Working Paper Series
WP-10-04

May 2010

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This research was supported by the National Center for Family & Marriage Research, which is funded by a cooperative agreement, grant number 5 UOI AEOOOOOI-03, between the Assistant Secretary for Planning and Evaluation (ASPE) in the U.S. Department of Health and Human Services (HHS) and Bowling Green State University
and by the National Poverty Center (NPC), using funds received from the U.S. Census Bureau, Housing and Household Economics Statistics Division through contract number 50YABC266059/TO002.
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Last modified: April 6, 2010

ABSTRACT

Across the United States, two phenomena have emerged: high rates of multi-partnered fertility (having children by more than one partner) and high rates of male involvement with the criminal justice system. This paper is a first step in an exploration of the possible connection between these two phenomena. The first part of the paper provides nationally representative estimates of the prevalence of multi-partnered fertility among mothers during the 1985-1996 period, for the overall population and for select subgroups. These estimates, based on the SIPP surveys, constitute a useful addition to the literature, which contains very few estimates of women's multi-partnered fertility or its evolution over time. In the second part of the paper, we combine MSA-level data on arrest rates (constructed from the FBI's Uniform Crime Reports) with SIPP's family structure data, in order to explore the association between the rate of multiple-father fertility and local arrest rates. Over time and across MSAs, we observe a positive correlation between the probability that a mother has had children by more than one man and the lagged arrest rate in her MSA. The correlation is stronger among racial and educational subgroups that experience higher rates of multiple-father fertility.

Draft prepared for the annual meeting of the Population Association of America, April 15-17, 2010.

Multiple-Father Fertility and the Criminal Justice System

Eirik Evenhouse and Siobhán Reilly

I. Background

Across the United States, two phenomena have emerged: high rates of multi-partnered fertility (having children by more than one partner) and high levels of male involvement with the criminal justice system. Both trends have been especially pronounced among African-Americans, Hispanics, and the poor. This paper describes our first steps in exploring the connection between these two phenomena. In addition, we document the prevalence of multiple-father fertility and its behavior over time, for the overall population and for specific subgroups.

No nationally representative figures exist for the rate of multi-partnered fertility among mothers, other than the numbers we offer here, which cover the period from 1985 to 1996 and are based on the Survey of Income and Program Participation (SIPP). The rate ranges from 3.8 percent among Asian mothers to 14.4 percent among black mothers.[1] Only the SIPP enables researchers to measure multiple-father fertility in nationally representative samples going back as far as 1985.

Among fathers, Guzzo and Furstenberg (2007) report that 17 percent of fathers aged 15 to 44 have children by more than one woman. In certain populations, the rate of multi-partnered fertility is higher. Carlson and Furstenberg (2006) report that 23 percent of all mothers in the Fragile Families and Child Wellbeing Study have children by more than one man. Among unmarried couples in the same survey, the rates are even higher: in 22 percent of cases the father has children from a prior relationship, in 17 percent of cases the mother does, and in 20 percent both father and mother do (Roberts 2008).

[1] In keeping with SIPP's own descriptors, we use "black" rather than "African-American" when discussing SIPP data.

There is mounting evidence that the presence of children from prior relationships reduces the probability of marriage, for mothers as well as fathers. For example, in a sample of low-income women in inner-city Philadelphia who had just given birth, "men who had children with multiple partners were significantly less likely to cohabit with or to be married to the mother of the focal child, net of demographic and socioeconomic characteristics" (Margolis and Mykyta 2008). That finding is echoed in analyses of the Fragile Families survey (e.g., Mincy and Huang 2001, Carlson and Furstenberg 2006).

Multi-partnered fertility also appears to work against the interests of children. It has been shown to reduce father-child contact (e.g., Cooksey and Craig 1998; Manning and Smock 1999) as well as fathers' payment of child support (e.g., Huang, Mincy and Garfinkel 2005; Manning, Stewart, and Smock 2003).

Although multi-partnered fertility is observed at all socioeconomic levels, it is especially common among the very groups whose menfolk are most at risk of entanglement with the criminal justice system. Welfare recipients (Meyer, Cancian, and Cook 2005), African-Americans, and women who have their first births as teens all have higher rates of multi-partnered fertility. This may occur simply because economic deprivation and social exclusion manifest themselves in gender-specific ways: involvement with the criminal justice system for men, and relationship instability and poverty for women. However, there are reasons to hypothesize that the high and growing rates of multiple-mother and multiple-father fertility may be, in part, a consequence of men's increased involvement with the criminal justice system, including their incarceration. Entanglement with the criminal justice system harms men's labor market prospects and, in the case of imprisonment, forces their withdrawal from their families. The mothers of their children may react by seeking support or companionship elsewhere. Mothers may form new couples, and births to those couples create multiple-father families. Men, too, may form new relationships and have children within them, with the result that their

children are scattered among multiple households and their relationships with their children mediated by more than one mother. Former prisoners and their families appear to be more vulnerable to prison-induced breakups because their relationships were typically more tenuous. A Bureau of Justice Statistics study found that forty-eight percent of the parents in state prisons and 38 percent of parents in federal prison reported themselves as never-married (DHHS 2006).

Another channel through which high involvement with the criminal justice system may foster multiple-partner fertility is via changes in the sex ratio. For example, while an overall incarceration rate of just over one percent (Pew Center on the States 2008) may have little impact on the sex ratio in the general population, the situation may be quite different for some subgroups. That one in nine black men between the ages of 20 and 34 is in prison (Sabol *et al*. 2007) is likely to hurt the ability of heterosexual black women (a group with a low propensity for interracial pairing) to find and keep monogamous partners during their childbearing years. Moreover, incarceration rates understate the problem. Many more men are involved with the criminal justice system (as parolees, probationers, or former prisoners) than are imprisoned at any one time, and this involvement hampers their ability to maintain stable relationships with women.

After many decades of relative stability, the U.S. incarceration rate started rising in the early 1970s. The prison population nearly tripled from 1987 to 2007 (Pew Center on the States 2008). Researchers naturally became increasingly interested in the many kinds of collateral damage wrought by such high incarceration rates, such as the consequences for public health (e.g., Thomas and Sampson 2005, Freudenberg 2001). The impact on families and children was readily acknowledged and deplored, but until a decade ago, nobody, to the best of our knowledge, had assembled systematic evidence concerning the effects of incarceration on family formation or child wellbeing (Hagan and Dinovitzer 1999). Of the empirical studies of this issue published since then, the majority are based on a single survey, the longitudinal Fragile Families

and Child Wellbeing Study; examples include Western and McLanahan (2000), Western, Lopoo and McLanahan (2004), Waller and Swisher (2006), and Geller, Garfinkel, Cooper and Mincy (2008). Whether the outcome measure is union formation or stability, father-child contact, or payment or receipt of child support, every study concludes that incarceration has adverse consequences.

Few studies have looked explicitly at the connection between the criminal justice system and multi-partnered fertility. However, two relatively recent data sets have allowed this. In 2002, the National Survey of Family Growth surveyed men for the first time and included questions about their fertility; cross-tabulations by Guzzo and Furstenberg (2007) and Logan, Manlove, Ikramullah, and Cottingham (2006) show that men who have been incarcerated are more likely to have had children with multiple women. The same holds for fathers in the Fragile Families survey (Mincy 2002 and Carlson and Furstenberg 2006).

Despite the accumulating evidence about the adverse consequences of an increase in multi-partnered fertility, almost no policies target it explicitly and few have been adjusted in response to it. While this may owe something to the newness of the phenomenon, and to the thorny practical and ethical dilemmas it poses for policies intended to protect children—such as child-support laws, welfare, and marriage initiatives—a contributing factor is the sparsity of knowledge about its root causes.

In this study, we focus specifically on the multiple-partner fertility of women (which we call multiple-father fertility, or MFF). The data favor this approach. Few large-scale surveys contain the information needed to measure multiple-partner fertility, and those that do are typically address-based and gather data only on household members living at that address. Because most mothers live with their children, such surveys are more likely to contain the necessary data about a woman's children (such as whether all of her children share the same father). Because men are more likely than women to live apart from their children from prior

relationships, address-based surveys are likely to miss those children, making it impossible for researchers to determine whether all of a man's children have the same mother. Finally, women's reports of how many children they have borne are generally considered more accurate than men's reports of the number of children they have fathered (Rendall et al., 1999).

