Work, Welfare, and Child Maltreatment

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We examine how child maltreatment—including neglect, physical and sexual abuse, and other forms of maltreatment—is affected by parental economic circumstances. Using state-level panel data on cases of maltreatment and numbers of children in foster care, we find that increases in the fractions of children with absent fathers and working mothers in a state are related to increases in many measures of maltreatment, as are increases in the share of families with two nonworking parents and those with incomes below 75% of the poverty line. Decreases in state welfare benefit levels are associated with increases in foster care placement.

I. Introduction

Child maltreatment is a large and growing problem in the United States. In 1997, nearly 3 million cases of child abuse and neglect—more than 40 cases per 1,000 children—were reported to state child protective services (CPS) agencies (U.S. Department of Health and Human Services 1999),

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about a fivefold increase over the number and rate just 20 years earlier (Waldfogel 1998). Although there is debate about how much of this increase in reports represents a real deterioration in the quality of care that children receive, and how much reflects a growing awareness of child maltreatment, the effect has been to heighten interest in identifying the determinants of abuse and neglect.

This article is concerned with the links between socioeconomic status—in particular, poverty, employment, and family structure—and child maltreatment. We use state-level panel data on numbers of reports and substantiated cases of child maltreatment as well as numbers of children in foster care, together with state-level measures of the economic status of children's families constructed from Current Population Survey data, to estimate the relationship between family income, family structure (specifically the absence of fathers), and parental work status and maltreatment outcomes. We find strong evidence that these socioeconomic factors influence maltreatment. We also examine the effects of states' welfare (Aid to Families with Dependent Children [AFDC] and Food Stamp) benefit levels on child abuse and neglect. Since welfare benefit levels influence parental employment, family income, and family structure, changes in welfare benefits may affect maltreatment. Our evidence indicates that decreases in welfare benefit levels are associated with increases in foster care placements. We conclude with a discussion of the likely effects of the current welfare reforms on child maltreatment.

Economists have long been concerned with determinants of children's well-being and with how the economic circumstances of families affect children's health, their academic performance, educational attainment, and ultimately their labor-market performance as adults. However, there is relatively little research that examines how economic circumstances are related to abuse and neglect. There are several reasons why it should be a topic of interest to economists.

First, a better understanding of the determinants of child abuse and neglect contributes to the literature that links socioeconomic circumstances to children's performance in school, on cognitive tests, and later in life as adults. A large body of evidence indicates that children from families with lower incomes and children from single-parent families perform more poorly on standardized tests and are more likely to leave school early and to be poor as adults (see, e.g., Hill and Duncan 1987; Corcoran et al. 1992; Brooks-Gunn and Duncan 1997; Mayer 1997; Shea 2000). However, the mechanisms through which these effects operate are not well understood. Child maltreatment is one possible avenue through which socioeconomic factors may affect children's outcomes. The research presented in this article indicates that increases in poverty and single parenthood result in higher levels of abuse and neglect. Furthermore, child neglect and abuse have been shown to result in poorer academic per-

formance, greater delinquency and substance abuse, and other behavioral problems that may result in poor labor-market outcomes later in life (Widom 1989; Starr and Wolfe 1991; Felitti et al. 1998). In addition, adults who were abused as children may be more likely to have unintended pregnancies (Dietz et al. 1999) and to abuse their own children (Kaufman and Zigler 1987; Widom 1989).

Second, a prerequisite for studying the determinants of children's well-being is having measures of children's well-being. Measuring the welfare of children—or of people of any age group within a household—is not an easy task. Given the data that are typically available from household surveys, it is difficult to measure what children consume: they share their homes with adults, many of the goods they consume fall into the category of "public goods," and survey data rarely provide breakdowns of how private goods are allocated within households. Furthermore, the quality of care that children receive is likely to be as important a determinant of their welfare as the quantities of goods and services they consume, and measuring the quality of care is difficult. Measures of child neglect and abuse are very useful indicators of the quality of life of children in that they provide information on the numbers of children who receive extremely poor care, both in terms of material deprivation and the treatment they receive by their parents.

Third, our research is related to work on the effects of economic fluctuations on health outcomes, much of which is concerned with the links between economic fluctuations and the mental and physical health of adults. Goldsmith, Veum, and Darity (1996) present evidence that adults who become unemployed are more likely to become depressed and to suffer from loss of self esteem. Ruhm (1999) examines the relationship between recessions and mortality and argues that recessions are actually good for adult health—recessions are associated with fewer deaths from coronary disease, accidents, and a variety of other causes. However, Ruhm's work also indicates that adult mental health suffers during recessions: of the 10 categories of death examined, death by suicide is the only one that is countercyclical. This research is relevant to the study of child maltreatment, because the mental health of adults is an important determinant of children's well-being. Previous work indicates that parental depression and stress are associated with more child maltreatment (Cicchetti and Carlson 1989). If so, the effects of parental unemployment on maltreatment may operate directly, through effects on family income, but also indirectly, through their effects on the mental health of parents.

Although the empirical work in this article is largely descriptive, it is useful to consider the types of models that result in links between economic factors and child maltreatment. A good starting place is a simple model of expenditure on "children's goods," defined broadly to include parental time as well as goods and services, in which parents make choices

by maximizing their welfare (which, with altruism, will also be a function of their children's welfare), given prices and their endowments of time and money. In this case, the basket of goods that children consume, as well as children's welfare, will be a function of parental endowments, parental preferences, and prices. Child maltreatment can be defined to occur when a child's welfare falls below a threshold level. In this simple framework, increases in income and reductions in the prices of "children's goods" will result in less maltreatment.

This simple framework ignores several important aspects of child maltreatment. First, abuse is often the result of inappropriate behaviors by parents toward their children, rather than inadequate allocations of goods or services. Because emotional and physical cruelty are not terms that enter budget constraints, they are more difficult to model, and economic factors may operate on them in different ways. For example, it may be that (some) parents derive pleasure from maltreating their children but that maltreatment will, if detected, result in a penalty. In this case, economic factors enter a parent's maltreatment decisions by affecting the opportunity cost of detection relative to the value of being abusive. In theory, since the cost of detection relative to the value of maltreatment could rise or fall with income, maltreatment could decrease or increase with income. Second, factors such as stress and depression affect the likelihood that parents maltreat their children, and these factors may themselves be affected by economic circumstances. For example, the loss of self-esteem or depression that accompany unemployment may result in greater levels of child maltreatment, over and above effects that operate more directly through the budget constraint. Likewise, single parenthood may result in greater maltreatment not only because single-parent households tend to be poor but also because of the stress associated with raising children alone. Given the state-level data we use in this study, it is not possible to disentangle the effects of changes in economic conditions that work directly through budget constraints from those that operate through changes in parental attitudes and behaviors. Our intent is to establish whether economic conditions affect child maltreatment; a more precise understanding of how these effects operate requires micro-level data.

A final important issue is that unobserved parental characteristics that result in abuse and neglect may be correlated with factors that affect labor market outcomes and family structure. For example, an emotionally unstable mother may be less likely to work, less likely to live with her child's father, and more likely to abuse or neglect her child. A finding that unemployment or single parenthood is positively related to maltreatment does not provide information on the underlying structural mechanisms that drive the relationship. This general issue is also important (and hotly debated) in the research on socioeconomic factors and cognitive and academic achievement. For example, Mayer (1997), Blau (1999), and Shea

(2000) argue that parental factors, such as education and the overall quality of the family (i.e., "family background"), are far more important determinants of children's success than is current income. Other studies, however, contend that economic deprivation in childhood does have direct and profound consequences for children. For example, Brooks-Gunn and Duncan (1997) argue that income deprivation leads to lower achievement by undermining the quality of parenting and the availability of educational resources in the home. This is a difficult issue to settle. However, the results we present on the negative effects of states' welfare benefit levels on foster care lend some support to the latter position.[1]

The article is organized as follows. In Section II, we provide background information on the child protective service systems that are in place in all U.S. states and the District of Columbia. In Section III, we discuss data and empirical methods. In Section IV, we present evidence on the relationships between poverty, parental employment, and family structure on child maltreatment. In an earlier paper (Paxson and Waldfogel 1999), we presented preliminary evidence that fluctuations in these socioeconomic factors are associated with large changes in rates of child maltreatment. The work presented in this section expands on these results. We trace through the effects of economic factors on reports of child maltreatment, substantiation rates, final numbers of substantiated cases of physical abuse, neglect, sexual abuse, and other forms of abuse, and numbers of children in foster care. We also examine the relationship between cocaine use and maltreatment.

