive impacts for Hispanic and Latino teens.

These results indicate that policies aiming to reduce teen childbearing in order to improve the outcomes for the most disadvantaged may not help the population most in need. In fact, these policies may have detrimental impacts for individuals facing the poorest circumstances. While reducing teen childbearing will improve the outcomes for some populations, a focus on improving underlying socioeconomic conditions would better serve others.

I. Data

This study uses data from the National Longitudinal Study of Adolescent Health (AddHealth). AddHealth is a nationally representative survey of individuals in the United States who were in grades 7 through 12 during the 1994-95 school year. The survey collects data on a range of health and

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¹In related work, Levine and Painter (2003) use a matching method within school to find negative impacts on education and earnings, with larger effects among those with the lowest likelihood of having teen births.

fertility behaviors as well as information on family background, contextual variables, and economic outcomes. Wave 1 interviews were conducted in 1994-95 with follow up waves in 1996, 2001-02, and 2008. Wave 3 asks respondents a host of fertility questions including details on the outcome of each reported pregnancy.

The sample for this study is limited to young women from Wave 3 who end first pregnancies by the age of 18 and 9 months.² Individuals reporting miscarriages, ectopic pregnancies, or still births are coded as miscarrying. This sample consists of 1,024 women, with 61 percent of these women reporting their pregnancy ending in a birth, 16 percent with a miscarriage, and 23 percent with an abortion.³

Educational outcomes include whether a respondent received a high school diploma, received a GED, and years of completed schooling. Labor market outcomes include labor income and welfare receipt. Controls are included for whether a respondent reports smoking or drinking during pregnancy and whether the respondent conceived before the age of 15 as these are known risk factors for miscarriage (see Hotz, McElroy, and Sanders, 2005 and Ashcraft and Lang, 2006).⁴ Including other controls that correlate with birth outcomes as well as the dependent variable could make the bias worse or change the direction of bias and thus distort the bounds on the estimates (see Ashcraft and Lang, 2006).

AddHealth provides contextual data from the 2000 Census linked to respondents in Wave 3.⁵ Two census variables are used to

²This is the same way Fletcher and Wolfe (2009) define teen pregnancy. Other papers define teen pregnancy as pregnancies that begin by age 18 (Hotz, McElroy, and Sanders, 2005; Ashcraft and Lang, 2006; and Ashcraft, Fernandez-Val, and Lang, 2013). The pattern of results is robust to extending the sample to include pregnancies that end prior to the age of 20.

³These numbers are similar to national statistics as reported in Fletcher and Wolfe (2009).

⁴Using certain drugs has also been linked to miscarriages. The results are robust to including a control for any drug use during pregnancy.

⁵Wave 1 also provides contextual variables which come from the 1990 Census. The results are robust to defining socioeconomic status based on these earlier contextual variables instead of the Wave 3 variables.

divide the sample by socioeconomic status: the proportion of individuals 25 years and over with less than a high school diploma and median family income by county. Individuals are defined to be from low or high education and income areas based on whether they are above or below the median levels within the sample of pregnant teens.⁶ Data is also divided by race where race is reported by the individual in Wave 1.⁷

II. Empirical Methodology

This paper estimates the impact of teen childbearing on those who become pregnant. This is the effect we would like to measure in order to understand the benefit of policies aimed at preventing teen births. Miscarriages are used to put bounds on the effects of teen childbearing. Hotz, McElroy, and Sanders (2005) developed the use of miscarriages as an instrument for teen birth. They provide evidence that miscarriages are random after controlling for factors such as drinking, smoking, and early contraception.⁸ If abortion were not an option, miscarriage could serve as a good instrument for no childbearing.

However, research shows that teens who abort come from more advantaged backgrounds (Ashcraft and Lang, 2006; Fletcher and Wolfe, 2009; and Ashcraft, Fernandez-Val, and Lang, 2013). The data used in this study confirm previous findings and show that teens who have abortions do come from families where parents have higher education and more income. In addition, teens who have abortions score higher on the Wave 1 AddHealth Picture Vocabulary Test, a version of the Peabody Picture Vo-

⁶Results are similar if the whole sample is used to define the median level instead of just the pregnant teen sample.