Although we are interested ultimately in the link between incarceration and multi-partnered fertility, in this exploratory study we use metropolitan-level arrest rates as our measure of men's entanglement with the criminal justice system. The advantage of arrest rates is that, unlike incarceration rates, they can be calculated at the MSA (Metropolitan Statistical Area) level.[2] The drawback of arrest rates is that they do not necessarily track the incarceration rate very closely. Between 1988 and 1993, for example, the U.S. incarceration rate rose 44 percent (Arvanites and Asher 1998); by our calculations, the overall arrest rate during that same period rose 26 percent.

In the next section, we explain our data and methodology. In Section III we present a set of estimates of women's multipartnered fertility spanning the 1985-1996 period, for a variety of subpopulations. In Section IV, we summarize our empirical evidence concerning the hypothesized correlation between local arrest rates and multiple-father fertility. Section V concludes.

2. Data and Methodology

Household data

Our data on individuals come from the U.S. Census Bureau's Survey of Income and Program Participation (SIPP), a series of large-scale longitudinal household surveys designed to be nationally representative. The unit of analysis is a mother with resident children. Taking one observation per family per panel and pooling 9 panels (1985-1988, 1990-1993, and 1996) yields

[2] Incarceration data, by contrast, are generally analyzed only at the state level. Many prisoners are incarcerated in their home state, but not in their home county. The Bureau of Justice Statistics data on prison populations do not include any information about the counties in which prisoners' offences were committed.

observations on 47,653 mothers. This sample, weighted so as to be nationally representative, is the basis for our descriptive statistics.[3]

Our regression analysis, focused on the correlation of an MSA's arrest rate with family structure, is based on a smaller sample of 27,406 individuals, weighted to be representative of the U.S. metropolitan population. This sample is substantially smaller for two reasons. One is that SIPP includes a large number of non-metropolitan respondents. The second is that SIPP masks the MSA of a large fraction of its metropolitan respondents.[4]

The advantage of SIPP for research on multiple-partner fertility is that, in each survey except that of 1989, the precise relationship of each person in a household to every other person in that household is recorded. This matrix of household relationships is the basis of our measure of multiple-father fertility.[5]

To determine the number of fathers represented among a mother's children, we use a two-step procedure. First, we identify, for each woman, every household member who is listed as her biological child. Then, restricting our attention to the interrelationships among her children, we count the number of occurrences of "Full sibling" and of "Half-sibling," which enables one to infer the number of fathers represented among those children.

This method for measuring multiple-father fertility has several limitations. One is that, if a mother has more than 5 children present, we can infer only whether she has children by more than one man; we cannot, for instance, tell a case of two fathers from a case of three. For this reason, we exclude from our sample the 1.1 percent of mothers with six or more children present

[3] SIPP includes numerous weights. The weights used in this analysis were the monthly person weights, which permit the analyst to use all available data for a given month. The person weight corresponds to the inverse probability of selection, with adjustments for subsampling within clusters, for non-response, and for movers. For more detail, see http://www.census.gov/sipp/weights.html (last accessed January 18, 2010).

[4] In states with small nonmetropolitan populations, the Census Bureau randomly recodes a substantial share of SIPP's metropolitan respondents as nonmetropolitan; see any SIPP User Guide for more information. Beginning with the 2004 survey, the public-use SIPP data do not include the MSA of any respondents.

[5] These household relationship codes appear to be highly reliable. While a small fraction of them – between 0.6 and 1.2 percent, depending on the survey year – are imputed, they should not be considered missing data and hence a potential source of bias. Analysis of the 1996 survey (the first year in which SIPP recorded the type of imputation) reveals that 100 percent of the instances of imputed relationship code were logical imputations rather than statistical imputations, that is, they were based on good data for the household contained elsewhere in the survey instrument.

(a small group of mothers with a higher-than-average likelihood of having children by more than one man). A second limitation is that some of a mother's children may not be living with her; they may live with their fathers or other relatives, or may have grown up and moved out. A third is that some mothers, especially younger ones, have not yet finished having children. Each of these measurement issues causes us to underestimate the incidence of MFF.

There is also the possibility of a small degree of attrition bias in our sample, as the detailed household relationship data are collected in the second wave of each panel rather than the first.[6] We expect any resulting bias to be minimal; only four months elapse between SIPP's first and second waves.[7]

Arrest data

We compute annual MSA-level arrest rates by combining arrest data from the FBI's Uniform Crime Reporting (UCR) Program with county-level population estimates. The UCR data are extremely detailed, listing the number of arrests (and its breakdown by race and adult/juvenile status) for every offense category for every law enforcement agency in the country that year. Similarly, the Census Bureau produces annual (intercensal) estimates of the population in every county, broken down by age, race, and sex. Because approximately 90 percent of crimes are committed by individuals under age 45 (FBI 2003), and because nearly all childbearing occurs between the ages of 15 and 44, we define a county's population, for our purposes, as the population aged 15 to 44.

Aggregating agency arrest counts and county populations to the MSA level, we compute an MSA's arrest rate by dividing its total arrests that year by its population. More specifically, we use the race categories in both the arrest and population data in order to compute race-

[6]The exception is the 1985 panel, in which household relationship detail was not collected until the fourth wave.
[7] In the 1996 SIPP, for instance, attrition after three years was 26 percent (CEPR 2009).

specific arrest rates for each MSA. Each MSA's time series of black and nonblack arrest rates go back to 1980 (the first year for which the UCR arrest data are available to the public through the National Archive of Criminal Justice Data).

From the county population data, we also compute, for each MSA, a time-series of the sex ratio among men and women aged 15-44. We assume a racially segmented partner market, and so compute the sex ratio separately for the black and non-black populations.

Methodology

Like most researchers who study couples' behaviors – cohabitation, marriage, divorce, fertility, and child support – we eschew a structural model in favor of a reduced-form approach. There is a large theoretical literature on the behavior of couples, but the models are not generally very amenable to testing because so few of the theorized constructs are observable. A mother's decision to have children with more than one man depends, for example, on the men's qualities as companions or (step)fathers and on the mother's own qualities as a companion, but such qualities can be hard to measure. To take another example, in bargaining models of couple behavior, each partner has an implicit threat point. Identifying that threat point is difficult for the other partner, let alone the researcher. The fact that each partner's behavior is strategic, that is, determined partly by the other's actions, poses additional difficulty. Moreover, individuals are forward-looking, making it hard to correlate conditions in one period with relationship status in a later period.

As for factors that are more observable, the numerous theoretically plausible interactions among them make it hard to predict their net influence on the likelihood of multiple-father fertility. Factors such as the expected value of child support, the expected value of welfare benefits, the probability of finding a male companion in the future, the expected income of that

future partner, a mother's own expected income, and the cost of housing do not necessarily have the same implications for women's behavior as they do for men's.

At present, the existing research on multipartnered fertility is almost entirely descriptive rather than theoretical. Researchers have documented some broad associations. As mentioned above, men who have been incarcerated are more likely to have children by multiple women. Welfare recipients have higher rates of multipartnered fertility (Meyer, Cancian, and Cook 2005), as do men and women with less education, African-Americans, women who have their first births as teens, and women with nonmarital first births (Carlson and Furstenberg 2006).

The only theoretical model of multiple-father fertility of which we are aware is a model of marriage and fertility proposed by Willis (1999). In that model, if "females are in excess supply and have sufficiently high incomes, a marriage market equilibrium may exist in which children are born within marriage to high-income parents, whereas in low-income groups men father children by multiple partners outside of marriage." This study can be seen as a test of the implications of the Willis model. We focus on the correlation between multiple-father fertility and conditions in the local market for partners; the arrest rate can be viewed as a measure of their desirability and the sex ratio as a control for their overall availability.

We estimate two variants of a reduced-form model of multiple-father fertility:

(1) $$MFF_{imt} = \beta_0 + \beta_1 A_{im} + \beta_2 Z_i + \beta_3 MSA_{mt} + u_{imt}$$

in which the subscripts *i*, *m* and *t* denote woman *i* living in MSA *m* in year *t*, and *MFF* is an indicator of multiple-father fertility. One variant is a binary logit model of whether the mother has children by one man or more. The other is a multinomial logit model with six possible outcomes, each corresponding to a specific combination of marital history and fertility status. The parameter in which we are particularly interested is β_1, the coefficient on the race-specific arrest rate in a woman's MSA. Z_i and MSA_{mt} are vectors of maternal characteristics and other MSA characteristics, respectively.