In Section V, we turn to the links between family structure, welfare benefits, and child maltreatment. Welfare programs affect the incentives of women and men to work and to live in single- or dual-parent families. By changing the family structure and work behavior of parents as well as their incomes, welfare reforms can be expected to affect the incidence of child maltreatment. Our analysis indicates that decreases in a state's welfare benefit levels result in sizeable increases in foster care placements. We also find some significant effects of welfare waivers on child maltreatment. We conclude with a (cautious) discussion of the effects of current welfare reforms on child maltreatment.

II. Child Maltreatment and Child Protective Services

All 50 states and the District of Columbia have legislation defining child maltreatment and specifying under what circumstances it should be

[1] As will be discussed below, there are several mechanisms through which higher welfare benefit levels could reduce foster care. Higher incomes that come with higher welfare benefit levels could directly reduce the need for foster care. In addition, single parents who reduce their labor supply in response to higher benefit levels may be less stressed and have more time to care for their children.

reported and by whom. They also have systems in place to receive reports of suspected child maltreatment, to determine whether or not reports should be substantiated, and to decide what actions, including removal of children to foster care or some other form of substitute care, should be taken to protect children from further harm. The most common type of maltreatment reported to child protective services (CPS) is neglect, which constitutes about 56% of all reports. Physical abuse makes up 25% of reports. Sexual abuse, emotional maltreatment, and other categories together account for the remaining 19% (U.S. Department of Health and Human Services 1999). Reports may be made by so-called mandated reporters, usually individuals such as doctors or teachers who work with children and who are required by law to report suspected cases of maltreatment, or by voluntary reporters, such as family members, friends, neighbors, or the children themselves. About 40% of the reports are substantiated upon investigation by CPS, and just under 30% are kept open for ongoing intervention, which may involve removing the child from the home or monitoring the child's safety at home (Waldfogel 1998).

The system of child protective services in the United States has expanded greatly over the past 4 decades, along with a growing awareness of and concern about child maltreatment. It was not until 1968 that all states had mandatory reporting laws. There was little federal involvement in the area of child maltreatment until 1974, when the Child Abuse Prevention and Treatment Act (CAPTA) was enacted. This act established standards for identification of and response to child maltreatment, created the National Center on Child Abuse and Neglect (NCCAN), and allocated small amounts of federal money to states that created adequate child protective service agencies. One result of federal involvement has been the creation of a state-level database on child maltreatment. Since 1988, NCCAN has been charged with collecting and publishing data on the incidence of maltreatment. Every year since 1990, state child protection agencies have been asked to provide data on the number of reports of child maltreatment, the disposition of reports, and the breakdown of substantiated cases by type of abuse as well as by other categories (such as the type of perpetrator and the age and ethnicity of victims).

Although these data are extremely useful, they must be treated with some caution, since states differ in how their child protective service systems operate. Each state has its own laws against child maltreatment, and their definitions of physical abuse, sexual abuse, neglect, and other forms of maltreatment are not identical. However, there are common elements in the definitions in different states. Physical and sexual abuse have the most clear-cut definitions. Physical abuse consists of a physical injury, or threatened injury, inflicted by a person responsible for the child's care on the child other than by accidental means. Where states differ is in how severe a physical injury must be to qualify as abuse. Some states

simply state that physical injury constitutes abuse. Other states specify that the injury has to result in long-term or severe harm to the child. Some states explicitly exempt spanking. Sexual abuse usually covers any sexual contact between a child and a person responsible for the child's care. Variations in the definition of sexual abuse across states are usually due to differences in the definition of who qualifies as a "person responsible for care."

Neglect is the most difficult form of maltreatment to define, and it is often split into subcomponents that relate to physical, medical, and educational neglect. The elements that are common to most definitions of neglect include (1) the failure by an adult responsible for a child to supply the child with necessary food, clothing, and shelter, (2) the failure to supply necessary medical care, and (3) the failure to send a child to school in accordance with state law. Some laws explicitly state that leaving children unattended or in inadequate care is a form of neglect. An important point to note is that neglect is not necessarily a mechanical result of poverty. Instead, an assessment of neglect is often conditioned on the resources of the child's parents or guardians. Some statutes make this explicit, by specifying that only caregivers who fail to provide children with basic needs and who are capable of doing so are guilty of neglect (see, e.g., Minnesota Statutes sec. 626.556, available on line at http://www.revisor.leg.state.mn.us/stat/626/556/html).[2] The idea that neglect should be assessed in light of the family's economic circumstances also appears in literature on the assessment of neglect. For example, Gaudin (1993, section "Assessment of Neglect") writes that the "assessment of the adequacy of . . . housing and household furniture and appliances must be considered in the context of the limited housing options that conditions of poverty allow many families of color. The unavailability of adequate low-rent housing becomes a question of community neglect, rather than child neglect on the part of parents who are denied access to more adequate housing by reason of economics or discrimination." A legal guide for physicians, Richards and Rathbun (1999, p. 442) states that "*if the parents have the resources* to care for a child properly but choose not to, they are neglecting that child" (italics added). Implicitly or explicitly, children are often counted as being neglected only if they do not receive care or resources that their parents or caregivers should have been able to provide given their resources.

There are several other important differences across states in their laws

[2] Other states exempt parents from responsibility due to lack of resources only in special cases. For example, Arizona law specifies that neglect is the "inability or unwillingness" of a caretaker to provide adequate resources, except in cases where care to a child with a disability or chronic illness is the result of "unavailability of reasonable services" (Arizona Revised Statues sec. 8-201(21); available on line at http://www.azleg.state.az.us/ars/8/00201.htm).

regarding abuse and neglect. First, states differ in their definitions of mandated reporters. For example, in some states only professionals who come into contact with children (physicians, teachers, etc.) are required to report suspected child maltreatment. In other states, everyone is a mandated reporter. Second, states differ in the level of evidence required to substantiate a report of maltreatment: some require "some credible evidence," while others require "a preponderance of evidence." These differences, combined with varying definitions of maltreatment, may be responsible for some of the variation across states (including the District of Columbia) in the report rates and substantiation rates of child maltreatment—and these cross-state differences are large. For example, in Washington, DC, in 1997, 11,518 children, or 10.7% of the children under the age of 18, were the subject of an investigation by CPS, and 5,341, or 46%, of these cases were substantiated. In Pennsylvania, a state with one of the most stringent definitions of child abuse in the country, only 0.8% of children were the subject of an investigation in 1997, and the substantiation rate was 25% (U.S. Department of Health and Human Services 1999). Although differences in the socioeconomic circumstances of children in these two locations may account for some of the difference in rates, a major source is likely to be institutional and legal differences. For this reason, it is important that our analysis adequately accounts for heterogeneity across states in their laws and in the ways their CPS systems operate.

III. Data and Methods

A. Data

The data for our analysis come from a variety of sources. First, the state-level information on child maltreatment from 1990 to 1996 comes from the NCCAN database. This database contains information on the numbers of reports of child maltreatment and the numbers of substantiated cases of physical abuse, neglect, sexual abuse, and other types of abuse. This information can be used to calculate each state's substantiation rate. No consistent information on substantiated cases is available prior to 1990.

A few details of our measures of abuse and neglect require discussion. First, "reports" are usually recorded by states on a family basis (i.e., number of families reported for maltreatment) but are also reported on a child basis (i.e., number of children suspected to be victims of maltreatment) by a small number of states. We converted all reports to a "family" basis by multiplying "child-based" reports by the average ratio of family-based to child-based reports in states that produced both fig-

ures.[3] Our results do not appear to be sensitive to how this conversion is done, and we obtain similar results if we restrict the sample to states that use family-based reports. Second, states vary in how reports of maltreatment are disposed of after investigation. Most reports are deemed to be substantiated or unsubstantiated, although in some cases there may be no finding (e.g., if the child protective service agency is unable to locate the family). In addition, some states have a category of "indicated," which means that, although there is evidence of maltreatment, it does not rise to the level required by state law for substantiation. Our measures of the numbers of victims of child maltreatment include both indicated and substantiated cases. Third, some states report medical neglect as a category separate from neglect, but many do not. To make the data more consistent across states, we combine the two categories into one. Fourth, we report results for the category of "other." This category includes a variety of types of maltreatment, and it is the least likely of all measures to be defined the same way across states. For most states it includes emotional maltreatment. Other types of maltreatment that are commonly included in "other" are abandonment and contributing to the delinquency of a child. In addition, many states include newborns exposed to controlled substances (usually cocaine) in this category—this is important to keep in mind when we examine the relationship between drug use and maltreatment. Fifth, our measure of the total number of victims is the sum of victims in each of the categories (physical abuse, neglect, sexual abuse, and other). In some states, children who are victims of more than one type of maltreatment are included in the victim totals of each type of maltreatment they were exposed to. In these cases, our measure of "total victims" is overstated. This is unlikely to bias our results since we include state fixed effects in our models.