⁷Race is reported by the respondent and defined as Hispanic or Latino, black with no report of Hispanic or Latino, and white with no report of black, Hispanic or Latino. Results are robust to using race as reported by the interviewer as well. In addition, results do not differ substantially when using an "all others" category instead of white.

⁸Ashcraft and Lang (2006) also provide evidence that miscarriages are not correlated to factors that predict later outcomes.

cabulary test which measures scholastic aptitude.⁹ Because teens who miscarry are less likely to be the type who abort relative to teens who do not miscarry, they represent more disadvantaged backgrounds. Therefore, the IV estimates are upward biased towards finding benign effects.

Ashcraft and Lang (2006) extend the IV approach by using an OLS estimator on a sample of women who give birth or miscarry as teenagers. Because some women will miscarry before they can have an abortion, the miscarriage sample is now more likely to contain abortion types than the group that gives birth and thus represents more advantaged backgrounds. The OLS estimates on the birth and miscarriage sample are therefore downward biased towards finding adverse effects. Together, the IV and OLS estimates create bounds for the impact of teen childbearing on those who become pregnant as a teen.

This paper uses these established methods to create bounds on the effects of teen childbearing. It extends previous analyses by separating the results across socioeconomic status and race, as defined above, to better understand how impacts vary by background.

III. Results

Table 1 presents the effects of childbearing on education and labor market outcomes across socioeconomic conditions for individuals who experience teen pregnancies. Panel A divides results based on whether teens come from lower or higher educated counties and panel B divides results based on whether teens come from lower or higher income counties. For each group, the B/MC column presents OLS results on the sample of those who give birth or miscarry and the IV column presents IV estimates on the sample of all pregnant teens with miscarriage as the instrument.

Results in panel A show that teens from less educated counties do not experience any significant negative effects of childbearing. In fact, the point estimates suggest im-

proved effects due to childbearing on most education and labor market outcomes with a significantly positive upper bound on labor income. However, teens from more educated counties who give birth experience significant decreases in schooling attainment and labor income and significant increases in reports of welfare use. Similar results follow in panel B of the table where teens from low income counties show mostly insignificant but improved outcomes from childbearing while teens from higher income counties show significantly negative impacts from childbearing.

The bounds on schooling suggest that teen births result in three quarters to almost a year of lost schooling attainment for those from high educated counties and almost three fifths to four fifths of a year of lost schooling for those from high income counties. The bounds on labor income suggest a reduction of about \$5,000 or more and the bounds on welfare receipt indicate an increase in the probability of using welfare by about 0.25 for those from higher educated or higher income counties. These are large effects since pregnant teens have an average schooling attainment of 12 years, labor income of \$8,691 and welfare use of 0.33.

The estimates for teens from less educated and lower income counties suggest insignificant, but possibly large increases in schooling outcomes and labor income. Upper bounds on high school diploma receipt show increases of 12 percentage points, upper bounds on schooling attainment are about half a year and labor income increases range between \$1,500 and \$3,000.

Table 2 presents the results separated by race and shows that the effects of a teen birth are not uniform. White teens experience negative consequences of childbearing in educational and labor market outcomes with large decreases in years of schooling and labor income as well as significant increases in welfare use. The reduction in schooling estimates are between 0.8 and 0.5 years lost, lost income estimates are over \$3,000, and welfare use increases significantly about 15 percentage points. The impacts for black teens are insignificant and

⁹See online Appendix Table A.1 for summary statistics across pregnancy outcomes.