The MSA arrest rate is not only race-specific, but lagged as a function of each woman's fertility history. Our intent is to capture conditions around the time that the second child was conceived, a likely time for MFF to emerge. Thus, we use the arrest rate three years after the birth of her oldest resident child.

The maternal characteristics we include as controls are a mother's age, her age at the time her oldest resident child was born (a proxy for her age at first birth), ethnicity, education, and marital history. The gap between the mother's current age and her age at the birth of her oldest resident child gives us a rough idea of how long she has been exposed to the possibility of MFF. Her current age, together with a set of year dummies, controls for country-wide trends in norms or expectations that could affect women's fertility behavior. The education variables indicate whether the parent has less or more than a high school education. Our two controls for marital history are dummy variables for "Never married" and "Ever divorced."

MSA characteristics included among the control variables are the sex ratio, the male employment rate, the male dropout rate, the family poverty rate, and the cost of housing. Like the MSA arrest rate, the sex ratio is a race-specific measure and is lagged (to the same year as the arrest rate). It is measured specifically for the population aged 15 to 44, and expressed as the number of men per 100 women. The other MSA controls are not race-specific, pertain to the current period (that is, the year of the SIPP survey) and, except for the measure of housing costs, are based on that year's SIPP sample. Our measure of the dropout rate is the fraction of men who did not go beyond 10th grade. As a measure of the local poverty rate, we use the fraction of families with incomes below 150 percent of the relevant poverty threshold. The male employment rate is the fraction of men who were employed for the entire month preceding the survey. As an index of housing costs, we use an MSA's Fair Market Rent.[8]

We also include four state-level controls: a state's divorce rate, its per capita income, the

[8] Fair Market Rent (FMR) is defined as the 40th percentile of local rents and is published annually for each MSA by the U.S. Department of Housing and Urban Development. Some SIPP respondents live in CMSAs (grouped MSAs); the FMR for a CMSA was obtained by averaging the FMRs of its constituent MSAs.

strictness of child support enforcement, and the level of welfare benefits. The first three are measured in the same year as the SIPP survey, while the welfare benefit is lagged by 10 years.

A state's divorce rate could affect the incidence of multiple-father fertility, directly and indirectly. For the population as a whole, divorce is the most common route to multiple-partner fertility; in our sample, 65 percent of mothers who have had children by more than one man have also been divorced (the figure is 40 percent among black mothers, and 72 percent among non-black mothers). A state's divorce rate also reflects the social norms and demographic composition of its population, themselves determinants of fertility choices and possibly of the law enforcement policies that influence arrest rates.

We control for a state's per capita income for similar reasons. Both arrest rates and fertility behavior may be driven partly by income levels. Other things equal, richer states may spend more on law enforcement or may produce lower crime rates. Higher incomes may also be associated – positively or negatively – with higher levels of multiple-partner fertility. In the Willis model, for instance, it is the conjunction of high enough incomes for women with a low sex ratio that results in multiple-partner fertility.

We control for the strictness of child support, for two reasons. One is that child-support rules may treat a multiple-father family more generously than they do a one-father family (Meyer *et al.* 2005). The other is that the level of enforcement may affect the decisions of mothers and fathers to separate. During the period under scrutiny, nearly all states stepped up their enforcement efforts, due in large part to provisions in the 1988 Family Support Act (FSA) that enhanced states' ability and motivation to collect child support, particularly on behalf of children on AFDC. The level of enforcement effort has nevertheless varied considerably by state and year (see, for example, Nixon 1997; Bitler 2001; Plotnick, Ku, Garfinkel, and McLanahan 2004; Huang *et al.* 2005). Like many other researchers, our proxy for the strictness of enforcement is the annual ratio of the number of paternities established by a state's child support enforcement

agency to the number of non-marital births in that state.[9]

Finally, we control for a state's level of welfare benefits, as reflected in the maximum benefit for a four-person household, lagged 10 years.[10] Welfare's eligibility rules create large financial incentives in favor of multipartnered fertility, and higher benefit levels appear to contribute slightly to a higher incidence of MFF (Evenhouse and Reilly 2008). As already mentioned, the incidence of multipartnered fertility is high among welfare recipients. Analyzing Wisconsin welfare data from 1997-1998, Meyer, Cancian, and Cook (2005) find that, among mothers of two or more children, 39 percent had children by more than one man. Even that figure is only a lower bound, as another 44 percent of the mothers in their sample had at least one child whose paternity had not been legally established.

IV. Empirical results

Descriptive statistics

Tables 1 to 4 and Figures 1 to 4 present our estimates of women's multipartnered fertility during the 1985-1996 period, for a variety of subpopulations. In contrast with existing estimates, these estimates are the first time-series estimates for women to be derived from a large, nationally representative sample. Existing estimates draw most often on the Fragile Families survey, which is smaller, urban, and focused on nonmarital births. The estimates of Guzzo and Furstenberg (2007b) are based on the National Longitudinal Survey of Adolescent Health, which includes only young women (aged 19 to 25 in 2001) and in which high school dropouts are underrepresented. The estimates of Meyer *et al.* (2005) are based on administrative data from one state's welfare program. All other estimates of which we are aware concern the multipartnered fertility of fathers rather than mothers (e.g., Manning *et al.* 2003; Guzzo and

[9] This choice reflects the 1988 Family Support Act's emphasis on paternity establishment, particularly for children on welfare. States were penalized if they failed to establish paternity in a given proportion of the children born to mothers on welfare, and the federal government bore 90 percent of the states' associated laboratory costs.

[10] The AFDC benefit data are courtesy of Robert Moffitt.

Furstenberg 2007a).

In our SIPP sample, 8.4 percent of mothers have had children by more than one man (see Table 1). Breaking down that 8.4 percent, we see that 7.59 percent have had children by two men, 0.73 percent have had children by three men, and 0.08 percent have had children by 4 or more men. As a rule of thumb, it seems that mothers with children by one man outnumber those with children by two men more than tenfold, who in turn outnumber mothers with children by three men more than tenfold, the latter themselves outnumbering mothers with children by four men or more nearly tenfold.

Another contrast is between families that report receiving public assistance and families that do not. As Table 2 shows, the frequency of multiple-father families is markedly higher among mothers receiving welfare (17.1 percent) than among other mothers (7.4 percent), in keeping with the findings of Meyer *et al.* (2005) and Guzzo and Furstenberg (2007).

Ethnicity is strongly correlated with the likelihood of multiple-father fertility (see Table 3). The incidence of MFF is highest among black mothers (14.0 percent). Hispanic mothers have a slightly higher rate (10.0 percent) than white mothers (7.3 percent), and Asian mothers have the lowest rate (3.6 percent).

The likelihood of multiple-father fertility also depends a great deal on the age at which a woman has her first child (see Table 4). For example, mothers who had their first child at an extremely young age (fifteen or younger) have an overall rate of MFF of 25.7 percent, five times the rate for mothers who were 25 or older.

Looking at the data year by year, there appears to be a slight increase in the rate of multiple-father fertility between 1985 and 1996. Whether mothers are grouped by ethnicity, by education, by metropolitan status, or by marital history, the trend is upward, albeit slightly, in

nearly every subgroup of mothers.[11] Consequently, inter-group differences appear relatively constant over the period. The rate of MMF among black mothers is consistently double or triple that of other mothers, for example (see Figure 1). The rate among mothers with more than a high school education is generally half the rate of mothers with a high school education and a quarter of that of high school dropouts (see Figure 2). Urban mothers have consistently lower rates of MFF than other mothers (see Figure 3), although any urban-rural difference is likely to be understated in SIPP data.[12] Mothers who have been divorced have an MFF rate that is generally 5 percentage points higher than mothers who have never married, who in turn have a rate that is generally 11 percentage points higher than that of mothers who are still in their first marriage (see Figure 4).