Our data on the numbers of children in foster care in 1990–96 come from the Voluntary Cooperative Information System (VCIS), a project of the American Public Welfare Association (1996). These data are a count of the children in foster care on the last day of the year and are available by state and year.

The state-level data on the socioeconomic characteristics of children's families come from the 1990 to 1996 March Current Population Surveys. These variables were defined to reflect the living conditions of children within each state and each year, rather than the living conditions of the entire population. For each year, we selected records for all children under the age of 18, constructed socioeconomic variables for each child, and then computed estimates of state-level means across children, using the appropriate individual level survey weights. Each year of the March Cur-

[3] In the results below, when we estimate models with the "report rate" as the dependent variable, we convert reports back to a per child basis.

rent Population Survey contains information on approximately 40,000 to 50,000 children. However, even with samples of these sizes, there are some state-year cells with small numbers of children. The median number of children per state-year was 562, with a range from 150 (District of Columbia) to 4,210 (California). The state-level statistics include the average of the logarithm of the child's household per capita income; the fraction of children with family income less than 75% of the poverty line; the fraction of children living in urban areas; the fraction of children who are white, black, or of another race; the fraction of children whose mother has less than a high school diploma; the fraction of children with an employed mother; the fraction with a nonworking father; and the fraction with no father in the household. (Few children live in households with no mother, and we excluded these cases.) We also constructed more detailed measures of family structure and employment status. These show the fraction of children in each of six categories, which represent all the combinations of the mother's work status with the father's status. In cases where both a mother and father are present, the possible categories are two working parents, two nonworking parents, a working father and nonworking mother, or a nonworking father and working mother. When only a mother is present, children may be classified as having an absent father and working mother, or an absent father and nonworking mother.

Our definitions of "mother" and "father" require discussion. A child's mother is identified in the Current Population Survey by her record number, and we selected only children with mothers present. We do not know whether the mother is biological, adoptive, or step. We defined "father" more broadly, to include biological, step, and adoptive fathers, as well as adult men living in the household who are not relatives of the child and are not explicitly identified as the child's father. (Men in this last category are referred to here as "imputed" fathers.) Because of evidence that nonbiological parents—stepparents or cohabitants of the parent—are more likely to abuse children (Daly and Wilson 1996), we examined whether increases in the fractions of children with "imputed" fathers, whom we know are unlikely to be biological fathers, resulted in more maltreatment. These estimated effects of imputed fathers on maltreatment were not statistically different from zero, with large standard errors.[4]

[4] Although we know that "imputed" fathers are unlikely to be biological, the CPS does not allow us to determine whether parents who are identified as such are or are not biological. Other data sets that identify the type of parent more precisely (such as the SIPP and the PSID) have samples of children that are much smaller than the CPS, making it difficult to compute accurate state-level measures. For example, in 1990, the CPS contained nearly three times as many families with children as did the SIPP. In addition, the SIPP does not uniquely identify the state of residence for families in smaller states.

State-level information on drug arrests was drawn from various years of the "FBI Uniform Crime Reports" (U.S. Department of Justice, Federal Bureau of Investigation, various years). Estimates of the numbers of adults and children in different age categories in each state and year were obtained from the web site of the U.S. Census Bureau (U.S. Department of Commerce, various years). Our final data set consists of 318 state-year observations for the years 1990–96. Appendix table A1 provides descriptive statistics on the variables used in our analysis.

B. Methods

The models we estimate are straightforward. For each of the measures of maltreatment, we estimate equations of the form:

$$\ln(y_{st}) = \gamma_s + \delta_t + X'_{st}\boldsymbol{\beta} + e_{st}, \tag{1}$$

where $\ln(y_{st})$ is the logarithm of reports, the logarithm of the substantiation rate, the logarithm of the number of victims of maltreatment, or the logarithm of the number of children in foster care for state s in year t. The term γ_s denotes a set of state fixed effects, and the term δ_t denotes a set of year effects. The vector X_{st} contains a set of controls for the logarithm of the state's population, the logarithm of the number of children in the state, and the fraction of children in different age categories. To control for business cycle variation within the state, we include the state's unemployment rate. The vector X_{st} also contains other controls (such as the fraction of children who live in urban areas, the fraction of children in different ethnic groups, and the fraction of children whose mothers do not have a high school degree), as well as measures of the economic circumstances and family structure of children in the state. In the foster-care models, we include a measure of foster-care payment levels, on the theory that states that compensate foster families more highly find it easier to attract suitable foster parents.[5] Monthly payments made to foster parents typically vary with the age of the child they foster. To construct our measure of the level of foster-care payments, we averaged the monthly payment for foster parents of 2-year-olds, 9-year-olds, and 16-year-olds, and took the logarithm of this value.

The use of state and year fixed effects is important. A major concern is that the state-level socioeconomic factors in X_{st} may be correlated with unobserved state-specific factors that influence child maltreatment, producing biased parameter estimates. These factors could include things such as (unobserved) parental attitudes or the cost of child care, which genuinely affect the way that children are treated, as well as differences across

[5] Because the foster-care payment level could itself be endogenous, with states with large numbers of children to place increasing the payment level, we also estimated the models without this variable, with little effect on the results.

states in how maltreatment is defined and how strenuously the state enforces its child maltreatment laws. To the extent that these factors are fixed over time, the bias can be eliminated by the inclusion of state fixed effects. Another concern is that trends in reports of child maltreatment will be spuriously correlated with trends in other variables, such as female labor force participation. The inclusion of year effects will sweep out these factors, at least to the extent that they are common across states.

Our choice of the logarithm of maltreatment as the dependent variable in (1) is purely a matter of convenience; its use makes it simpler to assess the effects of changes in the right-hand-side variables on maltreatment. The cost of this choice is that (1) does not have a simple micro-level analog. If, for example, the underlying micro-level relationship between a child's probability of being maltreated and his or her household characteristics can be represented by a linear probability model, then the appropriate aggregated (state-level) relationship would be a linear regression of the fraction of children in the state who are maltreated (rather than the logarithm of the number of children who are maltreated) on state means of household characteristics. In the results that follow, we show that it makes little difference to the results whether the fraction of children maltreated or the logarithm of children maltreated is used as the dependent variable.

An important issue is measurement error in the right-hand-side variables. A subset of the variables in X_{st} are computed as state-level averages using data from the March Current Population Survey, and these averages are imprecise measures of the true state averages. Without correcting for sampling error in the right-hand-side variables, the estimates of (1) will be biased. Furthermore, the inclusion of fixed effects is likely to make the biases associated with measurement error worse. However, this form of bias due to measurement error is straightforward to fix. As shown in Deaton (1985), the bias in the parameter estimates is a function of the variances and covariances of the state-level means constructed from the Current Population Survey. These variances and covariances can be estimated from the microdata and used to adjust the parameter estimates for bias. Specifically, let Z_{st} denote the vector of state dummies, year dummies, and all elements of X_{st} that are on the right-hand-side of (1), and let $\boldsymbol{\alpha}$ denote the vector of coefficients including the fixed effects and $\boldsymbol{\beta}$, so that equation (1) can be expressed as

$$\ln(y_{st}) = Z'_{st}\boldsymbol{\alpha} + e_{st}. \tag{2}$$

Only a subset of the elements in Z_{st} were calculated from the Current Population Survey, and we assume that only these variables are subject to sampling error. (Although the Census Bureau's intercensal population estimates are measured with some error, we do not have the information necessary to correct for any resulting biases.) Assume that the observed

values of $\ln(y_{st})$ and Z_{st} are jointly normally distributed with means equal to their true values:

$$\begin{pmatrix} \ln y_{st} \\ Z_{st} \end{pmatrix} \sim N\left(\begin{pmatrix} \ln y_{st} \\ Z^{*}_{st} \end{pmatrix}, \begin{bmatrix} \sigma_0 & 0 \\ 0 & \Sigma \end{bmatrix} \right). \tag{3}$$

The term σ_0 is the error variance of the dependent variable, and Σ is the variance–covariance matrix of Z.[6] The appropriate rows and columns of Σ are set to zero for the elements of Z that are assumed to be measured without error (i.e., the fixed effects and the independent variables not calculated from the Current Population Survey). A consistent estimator of $\boldsymbol{\alpha}$ is

$$\vec{\boldsymbol{\alpha}} = (Z'Z - N\Sigma)^{-1} Z' \ln(y), \tag{4}$$

where N is the number of observations, and Σ is replaced by its estimate from the microdata. Deaton (1985) contains the relevant formula for Σ and for the standard errors of the estimates. As we shall see below, these corrections for bias due to sampling error typically had very large effects, in some cases more than doubling parameter estimates.[7]

IV. Poverty, Parental Employment, Family Structure, and Maltreatment

A. Main Results

The first question we address is whether reports of maltreatment are associated with the economic conditions of children's families. Regression results based on data from 1990 to 1996 are presented in table 1. We use these results to illustrate the importance of including state fixed effects and adjusting for bias due to sampling error.