TABLE 1—EFFECTS OF TEEN CHILDBEARING ACROSS SOCIOECONOMIC STATUS

	Panel A				Panel B			
	Low Education Counties		High Education Counties		Low Income Counties		High Income Counties	
	B/MC	IV	B/MC	IV	B/MC	IV	B/MC	IV
HS Diploma	0.018 (0.082) 412	0.117 (0.102) 522	-0.148* (0.088) 322	-0.094 (0.125) 460	0.007 (0.091) 400	0.119 (0.115) 497	-0.151* (0.077) 334	-0.094 (0.113) 485
GED	-0.047 (0.061) 412	-0.085 (0.075) 522	-0.011 (0.075) 323	-0.042 (0.107) 461	-0.026 (0.068) 399	-0.101 (0.085) 496	-0.017 (0.067) 336	-0.038 (0.100) 487
High Grade	0.059 (0.281) 412	0.529 (0.347) 522	-0.945*** (0.258) 324	-0.753** (0.374) 462	-0.078 (0.298) 400	0.385 (0.390) 497	-0.816*** (0.235) 336	-0.575* (0.341) 487
Labor Income	1,477 (1,109) 397	2,516* (1,312) 501	-4,643** (2,036) 308	-5,328* (3,133) 443	1,531 (1,091) 383	2,945* (1,513) 477	-5,304*** (1,916) 322	-6,073** (2,967) 467
Welfare	-0.024 (0.060) 410	-0.072 (0.076) 520	0.245*** (0.051) 323	0.251*** (0.064) 461	-0.012 (0.065) 399	-0.066 (0.083) 496	0.249*** (0.050) 334	0.264*** (0.060) 485

Note: Controls: Smoking and drinking during pregnancy and conception before age 15. Each cell represents a separate regression with standard errors in parentheses and sample size below the estimate. Add Health sample weights are used.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

smaller in magnitude, with some of the upper bound estimates indicating positive effects. Hispanic and Latino teens experience significantly positive impacts associated with childbearing. In particular, both bounds show significant and large increases in high school diploma receipt as well as labor market income. The estimates suggest increases in high school diploma receipt of 24 to 42 percentage points and increases in income ranging from \$4,400 to \$5,700. While estimates on schooling are insignificant, the magnitudes suggest increases ranging between 0.25 and 0.69 years.

IV. Discussion

For teens from less educated and lower income counties and teens in minority groups, poor education and labor market outcomes are not because of teen childbearing. Instead, teen childbearing is likely the result of poor labor market prospects. In fact, teen childbearing may encourage some

young women to get more education and attain better labor market outcomes.

Policy mechanisms directed at reducing teen childbearing should have positive impacts on white teens and teens who come from relatively better backgrounds on average. However, these policies will not help most teens who come from poor socioeconomic backgrounds nor will they help black, Hispanic and Latino teens on average. Thus, broad policies targeting all teen pregnancies may not help the populations that they intend to help most.

While previous work suggests that such policies may only have modest positive effects on teen outcomes, these results suggest that there may be large positive effects concentrated among teens who are relatively better off, and the teens who most need help could be harmed. Instead of focussing on childbearing of poor and minority teens directly, results of this paper suggest that policymakers would be better off to target the conditions that make teen childbearing an optimal choice.

TABLE 2—EFFECTS OF TEEN CHILDBEARING ACROSS RACE

	All		White		Black		Hispanic/Latino	
	B/MC	IV	B/MC	IV	B/MC	IV	B/MC	IV
HS Diploma	-0.064 (0.059) 747	0.032 (0.079) 1,001	-0.134* (0.080) 330	-0.053 (0.103) 441	-0.133 (0.087) 254	-0.089 (0.111) 334	0.243** (0.120) 137	0.419*** (0.155) 177
GED	-0.028 (0.046) 748	-0.068 (0.063) 1,002	-0.023 (0.070) 331	-0.061 (0.094) 442	0.043 (0.027) 253	0.025 (0.035) 333	-0.127 (0.106) 138	-0.189 (0.140) 178
High Grade	-0.486** (0.204) 749	-0.095 (0.279) 1,003	-0.832*** (0.254) 331	-0.531 (0.342) 442	-0.194 (0.362) 254	0.209 (0.503) 334	0.245 (0.350) 138	0.689 (0.443) 178
Labor Income	-1,859 (1,551) 715	-1,181 (2,250) 960	-3,865* (2,121) 322	-3,459 (3,129) 429	-529 (1,805) 237	146 (2,293) 312	4,393** (1,740) 132	5,699** (2,275) 172
Welfare	0.125*** (0.042) 745	0.097* (0.055) 999	0.157*** (0.048) 329	0.138** (0.058) 440	0.019 (0.107) 253	-0.016 (0.130) 333	0.141 (0.087) 137	0.100 (0.114) 177