Regression results

To explore the possible correlation between multiple-father fertility and the activity of the criminal justice system while controlling for interrelated factors such as education, ethnicity, age at first birth, and marital history, we turn to regression analysis. We consider two types of model: a binary logit model of whether a mother does or does not have children by more than one man (Table 5), and a multinomial logit model in which the outcomes correspond to specific combinations of multiple-father fertility and marital history (Tables 6 and 7). For ease of interpretation, we report not logit coefficients or odds ratios, but rather marginal effects on the probability that an observation is in a particular category, computed at the mean of that variable (see Appendix Table 1 for the variables' means and standard deviations).

The binary logit regressions show that an MSA's arrest rate around the time of a mother's

[11] More striking than subgroup time trends are the large changes in the MMF rate from one year to the next in almost every subgroup's time series. This volatility raises the question of whether all SIPP panels are equally representative of the U.S. population, a question well outside the scope of this study.

[12] For a substantial portion of respondents in smaller MSAs, SIPP masks the MSA information by recoding the respondent as non-metropolitan, thereby contaminating the non-metropolitan subsample, and biasing downward estimates of urban-rural differences.

childbearing is significantly and positively correlated with her probability of multiple-father fertility, but that the effect is small. Other things equal, an increase of one standard deviation in the lagged arrest rate is associated with an increase in the probability of MFF of 0.3 to 0.4 percentage points. An increase of less than half a percentage point for a substantial increase in the arrest rate is modest, both in absolute terms and relative to the baseline probability of MFF of 8.3 percent. The multinomial logit results in Tables 6 and 7 give a more nuanced picture, revealing differences between black and nonblack and between the more educated and the less educated.

Table 5 reports estimates for three binary logit models. The first includes maternal, MSA and state characteristics, and a set of year dummies. The second model adds state fixed effects, and the third adds MSA fixed effects instead of state effects. In all three models, the correlation between the lagged arrest rate and MFF is highly significant. The addition of fixed effects only increases the correlation between arrests and MFF.

The marginal effects reported in Table 5 for mothers' personal characteristics are consistent in sign with the differences already noted in Tables 1 to 4 and Figures 1 to 4 but are considerably smaller, or even insignificant. For instance, more education still reduces the likelihood of multiple-father fertility, but the roughly 6 percentage point difference shown in Figure 2 between mothers with a high school education and those with post-secondary education falls to a mere one percentage point difference after other factors are controlled for. Similarly, the unadjusted difference in MFF rates between black mothers and white mothers, for example, or between Hispanic mothers and white mothers, falls to zero after controlling for other factors.

When we stratify the sample by race, the regression results are similar (results not shown), but the estimated marginal effect of higher arrest rates is several times larger for black mothers (0.019) than it is for other mothers (0.005). Stratifying by education (again, results not shown), the relationship between MFF and arrest rates turns out to be insignificant for mothers

with more than a high school education, significant and small (marginal effect of 0.008) for those with a high school education, and significant and somewhat larger (marginal effect of 0.017) for those who never finished high school.

The binary logit results show the relative importance of the various pathways to multiple-father fertility. The three factors most predictive of multiple-father fertility are (in descending order) having been divorced, never having married, and having had a child before the age of 16. Having been divorced raises the probability of MFF by about 14 percentage points, never having married raises it by 8 percentage points, and having had a first birth at fifteen or younger by 7 percentage points.

Early childbearing and having been divorced are not mutually exclusive behaviors, to be sure, but they overlap little enough that they can usefully be viewed as distinct paths to multipartnered fertility. The same can be said of early childbearing and of never marrying.[13] This suggests that we might be able to sharpen our analysis by differentiating among three varieties of multiple-father fertility: that occurring in the context of divorce and remarriage, that occurring in the context of nonmarital births followed by eventual marriage, and that occurring entirely outside marriage.

The six outcomes in the multinomial logit model of Table 6 correspond to six combinations of fertility and marital history. A mother is categorized (a) as having had children either by one man or by more, and (b) as having been divorced (once or more), being in her first marriage still, or never having married. (The base category for estimation purposes is mothers who are still in their first marriage and have had children by only one man; three-fifths of mothers are in this category). Overall, 8.4 percent of mothers have children by multiple men.

[13] Among mothers in the sample who have been divorced and have children by more than one man, fewer than one in twelve had a child before age 18. Similarly, the majority of women who had a teen birth do eventually marry; looking at those over 30 at the time of the survey, only one in six had never wed. Even the youngest teen mothers (those with a birth at 15 or younger) tend to marry eventually, with only one in three of those over 30 not yet having married.

Roughly two-thirds of those mothers have been divorced (5.5 percent of the sample) and the other third have either never married (1.2 percent) or are in their first marriage (1.7 percent).

The multinomial logit estimates in Table 6 suggest that higher MSA arrest rates are associated with higher rates of MFF, principally among divorced mothers (column 5) but also among never-married mothers (column 3). An increase of one standard deviation in the lagged arrest rate corresponds to a 0.8 percentage point increase in the number of divorced mothers with children by multiple men (a substantial increase relative to the category's baseline of 5 percent). The associated increase in the number of never-married mothers with children by multiple men is far smaller, in both absolute and relative terms (a 0.03 percentage point increase in a category that represents a mere 1.2 percent of all mothers).

As a check on the plausibility of the estimates in Tables 6, we re-estimate the model using the current arrest rate instead of the lagged rate. The results (not shown here) suggest that the arrest rate during a woman's childbearing years is somewhat more relevant to her behavior than the MSA's current arrest rate. The point estimates of the increase in MFF are only half as large, and only the effect of divorced mothers remains statistically significant.

As a second check, we re-estimate the multinomial model for five different subsamples, defined either by a mother's race or by her level of education. The results vary greatly by subsample. In each subsample, the lagged arrest rate is correlated with one or two of the outcome categories, but not necessarily with one involving MFF. For the sake of space, Table 7 summarizes these separate five regressions by reporting, for each one, only the marginal effect associated with an increase in the arrest rate. To make comparisons easier, the table also reports the same information for the whole sample as well.

A striking aspect of the results summarized in Table 7 is that none of the subsamples shows precisely the same pattern that we observe for the sample as a whole. Looking only at black mothers, for instance, we see that the arrest rate is significantly correlated with MFF but

only among divorced mothers (column 5). This is no doubt due partly to the much smaller sample size; the correlation for never-married mothers with MFF (column 3) comes close to being significant. By contrast, for other mothers, the arrest rate appears to be uncorrelated with any variety of MFF; it is, however, associated with being divorced (column 1) or never married (column 3).

Stratifying by education instead of race, we again see different patterns in each subsample. Among mothers who have not finished high school, higher arrest rates are associated with more cases of divorced mothers with MFF (column 5) as well as more cases of never-married mothers with no MFF (column 1). Among mothers who have finished high school, arrest rates are correlated only with being divorced with MFF (column 5). For mothers with more than a high school education, arrest rates are not correlated with any sort of MFF, only with a greater probability of being divorced (column 2).

As we see from the disparate results in Table 7, moving from a binomial model to a multinomial model does not yield a simple picture of the relationship between arrest rates and multiple-father fertility. Perhaps, however, there is not a single, simple story to be told about the connection between women's fertility and marital decisions and the arrest rates in their communities. Childbearing and marriage patterns differ quite radically between black women and other women, for example. For white women, marriage and motherhood usually go hand in hand, and divorce is the dominant path to multiple-father fertility. For black women, childbearing tends to be earlier and most of it is outside of marriage, with the result that mothers who have had children by more than one man are as almost as likely to be never-married as to be divorced. Perhaps arrest rates, insofar as they reflect the local supply of partner-worthy men, are drivers primarily of women's marital choices, and only tangentially related to their multiple-father fertility status.

The local arrest rate may also be an unreliable proxy for the local supply of desirable male partners. For example, it may be perfectly irrelevant for highly educated women. More generally, there is no reason to suppose that all groups of women share a common response to the arrest rate. This is amplified by the fact that race-specific arrest rates were used; black and nonblack arrest rates lie in different ranges, and they don't move together reliably (their correlation coefficient only 0.56).

Finally, we note that, even with a fairly large sample of mothers, the total number of cases of multiple-father fertility is relatively small, particularly if we stratify the sample, define more than one class of multiple-father fertility, or both. It is not surprising, then, that the measured effects differ from one subsample to another.