The first column of table 1 reports parameter estimates from a regression that does not include state fixed effects (although year effects are included) and does not adjust for bias due to sampling error. These results indicate large and significant effects of socioeconomic factors on reports of maltreatment. The fractions of children who are black and from other non-

[6] In Deaton's example, the dependent variable is also an error-ridden sample mean computed across individuals in a cohort-year pair. In this case, the covariance between $\ln(y_{st})$ and Z_{st} in (3) will not equal zero, and the formula for bias adjustment given below in (4) must be altered to account for correlation in the sampling errors between the dependent and independent variables.

[7] The measurement error correction yields a consistent estimator regardless of the joint distribution of the Z variables. However, as a referee pointed out to us, the consistency of the standard errors relies on the joint normality of the Z variables: since most of the explanatory variables used in this analysis are fractions that lie between 0 and 1, they cannot literally be normally distributed. The accuracy of our standard errors depends on whether the joint distribution of the Z variables is approximately normal.

Table 1
Reports of Maltreatment, With and Without Fixed Effects and Bias Adjustment, 1990–96

	No State Fixed Effects or Bias Adjustment	State Fixed Effects, No Bias Adjustment	State Fixed Effects + Bias Adjustment
Fraction children urban	.012	−.099	−.129
	(.137)	(.060)	(.074)
Fraction children black	−.832*	.220	.471
	(.252)	(.294)	(.811)
Fraction children non-white and nonblack	−1.653*	−.445	−.656
	(.278)	(.398)	(.892)
Fraction with mother with less than a high school degree	2.062*	−.076	−.257
	(.567)	(.253)	(.595)
Unemployment rate	.007	.002	−.001
	(.021)	(.010)	(.011)
Mean ln(per capita income)	−.132	.082	.153
	(.251)	(.123)	(.237)
Fraction of children below .75(poverty line)	−.075	.569	1.092
	(.899)	(.323)	(.624)
Fraction of children with a working mom	1.689*	.141	.305
	(.441)	(.175)	(.389)
Fraction of children with an absent dad	1.507*	.410	.829
	(.643)	(.234)	(.498)
Fraction of children with a nonworking dad	2.013*	.802*	1.743*
	(.624)	(.276)	(.596)

NOTE.—The dependent variable is ln(reports). All models also include year dummies, ln(population), ln(population age < 18), fraction children age 3–4, fraction children age 5–13, and fraction children age 14–17. The sample has 318 observations. Standard errors are in parentheses.
* Statistically significant at the 5% level.

white (mostly Hispanic) ethnic backgrounds have negative effects on reports. These effects are large; they imply that an increase in the fraction of children who are black from 0.05 to 0.10 would reduce reports of child maltreatment by about 4.2%. There are also large, positive, and significant effects of the fraction of children living in families with working mothers (relative to those with nonworking mothers), and with absent fathers or unemployed fathers (relative to working fathers). An increase in the fraction of children with working mothers of 0.05 is estimated to produce an increase in reports of over 8%. Increase in the fraction of children with nonworking fathers and absent fathers have effects of similar magnitude. However, mean per capita income and the fraction of children in extreme poverty are not significantly related to reports. The unemployment rate in the state also has a small and insignificant effect on reports of maltreatment.

How does the inclusion of state fixed effects and bias adjustment affect the results? The results shown in the second column are from a model that includes state fixed effects but does not adjust for bias. Adding state fixed effects changes the results in several ways. First, the introduction of state fixed effects eliminates the negative effect of the fraction of children who are black on reports of maltreatment; although states with larger fractions of black children have fewer reports of maltreatment, within-state changes in the fraction of children who are black have positive but insignificant effects on reports. Second, the formerly large and significant effects of the fraction of children with working mothers and absent fathers vanishes with the introduction of state fixed effects, while the effects of nonworking fathers are greatly reduced (although the latter effect remains statistically significant).

The third column shows the results from a model that continues to include state fixed effects and also includes bias adjustments. Bias adjustment generally increases the coefficients (in absolute value), and in some cases these effects are large. For example, the coefficient on nonworking fathers more than doubles, from 0.8 to 1.7. The standard errors also increase, but the *t*-values are largely unchanged. Our results illustrate that cross-sectional and panel data can produce very different results. For example, the results of column (1) indicate that low maternal education is associated with more reports and high fractions of nonwhite children are associated with fewer reports. These results are not robust to the inclusion of state-level fixed effects.

In general, our results are only partially consistent with previous work on the determinants of reports of maltreatment. Previous research, based largely on small cross-sections of data on individual children, has concluded that children who are poor, have unemployed fathers, or live with single mothers are more likely than others to be reported to their states' child protective service agencies (see, e.g., Gil 1970; Hampton and Newburger 1985; Zellman 1992; Lindsey 1994). There is also evidence from community studies that children living in poor areas are more likely to be reported to CPS, as are children from communities with higher levels of unemployment or lone parenthood (see Garbarino 1976; Garbarino and Sherman 1980; Steinberg, Catalano, and Dooley 1981; Spearly and Lauderdale 1983; Ards 1989; Garbarino and Kostelny 1992; Coulton, Korbin, Su, and Chow 1995; Drake and Pandey 1996). Our results indicate that only some of these relationships in cross-sectional or community studies hold up in a national sample. When state fixed effects are not included, we do find that absent and nonworking fathers are positively related to reports but that there is no relationship between poverty and reports. When fixed effects are added (and the appropriate bias adjustment is made), the effect of absent fathers on reports vanishes.

Reports of maltreatment may be quite inaccurate measures of true mal-

treatment. Numbers of reports are subject to changes in public awareness of child maltreatment, as evidenced by large increases in reports following media coverage of specific maltreatment cases (see Waldfogel 1998, p. 2). Given that around 60% of reports are not substantiated, it is quite possible that socioeconomic factors that are not associated with reports may be associated with the number of substantiated victims of maltreatment. In table 2, we use the detailed NCCAN data on victims of maltreatment to trace through the effects of socioeconomic factors on reports, substantiation rates, and the number of victims of different types of maltreatment. We also examine the effects of socioeconomic factors on the numbers of children in foster care.[8] The removal of children to foster care may indicate severe maltreatment, although, as we discuss in more detail below, foster care also reflects a variety of other factors. This table shows results from regressions with a specification identical to that in the last column of table 1 (i.e., state fixed effects are included, and bias adjustments are made throughout.) In appendix table A2, we show results that include state fixed effects but do not use the bias adjustment. As for reports, the bias adjustment is responsible for often large increases in the coefficients and standard errors. However, in most cases, estimates that are significant with bias adjustment are also significant without bias adjustment.

The second column of table 2 indicates that several of the socioeconomic characteristics of families affect the substantiation rate, so that the effects of these variables on reports and substantiated victims differ. (Note that the marginal effect of any variable on the logarithm of victims must be equal to the sum of its effects on the logarithm of reports and the logarithm of the substantiation rate.) Increases in average per capita incomes and in the fraction of children in extreme poverty are positively related to the substantiation rate. That higher average incomes (holding the poverty rate fixed) result in higher substantiation rates may reflect the fact that states can afford to substantiate more cases during good economic times. State unemployment has no effect on the substantiation rate.

The third column shows effects of the various family characteristics on the total number of substantiated victims. The effect of poverty on victims is large; an increase in the fraction of children in extreme poverty from 0.10 to 0.15 increases victims by 21%. Increases in the fractions of children

[8] The number of children who entered foster care is, in principal, a better measure of current maltreatment than the number of children in foster care. However, information on the stock of children in foster care is available for a much larger number of states and years. For observations in which both measures are available, the correlation between the stock and the number of entrants is high (correlation coefficient of .89). Furthermore, when the smaller sample is used, results for foster-care entrants are similar to results for the stock of foster-care children, albeit with less precisely estimated coefficients.