Note: Controls: Smoking and drinking during pregnancy and conception before age 15. Each cell represents a separate regression with standard errors in parentheses below the estimate and sample size below that. Add Health sample weights are used.

**Significant at the 1 percent level.

***Significant at the 5 percent level.

*Significant at the 10 percent level.

REFERENCES

- Ashcraft, Adam, and Kevin Lang.** 2006. “The Consequences of Teenage Childbearing.” *NBER Working Paper No. 12485*.
- Ashcraft, Adam, Ivan Fernandez-Val, and Kevin Lang.** 2013. “The Consequences of Teenage Childbearing: Consistent Estimates When Abortion Makes Miscarriage Non-Random.” *The Economic Journal*, 123: 875–905.
- Fletcher, Jason M., and Barbara L. Wolfe.** 2009. “Education and Labor Market Consequences of Teenage Childbearing: Evidence Using the Timing of Pregnancy Outcomes and Community Fixed Effects.” *Journal of Human Resources*, 44(2): 303–325.
- Hotz, V. Joseph, Susan Williams McElroy, and Seth G. Sanders.** 2005. “Teenage Childbearing and Its Life Cycle Consequences: Exploiting a Natural Experiment.” *The Journal of Human Resources*, 40(3): 683–715.
- Levine, David I., and Gary Painter.** 2003. “The Schooling Costs of Teenage Out-of-Wedlock Childbearing: Analysis with a within-School Propensity-Score-Matching-Estimator.” *The Review of Economics and Statistics*, 85(4): 884–900.
- Waite, Linda J., and Kristin A. Moore.** 1978. “The Impact of an Early First Birth on Young Women’s Educational Attainment.” *Social Forces*, 56(3): 845–865.

Appendix

TABLE A.1—SUMMARY STATISTICS

	All	Live Birth	Miscarriage	Abortion
Outcomes				
HS Diploma	0.64	0.59	0.60	0.81
GED	0.13	0.12	0.19	0.10
High Grade	11.97 (1.849)	11.65 (1.750)	11.94 (1.758)	12.84 (1.896)
Labor Income	8,691 (10,578)	7,684 (8,602)	9,191 (15,227)	11,045 (10,922)
Welfare	0.33	0.39	0.35	0.17
Individual Variables				
Age	22.03 (1.664)	22.13 (1.655)	21.81 (1.602)	21.91 (1.713)
White	0.55	0.52	0.61	0.59
Black	0.26	0.30	0.20	0.21
Hispanic	0.15	0.15	0.17	0.12
AH PVT	96.80 (12.73)	94.98 (12.42)	97.43 (12.96)	101.13 (12.32)
Family Background				
Mom Education	12.29 (2.125)	12.02 (1.881)	12.45 (2.272)	12.88 (2.476)
Dad Education	12.30 (2.151)	11.87 (2.061)	12.34 (1.926)	13.10 (2.256)
Family Income (Wave 1)	35,345 (30,130)	30,272 (26,017)	38,235 (35,226)	45,590 (32,931)
Birth Outcomes				
Live Birth	0.60	1	0	0
Miscarriage	0.16	0	1	0
Abortion	0.22	0	0	1

Note: Weighted means with standard deviations in parentheses.