VI. Conclusion

In this study, we examine whether the arrest rate in a mother's metropolitan area has any bearing on whether she has children by more than one man. The regression analyses presented here provide evidence that arrest rates are correlated with mother's marital choices and fertility choices. In a simply binary model, arrest rates appear to be correlated with multiple-father fertility specifically, with an increase of one standard deviation in the lagged arrest rate corresponding to a modest increase in the incidence of multiple-fertility for the sample as a whole. The increase is 0.43 percentage points, which represents one-twentieth of the baseline level.

Differentiating among the different combinations of marital status and multiple-father fertility, and stratifying the sample by race or by education, we continue to find significant correlations between arrest rates and mother's fertility and marital choices. However, exactly which marital and fertility outcomes are correlated with higher arrest rates varies from one subsample to another.

Our immediate next step is to update this study using the SIPP surveys of 2001, 2004, and 2008. We are currently awaiting authorization to access the Census Bureau's internal SIPP files. Access to the internal files is needed because the Census Bureau decided, with the 2004 survey, to stop including MSA data in the public-use SIPP files. Having access to the internal SIPP data will not only enlarge the sample by adding data from 2004 and 2008, but will also mean larger samples for all prior surveys as well (because the internal SIPP files do not mask the MSA of respondents from states with small nonmetropolitan populations).

Exploring the connection between arrest rates and the prevalence of multi-partnered fertility is only a first step toward a better understanding of the relationship between American family structure and the operation of the criminal justice system. In the next stage of this project, we will use a data set – the National Corrections Reporting Program – that documents the annual flow of individuals entering and exiting prison. Those data, which include a county identifier and time served for each individual, enable the researcher to approximate the number of men missing from a given MSA each year due to their incarceration.[14] The third part of the project will be to move beyond incarceration rates and arrest rates, which may both be mere symptoms of the same social problems that generate multi-partnered fertility, rather than causes of multi-partnered fertility, to policy variables that are more exogenous, in an effort to shed more light on causality. Identifying the policy changes that have impacted incarceration rates may allow us to shed more light on causality.

[14] The county identifier does not indicate where a prisoner resided before going to prison, but merely the county in which the prisoner's offense was committed.

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Table 1
Number of fathers represented among a mother's children, by number of children

Number of children living with mother	One father	Two fathers	Three fathers	Four or more fathers	Total
1	15,429				*15,429*
2	17,352	1,729			*19,081*
3	7,360	1,278	208		*8,845*
4	2,218	460	98	23	*2,799*
5	613	101	35	15	*765*
Percentage of all mothers	***91.59***	***7.60***	***0.73***	***0.08***	
Totals	*42,972*	*3,567*	*341*	*38*	*46,919*

Notes: Unit of analysis is a mother with resident children. Data are from the 1985-1988, 1990-1993, and 1996 SIPP panels, and are weighted to be nationally representative. Mothers with 6 or more children present—1.06 percent of SIPP mothers—are excluded.

Table 2
Number of fathers represented among a mother's children, by receipt of public aid

Number of fathers	Family not receiving aid	Family receiving aid	Totals
1	38,909	4,065	*42,794*
2	2,893	672	*3,566*
3	198	143	*342*
4+	17	21	*38*
MFF rate (%)	***7.4***	***17.1***	
Totals	*42,018*	*4,901*	*46,919*

Notes: Unit of analysis is a mother with resident children. Data are from the 1985-1988, 1990-1993, and 1996 SIPP panels, and are weighted to be nationally representative. Mothers with 6 or more children present—1.06 percent of SIPP mothers—are excluded.

Table 3
Number of fathers represented among a mother's children, by race/ethnicity

Number of fathers	White	Black	Hispanic	Asian	Totals
1	31,977	5,766	3,863	1,369	*43,853*
2	2,346	785	387	47	*3,668*
3	178	122	36	4	*346*
4	6	23	4	0	*34*
5	0	5	0	0	*5*
MFF rate (%)	***7.3***	***14.0***	***10.0***	***3.6***	
Totals	*34,507*	*6,702*	*4,290*	*1,420*	*46,919*

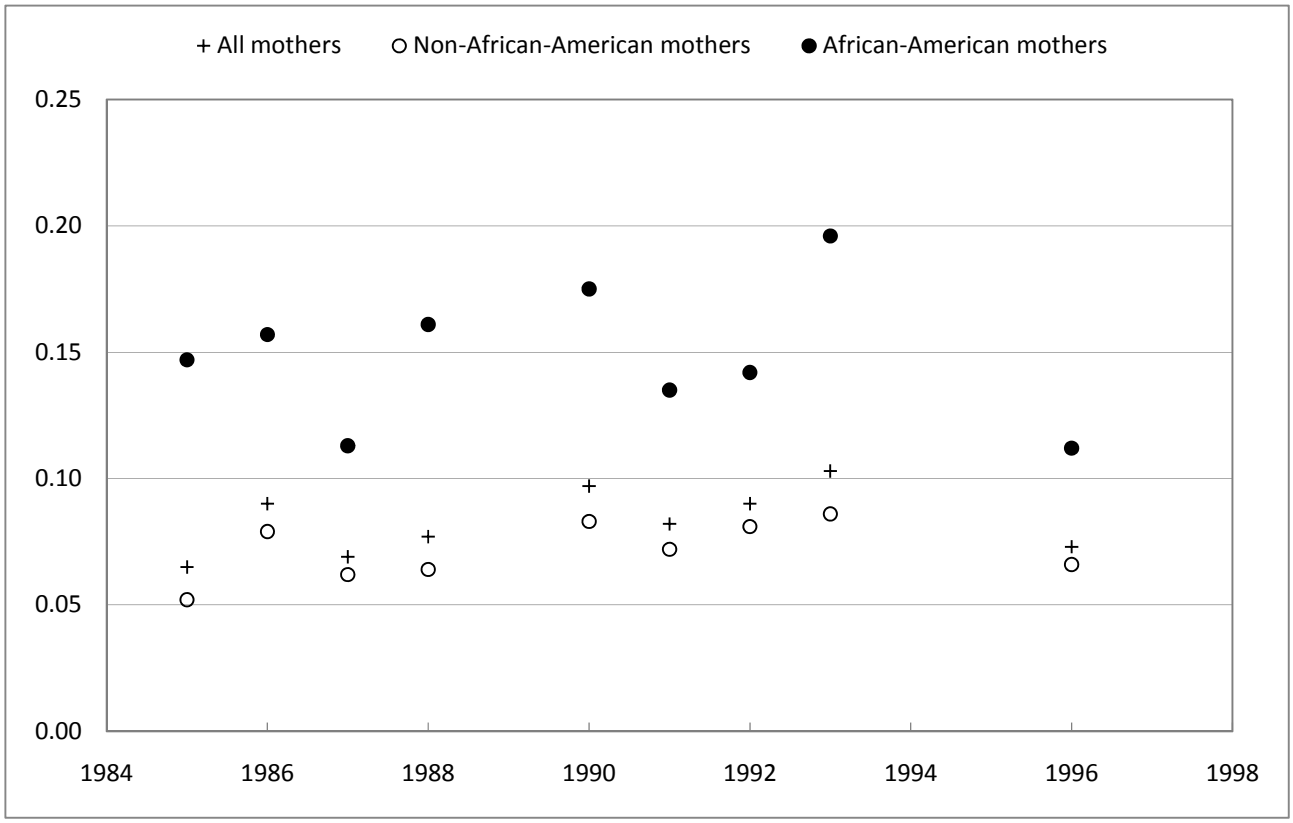
Notes: Unit of analysis is a mother with resident children. Data are from the 1985-1988, 1990-1993, and 1996 SIPP panels, and are weighted to be nationally representative. Mothers with 6 or more children present—1.06 percent of SIPP mothers—are excluded.