Table 2
Reports and Victims of Maltreatment, With State Fixed Effects and Bias Adjustment, 1990–96

	ln(Reports) (1)	ln(Substantiation Rate) (2)	ln(Total Victims) (3)	ln(Physical Abuse) (4)	ln(Neglect) (5)	ln(Sexual Abuse) (6)	ln(Other Abuse) (7)	ln(Foster Care) (8)
Fraction children urban	−.129	−.138	−.268	−.136	−.028	−.302	−.625	−.131
	(.074)	(.127)	(.143)	(.152)	(.172)	(.155)	(.471)	(.135)
Fraction children black	.471	−.312	.159	1.247	−1.002	1.326	−.662	.387
	(.811)	(1.404)	(1.578)	(1.671)	(1.903)	(1.690)	(6.099)	(1.566)
Fraction children nonwhite and nonblack	−.656	−1.690	−2.346	−5.406*	−3.710	−.700	13.108*	−2.131
	(.892)	(1.547)	(1.737)	(1.856)	(2.099)	(1.929)	(6.092)	(1.557)
Fraction with mother with less than a high school degree	−.257	−1.054	−1.312	−1.705	−.211	−1.897	−5.343	−2.627*
	(.595)	(1.033)	(1.161)	(1.225)	(1.395)	(1.275)	(4.458)	(1.168)
Unemployment rate	−.001	−.002	−.003	−.067*	−.011	−.013	.160*	−.030
	(.011)	(.019)	(.021)	(.023)	(.026)	(.023)	(.069)	(.020)
Mean ln(per capita income)	.153	1.067*	1.221*	.821	.779	1.611*	2.824	−.326
	(.237)	(.413)	(.464)	(.489)	(.556)	(.503)	(1.597)	(.429)
Fraction of children below .75(poverty line)	1.092	3.059*	4.152*	2.597*	2.721	3.680*	7.716	.234
	(.624)	(1.085)	(1.225)	(1.285)	(1.462)	(1.340)	(4.247)	(1.161)
Fraction of children with a working mom	.305	−.376	.071	−.666	.678	−1.149	.390	−.399
	(.389)	(.674)	(.756)	(.802)	(.912)	(.848)	(2.271)	(.708)
Fraction of children with an absent dad	.829	1.344	2.173*	2.414*	1.790	1.964	12.912*	−.357
	(.498)	(.860)	(.970)	(1.023)	(1.167)	(1.049)	(3.434)	(1.077)
Fraction of children with a nonworking dad	1.743 *	.781	2.524*	2.410	2.039	1.213	6.988	2.264*
	(.596)	(1.015)	(1.151)	(1.215)	(1.381)	(1.240)	(3.908)	(1.133)
Mean ln(monthly foster care payment)								.401*
								(.122)

NOTE.—All dependent variables are in logarithms. All models also include year dummies, ln(population), ln(population age < 18), fraction children age 3–4, fraction children age 5–13, and fraction children age 14–17. The sample has 318 observation for cols. 1–5. Some states do not have separate categories for sexual abuse or "other," and in these cases the maltreatment measures are missing. There are 314 observations for sexual abuse, 284 for "other" abuse, and 314 for foster care. Standard errors are in parentheses.

* Statistically significant at the 5% level.

with absent and nonworking fathers are also associated with large and significant increases in the numbers of victims.

Columns 4–7 of table 2 classify victims into specific types of maltreatment. The general pattern—that increases in poverty, absent fathers, and unemployed fathers are associated with more maltreatment—is true for many of the individual types of maltreatment. However, there are some important differences. Absent fathers have larger effects on physical abuse than neglect. The greater impact of absent fathers on physical abuse could be due to a variety of factors: single mothers could be more likely to physically abuse their children, or children with single mothers could be more often left in the care of others who physically abuse them. We cannot distinguish between these alternative interpretations without breakdowns of the sex of perpetrators and their relationship to the victim by the type of maltreatment—information states do not include in their summary data reports to NCCAN. The largest effects of poverty, absent fathers, and unemployed fathers are for the rather uninformative category of "other" types of maltreatment. Since "other" includes, for many states, substance-exposed newborns, we examine below whether drug use in a state accounts for these results.

The most extreme cases of child maltreatment result in removal of children from their homes, usually to foster care. Approximately 5% of children reported as being maltreated and 14% of substantiated victims are removed to foster homes (Waldfogel 1998, p. 11). In column 8 of table 2, we examine whether the factors that influence child maltreatment have similar effects on the number of children in foster care. These results indicate that the effects of family characteristics on foster care differ markedly from their effects on the various measures of maltreatment. Neither poverty nor (with the exception of nonworking fathers) the family structure variables are significantly different from zero, possibly indicating that these variables are not associated with severe maltreatment. However, there are several other reasons why the results for foster care and the other maltreatment measures may differ. First, the placement of children into foster care requires the availability of host foster families, and the number of host families may be influenced by family structure within a state. The outcome we observe—numbers of children in foster care—reflects both the demand for and supply of foster families. The fact that the foster care payment level is positively and significantly related to the number of children in foster care indicates that these supply-side factors may be important.[9] Second, children

[9] The positive relationship between foster-care payment levels and children in foster care could also be driven by states increasing their foster-care payment levels (to attract more foster parents) when the number of children to place rises. Because of the possible endogeneity of the foster-care payment level, we estimated this equation without the payment level, with little effect on the other results.

are placed into foster care for a variety of reasons. Only about 50% of placements occur for protective service reasons; the remainder involve delinquency, a child's disability, parental incarceration, or other reasons (American Public Welfare Association 1996). These other types of placements may respond differently to socioeconomic factors than placements due to maltreatments.

It is likely that the statuses of fathers and mothers operate jointly to influence child maltreatment. For example, the effects of absent fathers may be different when mothers do or do not work. In table 3 we include measures of the fractions of children in each of five categories that represent different combinations of the mother's and father's status. The sixth and the omitted category is the fraction of children with working fathers and nonworking mothers. Using this more complete specification yields the following results.

First, the effects of extreme poverty on all types of maltreatment become larger. As might be expected, poverty has a larger effect on neglect than on physical abuse.

Second, the positive effects of higher shares of children living in an absent-father families on physical abuse and neglect are apparent when single mothers work but not when they stay at home. This finding is consistent with working single mothers being more neglectful or abusive, or with the children of working single mothers being left in inadequate care. The estimated effect of moving a single mother from nonwork to work is quite large. For example, the results imply that a shift of 1% of children from the category of "nonworking mother, absent father" to "working mother, absent father" is associated with an increase in substantiated cases of physical abuse of 5.7% and an increase in neglect of 7.8%.

Third, higher fractions of children with nonworking fathers and working mothers are not associated with more maltreatment of any type, although higher fractions of children with two unemployed parents have large effects on most types of maltreatment. To the extent that the fraction of children in extreme poverty and average per capita income do not adequately control for family income, this result could be due to the lower income of children with two nonworking parents. Alternatively, families with two nonworking parents could be subject to more stress that results in more maltreatment, or such families could have other problems (such as mental illness or substance abuse) that are related both to unemployment and maltreatment.

Fourth, the relationship between parental status and numbers of victims in the category "other" are quite different from the relationships for other types of victims. For example, greater fractions of children with absent fathers and nonworking mothers are associated with large increases in victims of "other" types of maltreatment.

Finally, the results for foster care continue to differ from those for the other measures of maltreatment. One striking result is that an increase in

Table 3
Reports and Victims of Maltreatment, 1990–96: Detailed Parental Status Variables

	ln(Reports) (1)	ln(Substantiation Rate) (2)	ln(Total Victims) (3)	ln(Physical Abuse) (4)	ln(Neglect) (5)	ln(Sexual Abuse) (6)	ln(Other Abuse) (7)	ln(Foster Care) (8)
Unemployment rate	−.002	.015	.012	−.048	.014	.001	.145	−.030
	(.012)	(.022)	(.025)	(.028)	(.030)	(.026)	(.087)	(.023)
Mean ln(per capita income)	.157	1.245*	1.401*	1.037	1.053	1.752*	2.641	−.287
	(.245)	(.459)	(.517)	(.565)	(.624)	(.540)	(1.655)	(.461)
Fraction of children below .75(poverty line)	1.344	4.092*	5.437*	4.278*	4.518*	3.595*	5.579	1.898
	(.727)	(1.366)	(1.555)	(1.697)	(1.862)	(1.597)	(4.890)	(1.490)
Fraction with a working mom and absent dad	1.289	2.618	3.907*	4.042*	5.086*	1.633	10.604*	.315
	(.780)	(1.440)	(1.641)	(1.800)	(2.004)	(1.795)	(5.081)	(1.366)
Fraction with nonworking mom and absent dad	.319	−1.323	−1.004	−1.684	−2.771	1.712	17.814*	−3.760
	(.878)	(1.663)	(1.870)	(2.087)	(2.294)	(1.902)	(5.625)	(2.335)
Fraction with working mom and nonworking dad	2.317*	−2.584	−.267	−1.422	−1.736	−2.642	9.079	2.113
	(1.047)	(1.962)	(2.175)	(2.420)	(2.674)	(2.285)	(10.709)	(2.320)
Fraction with nonworking mom and dad	1.245	3.884*	5.129*	5.225*	6.381*	4.964*	6.311	.766
	(.957)	(1.817)	(2.060)	(2.292)	(2.527)	(2.339)	(6.745)	(1.901)
Fraction with working mom and working dad	.042	−.639	−.597	−1.451	.063	−.441	1.558	−1.642*
	(.447)	(.829)	(.933)	(1.035)	(1.133)	(.975)	(2.353)	(.834)
Mean ln(monthly foster care payment)								.510 *
								(.149)

NOTE.—All dependent variables are in logarithms. All models also include year dummies, ln(population), ln(population age < 18), fraction children age 3–4, fraction children age 5–13, and fraction children age 14–17. The sample has 318 observation for cols. 1–5. Some states do not have separate categories for sexual abuse or "other," and in these cases the maltreatment measures are missing. There are 314 observations for sexual abuse, 284 for "other" abuse, and 314 for foster care. Standard errors are in parentheses. The omitted "family type" is nonworking mom and working dad.