Table 4
Number of fathers represented among a mother's children, by age at first birth

Number of fathers	Aged 15 or younger	Aged 16-17	Aged 18-19	Aged 20-24	Aged 25 or older	Totals
1	279	1,595	3,698	13,909	23,494	*43,853*
2	75	308	641	1,373	1,167	*3,668*
3	18	42	65	121	95	*346*
4	3	6	11	7	7	*34*
5	0	0	0	4	1	*5*
MFF rate (%)	***25.6***	***18.3***	***16.2***	***9.8***	***5.1***	
Totals	*375*	*1,950*	*4,416*	*15,413*	*24,764*	*46,919*

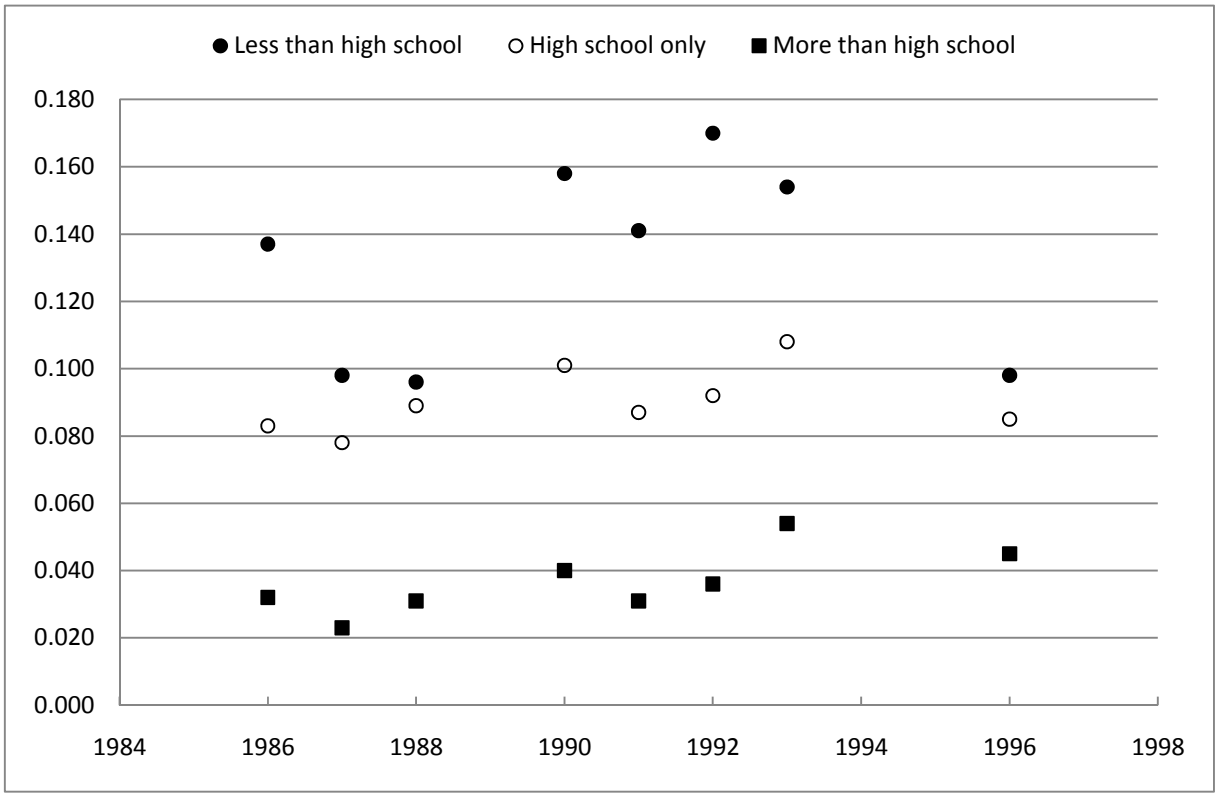
Notes: Unit of analysis is a mother with resident children. Data are from the 1985-1988, 1990-1993, and 1996 SIPP panels, and are weighted to be nationally representative. Mothers with 6 or more children present—1.06 percent of SIPP mothers—are excluded

Figure 1
Fraction of mothers with children by more than one man, by ethnicity



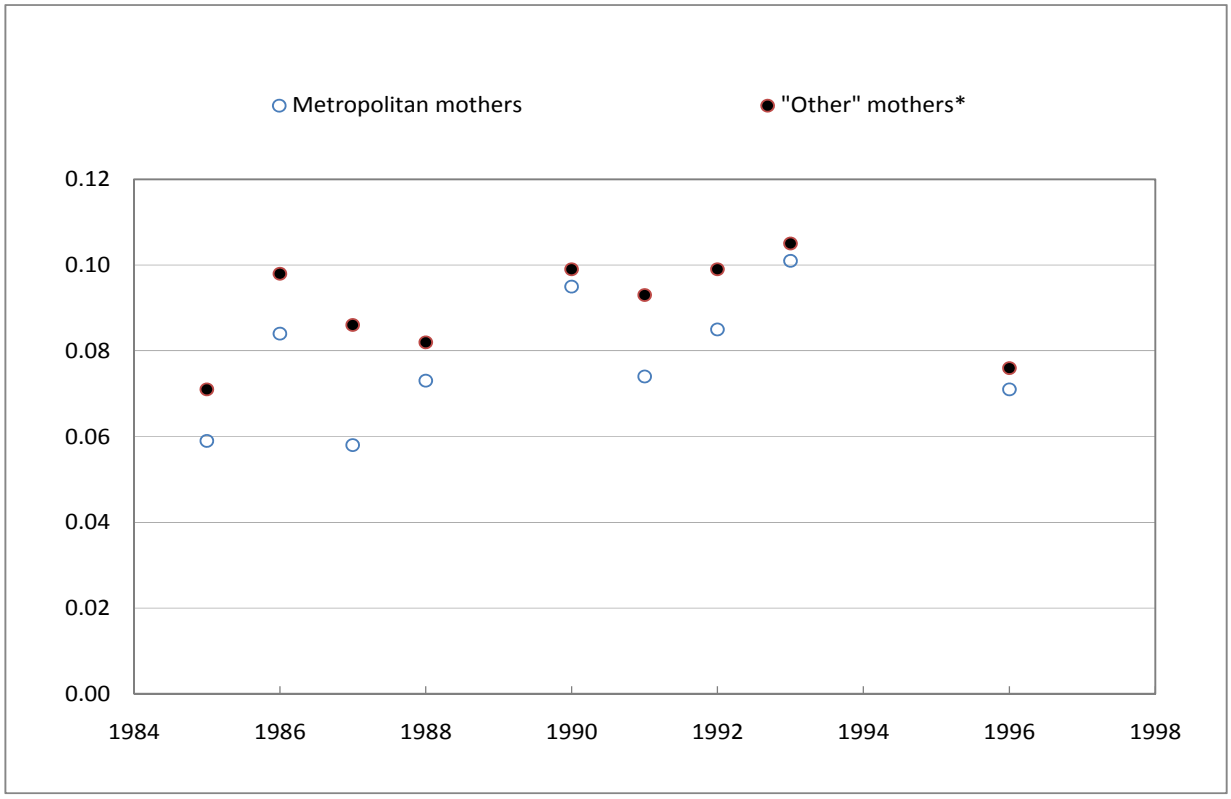
Notes: Data are from the 1985-1988, 1990-1993, and 1996 SIPP panels. Data weighted to be nationally representative. Mothers with 6 or more children present—1.06 percent of SIPP mothers—are excluded.

Figure 2
Fraction of mothers with children by more than one man, by education



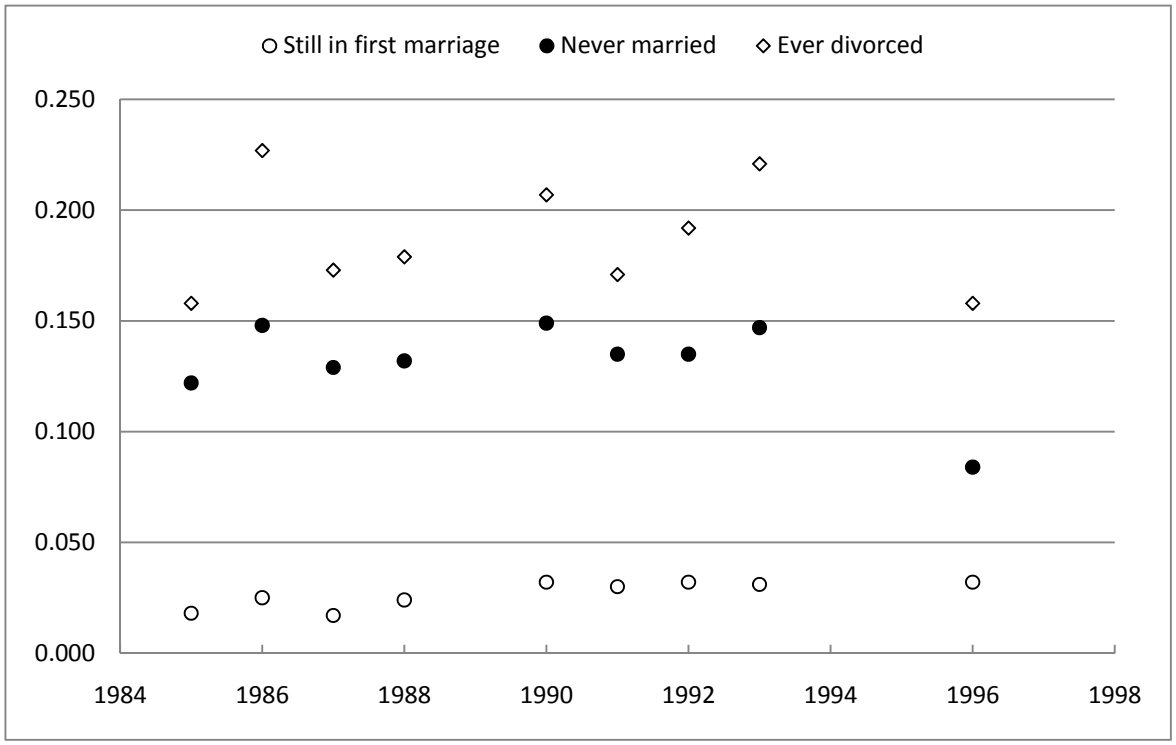
Notes: Data are from the 1985-1988, 1990-1993, and 1996 SIPP panels. Data weighted to be nationally representative. Mothers with 6 or more children present—1.06 percent of SIPP mothers—are excluded.

Figure 3
Fraction of mothers with children by more than one man, by metropolitan status*



*Notes: Data are from the 1985-1988, 1990-1993, and 1996 SIPP panels. Data weighted to be nationally representative. Mothers with 6 or more children present—1.06 percent of SIPP mothers—are excluded. *"Other" is not synonymous with non-metropolitan. SIPP randomly masks the MSA for a large share of respondents in smaller metropolitan areas, so "other" combines those respondents with genuine non-metropolitan respondents.*

Figure 4
Fraction of mothers with children by more than one man, by marital history



Notes: Data are from the 1985-1988, 1990-1993, and 1996 SIPP panels. Data weighted to be nationally representative. Mothers with 6 or more children present—1.06 percent of SIPP mothers—are excluded.

Table 5. Binary logit models: "Mother has children by one father" versus "Mother has children by two or more fathers"

	State and MSA characteristics	With state fixed effects added	With MSA fixed effects added instead
MSA arrest rate *(per 1000 residents aged 15-44)* z-score	**.0033** *(.002)*	**.0042** *(.000)*	**.0043** *(.000)*
Never married	**.0856** *(.000)*	**.0835** *(.000)*	**.0820** *(.000)*
Has been divorced	**.1414** *(.000)*	**.1386** *(.000)*	**.1355** *(.000)*
Number of resident biological children	**.0318** *(.000)*	**.0314** *(.000)*	**.0309** *(.000)*
Aged 15 or less at birth of oldest resident child	**.0734** *(.000)*	**.0751** *(.000)*	**.0681** *(.000)*
Aged 16-17 at birth of oldest resident child	**.0365** *(.000)*	**.0369** *(.000)*	**.0357** *(.000)*
Aged 18-19 at birth of oldest resident child	**.0367** *(.000)*	**.0362** *(.000)*	**.0348** *(.000)*
Aged 20-24 at birth of oldest resident child	**.0136** *(.000)*	**.0139** *(.000)*	**.0129** *(.000)*
Black	**.0123** *(.023)*	.0090 *(.077)*	.0062 *(.303)*
Hispanic	- .0003 *(.908)*	.0004 *(.896)*	.0014 *(.600)*
Asian	- **.0099** *(.044)*	- .0088 *(.090)*	-.0079 *(.131)*
Less than high school education	- .0038 *(.191)*	.0040 *(.167)*	.0038 *(.203)*
More than high school education	- **.0114** *(.000)*	**-.0114** *(.000)*	**-.0113** *(.000)*
Age *(years)*	**.0034** *(.007)*	**.0034** *(.000)*	**.0034** *(.002)*
Age squared	**-.0001** *(.001)*	**-.0001** *(.000)*	**-.0001** *(.000)*
---------- *MSA characteristics* ----------			
Surplus men per 100 women (*ages 15-44)*	.0001 *(.246)*	**.0003** *(.003)*	**.0003** *(.010)*
Deficit of men per 100 women (*ages 15-44)*	.0005 *(.126)*	- .0004 *(.222)*	-.0002 *(.547)*
Poverty rate (z-score) *(threshold=150% of poverty line)*	- .0028 *(.219)*	- .0040 *(.061)*	-.0041 *(.130)*
Male 10^{th}-grade dropout rate (z-score)	- .0015 *(.614)*	- .0004 *(.765)*	-.0008 *(.583)*
Employment rate of men aged 15-44 (z-score)	- .0015 *(.193)*	- .0010 *(.389)*	-.0005 *(.695)*
Rent level *(40^{th} percentile, in $100s of 2009 $)*	- .0001 *(.783)*	- .0006 *(.197)*	**-.0010** *(.011)*
---------- *State characteristics* ----------			
Intensity of child support enforcement *(0 - 1.2)*	.0039 *(.545)*	- .0042 *(.464)*	.0068 *(.150)*
Per capita income *(in $1000s of 2009 $)*	- .0001 *(.783)*	- .0008 *(.503)*	.0010 *(.065)*
Divorce rate *(per 1000 residents)*	.0016 *(.316)*	- **.0029** *(.017)*	- **.0036** *(.001)*
AFDC benefit $_{t-10}$ *(in $100s of 2009 $)*	.0003 *(.640)*	- **.0033** *(.008)*	- .0017 *(.140)*
Year fixed effects	Yes	Yes	Yes
State fixed effects	-	Yes	-
MSA fixed effects	-	-	Yes
Proportion of obs in the "2+ fathers" category	0.083	0.083	0.083
Sample size	26,743	26,716	27,716
Pseudo-R^2	0.243	0.249	0.256

Omitted outcome is one father. Arrest rate is race-specific rate for third year after birth of oldest resident child. Table reports marginal change in P(multiple fathers) for 1-unit change in variable (p-value of underlying logit coefficient in parentheses). Bold font denotes significance at 5-percent level or better. Omitted racial/ethnic category is non-Hispanic white. Omitted marital status is "still in first marriage." Omitted education category is high school degree. Family structure data from 1985-88, 1990-93, and 1996 SIPP surveys. Arrest data from FBI's 1980-2007 Uniform Crime Reports. Error clustering at state level.

Table 6. Six-outcome multinomial logit model with MSA fixed effects: Whole sample