* Statistically significant at the 5% level.

the fraction of children in families with two working parents (relative to families with a working father and nonworking mother) is associated with a significant decline in children in foster care. One possible reason for this negative relationship is that states with larger fractions of families in this category may have fewer host foster families available.

B. Extensions

The results discussed above provide evidence that family structure, parental work status, and poverty are related to maltreatment. In this section, we examine whether these results are robust to changes in functional form and to the addition of several time-varying state characteristics that may affect maltreatment.

Our first extension is to estimate the models shown in table 3, using rates of maltreatment instead of the logarithm of maltreatment. The results for the report rate, the substantiation rate, and the number of victims per child in the state are shown in columns 1–3 of table 4. Working with rates rather than logarithms will obviously produce coefficients that differ in size from those in table 3. However, the results indicate that the magnitudes of the effects of changes in poverty and family structure are fairly similar across the two different specification types. For example, the numbers in table 4 indicate that an increase in the fraction of children in extreme poverty of 0.05 will increase the victimization rate by 0.0086. If the victimization rate starts at its mean value of .018, this would represent an increase in victimization of 48%. The corresponding result in table 3 implies that an increase in extreme poverty of 0.05 will increase victimization by 27.2%. Similarly, the results in table 4 indicate that an increase of 0.05 in the fraction of children with working mothers and absent fathers (relative to the omitted category) would result in a 32% increase in victimization; the corresponding number in table 3 is 20%. Appendix table A3 shows estimates for the different types of maltreatment, measured in rates. For these results, it is also the case that the magnitudes and significance levels are similar to those in table 3.

Our second extension concerns adding controls for time-varying state-level variables that may affect maltreatment and are plausibly correlated with other variables included in our model. A particular concern is that attitudes toward "child friendly" policies may vary over time within states in ways that affect how strenuously maltreatment laws are enforced, and the amount of resources allocated to child protection. One possible way to handle this problem would be to control for measures of expenditure on or resources (such as caseworkers) allocated to child protective services. However, this strategy is problematic, for two reasons. First, no standardized cross-state data on CPS expenditures or numbers of caseworkers are available. Second, and more important, annual expenditures and num-

Table 4
Reports and Victims of Maltreatment, Variations and Extensions, 1990–96

	Reports/ Children (Mean = .042)	Substantiation Rate (Mean = .42)	Victims/ Children (Mean = .018)	ln(Reports)	ln(Substantiation Rate)	ln(Victims)	ln(Reports)	ln(Substantiation Rate)	ln(Victims)
Mean ln(per capita income)	.004	.773*	.036*	.133	1.312*	1.445*	.118	1.017	1.135
	(.010)	(.241)	(.014)	(.246)	(.483)	(.539)	(.308)	(.581)	(.632)
Fraction of children below .75(poverty line)	.046	2.807*	.172*	1.258	4.452*	5.710*	1.222	4.598*	5.819*
	(.030)	(.725)	(.043)	(.748)	(1.486)	(1.677)	(.911)	(1.748)	(1.918)
Fraction with a working mom and absent dad	.056	1.781*	.115*	1.133	3.177*	4.310*	1.165	2.142	3.306
	(.033)	(.762)	(.046)	(.823)	(1.607)	(1.816)	(.958)	(1.763)	(1.951)
Fraction with nonworking mom and absent dad	.014	−1.071	−.062	.338	−1.555	−1.217	.906	−2.037	−1.131
	(.037)	(.871)	(.052)	(.903)	(1.805)	(2.009)	(1.434)	(2.765)	(2.964)
Fraction with working mom and nonworking dad	.080	.133	.086	2.412*	−3.092	−.680	3.468	−3.004	.464
	(.044)	(1.007)	(.060)	(1.085)	(2.146)	(2.350)	(1.895)	(3.530)	(3.756)
Fraction with nonworking mom and dad	.061	2.083*	.152*	1.129	4.342*	5.472*	.580	2.345	2.925
	(.040)	(.946)	(.057)	(.984)	(1.973)	(2.216)	(1.353)	(2.609)	(2.837)

Fraction with working mom and working dad	−.006	−.300	−.007	.029	−.648	−.620	.159	−1.402	−1.243
	(.019)	(.434)	(.026)	(.447)	(.866)	(.967)	(.569)	(1.079)	(1.178)
Fraction of state house that is female				−.131	−.135	−.266	−.293	−.340	−.633
				(.328)	(.630)	(.704)	(.363)	(.681)	(.746)
Fraction of state senate that is female				−.289	1.299	1.010	−.182	1.247	1.065
				(.338)	(.671)	(.750)	(.383)	(.741)	(.806)
ln(adult female cocaine possession arrests)							.040	.046	.086
							(.040)	(.074)	(.081)
ln(adult male cocaine possession arrests)							−.048	−.046	−.094
							(.041)	(.077)	(.084)

NOTE.—All estimates include state fixed effects and are bias adjusted. The models also include all variables listed in table 3 (including the unemployment rate). The sample size is 318 for the first six columns and 274 for the last three columns. Standard errors are in parentheses. The omitted "family type" is nonworking mom and working dad. The dependent variables in the first three columns are total reports divided by number of children living in the state (where "reports" is measured on a per child rather than a per family basis), the substantiation rate, and total number of victims divided by the number of children living in the state. In the last six columns the dependent variables are in logarithms, i.e., ln(reports), ln(substantiation rate), and ln(victims).

* Statistically significant at the 5% level.

bers of caseworkers may well be affected by the current amount of maltreatment in the state, in which case these are not appropriate explanatory variables.

An alternative strategy is to control for political characteristics of the state that reflect how "child friendly" the state is likely to be. In an analysis of child support enforcement, Case (1998) provides convincing evidence that the gender composition of state legislatures affects the strength of child support enforcement policies. Specifically, Case finds that increases in the number of women in the state senate and house are positively related to the state having a variety of child support policies in place. These results are in line with the idea that female legislators devote more time and energy to child and family issues and that when voters care more about these issues they may be more likely to elect females. If female legislators are more "child-friendly," it is possible that having more of them would result in stronger laws against maltreatment or more resources devoted to detecting child maltreatment and enforcing laws, which would increase reports, substantiation rates, and numbers of victims.[10]

The second three columns of table 4 show estimates of models that include controls for the fraction of the state house and senate that is female. We find some evidence that female legislators affect maltreatment. The fraction of the senate that is female is positively related to the substantiation rate, although this effect is only marginally significant ($t = 1.94$). In addition, the results in appendix table A4 (which show results for the detailed types of maltreatment) indicate that female senators are positively related to physical abuse. These results are somewhat at odds with those of Case (1998), who finds that females in the house typically have stronger effects on child support enforcement than do females in the senate. However, including these political variables does not alter our earlier results. We still find that poverty, working single mothers, and unemployed parents are significantly related to the number of victims of maltreatment.

Another important determinant of maltreatment may be drug use, which also varies across states and over time. Recent increases in maltreatment (particularly in the late 1980s but also to a lesser extent in the early 1990s) have often been attributed to drug use, and in particular to the rise in the use of crack cocaine. In many states, newborns found to be exposed to cocaine are automatically counted as substantiated victims of child maltreatment (and usually classified in the category "other"). Parental drug use may also result in worse parenting of older children. Furthermore, it may be that some of the family characteristics we are

[10] It is also possible that female legislators could act to increase the resources devoted to prevention of maltreatment, which could result in lower maltreatment levels.

interested in are correlated with drug use, and it is useful to examine whether controlling for drug use changes our previous results. Ideally, we would include controls for the fraction of children whose parents use illegal drugs, or even better, for the prices of illegal drugs, but this information is difficult to obtain.[11] Instead, we include measures of the logarithm of the numbers of adult men and adult women who were arrested and charged with cocaine possession. (We also experimented with controlling for arrests for possession of any type of drugs, with similar results.)

The last three columns of table 4 provide only weak support for the hypothesis of a link between cocaine use and maltreatment. Female and male arrests for cocaine possession do not have significant effects on the number of reports or the number of victims. Appendix table A5, which shows results for the detailed types of maltreatment, indicates that cocaine arrests are only related to "other" forms of maltreatment. Specifically, more female arrests result in greater number of maltreatment victims classified as "other," and more male arrests result in smaller numbers of "other" victims. The fact that female cocaine arrests are positively related to "other" forms of maltreatment makes sense, given the often mechanical link between substance exposure for newborns and substantiation for "other" maltreatment. The negative link between male cocaine arrests and "other" maltreatment is less easily explained. One possible explanation, that arrests of males remove potential abusers from households, is inconsistent with there being no negative effect of male arrests on victims in other maltreatment categories in which males are often perpetrators (such as sexual or physical abuse.)

Appendix A5 also shows estimates of models that do not include state fixed effects. When state fixed effects are not included, there is a positive and significant relationship between arrests for female cocaine possession and all types of maltreatment except for sexual abuse and foster care. Male cocaine arrests have negative and significant effects on neglect and "other" abuse. However, most of these results are not robust to the inclusion of state fixed effects. The change in results when state fixed effects are included could be due to several factors. It is possible that a state's number of arrests for female cocaine possession is related to (fixed) state characteristics that are positively related to maltreatment. Under this interpretation, the positive relationship between female cocaine use and maltreatment when fixed effects are not included is spurious and, contrary to common belief, cocaine actually has no effect on physical abuse, sexual abuse, or neglect. However, it is also possible that the number of female

[11] Markowitz and Grossman (1998) present evidence that states that have lower alcohol prices have greater rates of physical child abuse, and, with prices of illegal drugs, a similar analysis could be conducted here.

cocaine arrests is a noisy measure of true maternal cocaine use and adding state fixed effects may exacerbate attenuation bias due to measurement error. In either case, however, controlling for cocaine arrests does not account for the large effects of nonworking mothers and absent fathers, and two nonworking parents, on "other" types of maltreatment.[12]

V. Welfare, Welfare Reform, and Child Maltreatment

In this section, we examine how the structure and generosity of states' welfare systems influenced child maltreatment from 1990 to 1996, a period that included far-reaching welfare reforms that many child welfare analysts thought might also affect child maltreatment (see, e.g., Besharov 1997; Courtney 1997; Waldfogel 1998). Given the profile of families who are most likely to come to the attention of CPS—poor, single parent, or two-parent with an unemployed father—it is perhaps not surprising that there is a great deal of overlap between families who are on welfare and families who are involved with the child welfare system. About half of families referred to CPS are receiving welfare at the time of the referral, and more than half have received welfare in the past (American Association for the Protection of Children 1987; Lindsey 1994; Pelton 1994). The share of foster children who come from families on welfare is high as well. A study in Illinois found that about 40% of children placed into foster care came from families that were on welfare at the time of the placement, with a further 20% from families that had been on welfare recently, a much higher share than might be expected given that only about 15% of children in Illinois lived in families that were receiving welfare (Shook 1998). At any moment in time, though, the percentage of families on welfare who are referred to CPS or have children placed into foster care is much lower. A Chicago study, for instance, found that only 4% of families on welfare became involved with the child welfare system over a 16-month period, with an additional 24% having been involved with child welfare in the past (Shook 1999).

How should the size and structure of welfare programs affect child maltreatment? We first consider the effects of decreases in a state's benefit level. Holding family structure and parental employment status fixed, decreases in a state's welfare benefits should increase poverty among children—and our previous results indicate that increases in poverty increase maltreatment. However, the generosity of welfare benefits may also affect the labor supply decisions of parents (and, hence, the incomes of children's families), change the fractions of children whose parents do and do not

[12] It should be noted that the sample size drops substantially when the cocaine measures are added because the data are not available for all states in all years. This decline in sample size results in less precise estimates whether or not the controls for cocaine arrests are included.

work, and alter the decisions of parents to live with or without a partner. The effects of changes in benefits on maltreatment will depend on how large the different incentive effects are, something that is the topic of a great deal of research. A summary by Hoynes (1996) concludes that the welfare system in the United States has produced modest work disincentives, accounting for about half of the difference in work effort between recipients and nonrecipients of welfare, but has had very small effect on family structure and fertility decisions (see also Moffitt [1998] on this latter point). However, even if the only effects of changes in benefit levels are to change work incentives, the predicted effects of changes in benefits on maltreatment (given our previous results) is still ambiguous. Lower benefits will decrease the incomes of those already on welfare, but they could result in higher incomes for families whose work effort increases in response to the decrease in generosity. The net result could be an increase or decrease in the fractions of children in poverty. Lower benefits may move single mothers into employment (predicted to increase maltreatment, holding income constant) but may also result in fewer children with two nonworking parents (predicted to decrease maltreatment.)

Changes in eligibility rules for welfare may also affect maltreatment. The effects of changes in eligibility are of special interest given the recent reforms in the U.S. welfare system. At the federal level, the passage of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) in 1996 imposed a 5-year lifetime time limit on families' eligibility for federally funded cash assistance, replacing the previously open-ended Aid to Families with Dependent Children program (AFDC) with the tellingly named Temporary Assistance to Needy Families program (TANF). The federal law also required many single mothers to work as a condition of receiving welfare. Reforms at the state level, which in many instances preceded the federal reforms in 1996, may impose even shorter time limits and tighter work requirements, and families who do not comply with work or other program requirements may be "sanctioned," that is, may lose all or part of their cash benefits.[13] Waivers that have the effect of forcing people off of AFDC and into employment could, in principle, increase or reduce maltreatment. Depending on what jobs former welfare recipients find, incomes could rise or fall. In addition, we might expect to find positive effects for a child if the mother was happy with her job and had a more stable source of income and a more extensive social network. However, there might also be negative effects

[13] States were allowed to implement reforms prior to the passage of the new federal law if they obtained a "waiver" from the federal government. In 1992, six states had obtained one or more waivers related to work requirements, time limits, work incentives, or child support enforcement; by 1996, all but six had (Ziliak et al. 1997).

if the mother was stressed by her job, had more difficulty making ends meet due to work expenses, and had less energy available for the child at the end of the day. The effect on the child would also depend on the quality and stability of the setting where the child was cared for while the mother was at work.

There is some evidence that work requirements and time limits adopted between 1992 and 1996, prior to the PRWORA, have had effects on women's employment. Recent work by Moffitt (1999) indicates that states that adopted stricter work requirements and time limits also experienced increases in the labor supply of women, especially those with low levels of education. However, these results should be treated with some caution: in work on the effects of waivers on AFDC caseloads, Blank (1997) presents evidence that the adoption of waivers was correlated with other (unobserved) factors that affected caseloads. For example, caseloads appear to decline prior to the implementation of waivers. Although we control for waiver adoption in the results that follow, a persuasive analysis of the effects of waivers on maltreatment will require a long span of data from the post-PRWORA period.

To analyze the relationship between welfare and maltreatment, we combined state-level information on maltreatment up to 1996 with information on welfare benefit levels (we use the logarithm of the maximum welfare benefit including cash and Food Stamps for a family of four) and with information on whether the state had received any type of waiver allowing it to impose stronger work requirements, work incentives, or time limits for the receipt of AFDC in the years prior to 1996.

How have the characteristics of states' welfare systems affected maltreatment? Table 5 shows regressions of the logarithm of reports, victims (by type of maltreatment), and children in foster care on the welfare benefit level and whether the state had one of the three different types of waivers, plus state effects, year effects, and other controls listed in the footnote to the table. We show results with and without the female legislative variables.[14] The waiver measure is lagged 1 year on the theory that behavioral responses to these recent changes in the welfare system take time to occur. The major result is that welfare benefit levels are negatively related to foster care, although not to other measures of maltreatment.[15] The effect of welfare benefit levels on foster care is large and significant. A 10% increase in the maximum welfare benefit for a family of four is predicted to reduce foster care by 24%. The negative relationship between

[14] We also estimated models that included a measure of male and female cocaine arrests, with very similar results despite the decline in sample size.

[15] In any earlier version of this article, we reported that the welfare benefit level was negatively related to child neglect. However, this result was due to errors in NCCAN's published maltreatment data for California for some years. We thank Lisa Sanbonmatsu for informing us of these data errors.