	Children by one father and…		Children by multiple fathers and…		
	…never married	…divorced (once or more)	…never married	…still in first marriage	…divorced (once or more
MSA arrest rate z-score	.0004 *(.480)*	.0080 *(.127)*	**.0003** *(.035)*	.0003 *(.422)*	**.0079** *(.000)*
Number of resident biological children	**- .0233** *(.000)*	**- .1084** *(.000)*	**.0016** *(.000)*	**.0074** *(.000)*	**.0245** *(.000)*
Aged 15 or less at birth of oldest child	**.0240** *(.002)*	**.2159** *(.000)*	**.0087** *(.000)*	**.0332** *(.000)*	**.0751** *(.000)*
Aged 16-17 at birth of oldest child	**.0173** *(.000)*	**.2780** *(.000)*	**.0035** *(.000)*	**.0180** *(.000)*	**.0542** *(.000)*
Aged 18-19 at birth of oldest child	**.0193** *(.000)*	**.1905** *(.000)*	**.0044** *(.000)*	**.0125** *(.000)*	**.0609** *(.000)*
Aged 20-24 at birth of oldest child	**.0067** *(.000)*	**.0952** *(.000)*	**.0019** *(.000)*	**.0068** *(.000)*	**.0167** *(.000)*
Black	**.1559** *(.000)*	**.0019** *(.007)*	**.0201** *(.000)*	.0023 *(.110)*	- .0037 *(.343)*
Hispanic	**.0248** *(.004)*	- .0170 *(.737)*	**.0021** *(.000)*	.0002 *(.816)*	- .0028 *(.623)*
Asian	.0071 *(.845)*	**- .1360** *(.000)*	.0026 *(.119)*	.0002 *(.517)*	**- .0260** *(.000)*
Less than high school education	**.0363** *(.000)*	**.0395** *(.011)*	**.0029** *(.000)*	.0001 *(.562)*	- .0062 *(.699)*
More than high school education	**- .0241** *(.000)*	**- .0675** *(.000)*	**- .0023** *(.000)*	**- .0065** *(.000)*	**- .0161** *(.000)*
Age *(years)*	**- .0092** *(.000)*	**.0540** *(.000)*	- .0005 *(.087)*	- .0012 *(.694)*	**.0133** *(.000)*
Age squared	**.0001** *(.001)*	**- .0005** *(.000)*	.0000 *(.553)*	.0000 *(.693)*	**- .0002** *(.000)*
-------- *MSA characteristics* ----------					
Surplus men per 100 women (*ages 15-44)*	- .0004 *(.312)*	- .0019 *(.119)*	**- .0002** *(.000)*	**.0002** *(.001)*	.0001 *(.842)*
Deficit of men per 100 women (*ages 15-44)*	**.0016** *(.000)*	**.0045** *(.000)*	- .0001 *(.549)*	**.0008** *(.000)*	- .0003 *(.883)*
Poverty rate (z-score)	.0028 *(.052)*	.0072 *(.355)*	- .0002 *(.663)*	- .0012 *(.402)*	- .0031 *(.367)*
Male 10^{th}-grade dropout rate (z-score)	.0026 *(.101)*	- .0001 *(.909)*	.0004 *(.055)*	- .0002 *(.908)*	.0003 *(.797)*
Employment rate of men 15-44 (z-score)	.0009 *(.499)*	.0023 *(.473)*	.0000 *(.888)*	.0002 *(.759)*	- .0006 *(.763)*
Rent level *(40^{th} percentile, $100s of 2009 $)*	- .0080 *(.474)*	- .0008 *(.705)*	.0223 *(.703)*	.0005 *(.064)*	.0009 *(.158)*
-------- *State characteristics* ----------					
Intensity of child support enforcement	- .0077 *(.151)*	**- .0397** *(.028)*	**- .0025** *(.012)*	- .0003 *(.770)*	- .0002 *(.721)*
Per capita income *($1,000s of 2009 $)*	- .0007 *(.355)*	- .0017 *(.367)*	.0002 *(.137)*	- .0000 *(.908)*	.0013 *(.177)*
Divorce rate *(per 1000 residents)*	.0003 *(.873)*	- .0003 *(.856)*	**- .0006** *(.001)*	- .0001 *(.876)*	- .0014 *(.430)*
AFDC benefit $_{t-10}$ *(in $100s of 2009 $)*	**- .0041** *(.000)*	.0025 *(.227)*	.0001 *(.718)*	- .0010 *(.149)*	- .0018 *(.159)*
Year fixed effects			Yes		
MSA fixed effects			Yes		
Number of observations in category	*2,566*	*6,453*	*353*	*479*	*1413*
Proportion of observations in category	*0.094*	*0.236*	*0.013*	*0.018*	*0.052*
Sample size		27,406			
Pseudo-R^2		0.182			

Omitted outcome is "One father, still in first marriage" (58.9 percent of observations). Table reports change in outcome's probability for a 1-unit change in each variable (p-value of underlying logit coefficient in parentheses). Bold font indicates significance at the 5-percent level or better. Omitted education category is "High school education." Family structure data are from the 1985-88, 1990-93, and 1996 SIPP surveys.

Table 7. Six-outcome multinomial logit model with MSA fixed effects, for different subsamples

	Children by one father and…		Children by multiple fathers and…		
	…never married	…divorced (once or more)	…never married	…still in first marriage	…divorced (once or more
Whole sample *(n=27,406)**:***					
MSA arrest rate z-score	.0004 *(.480)*	.0080 *(.127)*	**.0003** *(.035)*	.0003 *(.422)*	**.0080** *(.000)*
Number of observations in category	*2,566*	*6,453*	*353*	*479*	*1,413*
Proportion of observations in category	*0.094*	*0.236*	*0.013*	*0.018*	*0.052*
Nonblack subsample *(n=23,020)**:***					
MSA arrest rate z-score	**.0029** *(.002)*	**.0194** *(.014)*	.0000 *(.710)*	- .0006 *(.647)*	.0003 *(.248)*
Number of observations in category	*1,196*	*5,386*	*141*	*320*	*1,162*
Proportion of observations in category	*0.052*	*0.234*	*0.006*	*0.014*	*0.051*
Black subsample *(n=4,386):*					
MSA arrest rate z-score	- .0020 *(.945)*	- .0073 *(.756)*	.0027 *(.073)*	.0041 *(.170)*	**.0059** *(.050)*
Number of observations in category	*1,370*	*1,067*	*212*	*159*	*251*
Proportion of observations in category	*0.312*	*0.243*	*0.048*	*0.036*	*0.058*
High school only subsample *(n=15,996)**:***					
MSA arrest rate z-score	- .0012 *(.901)*	.0096 *(.274)*	.0000 *(.276)*	.0003 *(.055)*	**.0087** *(.000)*
Number of observations in category	*1,462*	*4,014*	*181*	*294*	*941*
Proportion of observations in category	*0.091*	*0.251*	*0.011*	*0.018*	*0.059*
High school dropouts *(n=4,669)**:***					
MSA arrest rate z-score	**.0114** *(.019)*	.0037 *(.411)*	.0003 *(.206)*	.0000 *(.930)*	**.0026** *(.000)*
Number of observations in category	*875*	*1,057*	*157*	*136*	*269*
Proportion of observations in category	*0.187*	*0.226*	*0.034*	*0.029*	*0.058*
****College-educated subsample*** *(n=6,741)**:***					
MSA arrest rate z-score	.0007 *(.147)*	**.0167** *(.016)*		.0031 *(.089)*	
Number of observations in category	*229*	*1,382*	*15*	*49*	*203*
Proportion of observations in category	*0.034*	*0.205*	*0.002*	*0.007*	*0.030*

Omitted outcome is "One father, still in first marriage." Table reports change in each outcome's probability for an increase of 1 standard deviation in MSA arrest rate (p-value of underlying logit coefficient in parentheses). Bold font indicates significance at the 5-percent level or better. For all but the college-educated subsample, other regressors (except controls for education or race) as in preceding table.

*For college-educated subsample, there are so few cases of MFF that the marginal effect reported is for the probability of being in any of the three MFF categories.

Appendix Table 1. Sample characteristics

Variable	Mean	Std dev
Lagged arrest rate *(arrests per 1,000 people 15-44)*	85.1	69
Black	0.164	
Hispanic	0.125	
Asian	0.044	
Never married	0.105	
Has been divorced	0.283	
Aged 15 or less at birth of first child	0.008	
Aged 16-17 at birth of first child	0.038	
Aged 18-19 at birth of first child	0.083	
Aged 20-24 at birth of first child	0.308	
Less than a high school education	0.169	
More than a high school education	0.250	
Age *(years)*	34.9	8.1
Year=1985	0.018	
Year=1986	0.161	
Year=1987	0.071	
Year=1988	0.065	
Year=1990	0.135	
Year=1991	0.071	
Year=1992	0.115	
Year=1993	0.106	
Year=1996	0.258	
Intensity of child support enforcement *(Paternities established per nonmarital birth)*	0.41	0.26
State per capita income *(in $1,000s)*	32.0	5.4
State divorce rate *(Divorces per 1,000 residents)*	3.82	2.0
AFDC benefit (lagged 10 years) *(in $100s)*	9.76	3.3
Rent level *(40^{th} percentile, in $100s of 2009 $)*	14.6	3.5
MSA sex ratio *(men per 100 women, population aged 15-44)*	99.3	7.7
Male dropout rate (10^{th} grade or less) *(per 100 men)*	10.9	5.3
MSA poverty rate *(families per 100 below 150% of poverty line)*	24.7	7.1
MSA male employment rate *(per 100 men)*	74.9	6.3

Note: Data weighted to be nationally representative