Table 5
Welfare Benefits, Waivers, and Maltreatment, 1990–96

	ln(Reports)	ln(Total Victims)	ln(Physical Abuse)	ln(Neglect)	ln(Foster Care)
A. No female legislative variables included:					
ln(welfare benefit level)	.621	.621	.779	−.507	−2.400*
	(.426)	(.823)	(.865)	(.998)	(.641)
Waiver indicator: work requirement	.037	−.091	−.124*	−.063	−.144*
	(.026)	(.050)	(.053)	(.061)	(.045)
Waiver indicator: time limit	−.057	.141*	.098	.169*	.101
	(.033)	(.063)	(.066)	(.076)	(.056)
Waiver indicator: work incentive	.027	−.149*	−.096	−.203*	.078
	(.028)	(.055)	(.057)	(.066)	(.048)
B. Female legislative variables included:					
ln(welfare benefit level)	.578	.592	.800	−.408	−2.285*
	(.427)	(.828)	(.871)	(1.004)	(.637)
Waiver indicator: work requirement	.037	−.091	−.123*	−.064	−.143*
	(.026)	(.050)	(.053)	(.061)	(.044)
Waiver indicator: time limit	−.055	.142*	.095	.180*	.108
	(.033)	(.063)	(.066)	(.077)	(.055)
Waiver indicator: work incentive	.031	−.146*	−.098	−.210*	.069
	(.028)	(.055)	(.058)	(.067)	(.048)

NOTE.—All dependent variables are in logarithms. Results in panel A are from equations that include state and year effects; controls for ln(population); ln(number of kids); fractions of children in age categories 2–4, 5–13, and 14–17; fraction of children urban, black, and other nonwhite race; fraction of children whose mother has no high school diploma; the state unemployment rate; and (for foster care only) the logarithm of the mean monthly foster care payment. Results in panel B are from equations that include controls for female legislative variables, in addition to the other controls listed above. The variable ln(welfare) is the logarithm of maximum welfare benefits for a family of four, measured in the year in which maltreatment is measured. The waiver indicators equal 1 if the state had a waiver in place of the type specified in the year before maltreatment is measured, 0 otherwise. Standard errors are in parentheses.
* Statistically significant at the 5% level.

welfare benefit levels and foster care is consistent with studies by Brandon (2000) and Brandon and Fisher (2001), using the SIPP, that find that children living in states with low welfare benefits are more likely to be living away from their parents.

There are several possible interpretations for the negative relationship between welfare benefit levels and foster care. Lower benefit levels may in fact increase severe maltreatment, through the income and labor supply effects discussed above. However, it is also possible that foster care serves as a substitute for welfare. Foster care is often provided by relatives of the child, and in fact states are currently required to give priority to placement with relatives. These relatives are eligible to receive payments as foster families that may exceed the welfare benefits the mother could have qualified for had she retained the child in her own care, providing

families in states with low welfare benefits with incentives to place children in foster care in relatives' homes. Low welfare benefit levels may, therefore, result in fewer absent father–working mother families and more children in foster care. These two mechanisms have quite different implications for the effects of welfare benefit levels on the well-being of children, and distinguishing between them is an important priority for future work.

The results for the waiver variables indicate that different types of reforms may have different effects on maltreatment. Waivers that allowed states to implement work incentives are associated with a 15% decline in the total number of victims and a 20% decline in victims of neglect. This result makes sense given that work incentives often raise families' incomes by allowing them to keep more of their benefits in spite of increased earnings. In contrast, waivers that allowed states to impose time limits are associated with increased maltreatment—a 14% increase in total victims and a 17% increase in victims of neglect. This result also makes sense if families that face time limits are more likely to move into deep poverty, which our earlier results would predict would be associated with increased maltreatment and particularly neglect. Waivers that allowed states to impose work requirements are associated with a 12% decline in physical abuse and a 14% decline in foster care. The association between work-requirement waivers and reduced physical abuse is somewhat surprising, given that work requirements might be expected to be related to increases in the number of working mothers in absent-father families, which, based on our previous analysis, should have worsened this type of abuse. However, it is important to keep in mind that there are several possible interpretations for this result and for the other waiver results. One explanation is that states that introduced particular types of waivers did in fact experience declines in some forms of maltreatment. For example, the introduction of work-requirement waivers could have coincided with more assessment or treatment services, or more attentive or active caseworkers, that caused maltreatment to fall. Or waivers that imposed work requirements might have discouraged unrelated men from spending time in the household, thus lowering the risk of physical abuse by those men. An alternative and less optimistic explanation is that the introduction of some types of waivers made it more likely for some types of maltreatment to go undetected. This could be the case if children whose families left welfare because of work requirements had less contact with caseworkers or medical professionals, who are among the most "reliable" of maltreatment reporters. Given the data that are available, it is not possible to distinguish between these explanations. In addition, the results on waivers must be viewed with caution because of their potential endogeneity. As discussed earlier, prior research has found that waivers were correlated with (unobserved) factors within states that were also correlated with outcomes such as single mothers' family formation and employment de-

cisions. These unobserved factors that prompted the early adoption of waivers may also be correlated with maltreatment outcomes. Until we have data for more years in which waivers have been in effect, we cannot place much faith in the estimated effects of waivers on maltreatment.

VI. Conclusion

Using state-level panel data, we find that socioeconomic circumstances, in particular income, parental work status, and single parenthood, affect the incidence of child maltreatment. Increases in the fraction of children living below 75% of the poverty line are associated with higher rates of child maltreatment, as are higher shares of children with absent fathers, especially those with absent fathers and working mothers, and higher shares of children with nonworking fathers.

We also find that declines in welfare benefits are associated with higher rates of foster care. This result is particularly troubling in light of the recent reforms in the U.S. welfare system. The TANF provisions in many states call for reductions in benefit levels for recipients who do not work or who fail to meet other program requirements. Our results suggest that the children of mothers who receive these cuts will be at a heightened risk of foster care.

Whether the time limits and other programmatic changes of welfare reform will increase or reduce maltreatment is still unknown. Although we present some preliminary results on the reforms adopted by the states through waivers, it is simply too soon to tell what their effect, and the effect of the federal reforms, will be. The children of women who manage to find good jobs and high-quality child care may see improvements. Yet, our result that, holding income fixed, the children of single mothers who work are at greater risk of maltreatment than those who do not suggests that moving women off of welfare rolls into jobs that do not pay more than welfare could harm children.

Appendix

Data Summary and Supplemental Tables

Table A1
Data Summary

	Sample Mean	Standard Deviation
Observations (state/years)	318	
Child maltreatment (from NCCAN):		
Children reported/1,000 children	42.1	13.4
Substantiation rate	.42	.18
Cases of physical abuse/1.000 children	3.8	2.3
Cases of neglect/1,000 children	9.0	9.1
Cases of sexual abuse/1,000 children	2.2	1.4
Other types of abuse/1,000 children	3.0	3.9
Children in foster care/1,000 children	5.9	3.1
Characteristics of children (from CPS):		
Fraction of children with working mother	.64	.07
Fraction of children with absent father	.19	.07
Fraction of children with nonworking father	.10	.04
Fraction of children with working mother, absent father	.11	.04
Fraction of children with nonworking mother, absent father	.08	.04
Fraction of children with working mother, nonworking father	.05	.02
Fraction of children with nonworking mother, nonworking father	.05	.03
Fraction of children with working mother and father	.48	.08
Fraction of children age 3–4	.11	.01
Fraction of children age 5–13	.50	.01
Fraction of children age 14–17	.21	.01
Fraction of children urban	.51	.29
Fraction of children black	.13	.14
Fraction of children nonwhite/nonblack	.05	.09
Logarithm of per capita family income	8.9	.19
Fraction of children below 75% of poverty line	.13	.06
Fraction of children with mother with no high school diploma	.13	.06
Other state characteristics:		
State unemployment rate	5.81	1.41
Logarithm of monthly foster care payment	5.82	.24
Logarithm of female cocaine arrests	5.46	1.94
Logarithm of male cocaine arrests	6.90	1.99
Fraction of state house that is female	.17	.09
Fraction of state senate that is female	.13	.08

SOURCES.—Source for National Center on Child Abuse and Neglect (NCCAN) data: U.S. Department of Health and Human Services, National Center on Child Abuse and Neglect, various years. Source for Current Population Survey (CPS) data: U.S. Department of Commerce, Bureau of the Census, various years.

NOTE.—For most states and years, reports are given as the number of families reported for abuse. This was converted to reports per child by assuming 1.6 reported children per reported family (1.6 is the average reported children per reported family in states that provide the information both ways). Sexual abuse, "other" abuse, and foster care have missing values for some states in some years, and means for these variables are computed over nonmissing values. There are 314 observations for sexual abuse, 284 for "other" abuse, and 314 for foster care.

Table A2
Reports and Victims of Maltreatment, with State Fixed Effects but without Bias Adjustment, 1990–96

	ln(Reports)	ln(Substantiation Rate)	ln(Total Victims)	ln(Physical Abuse)	ln(Neglect)	ln(Sexual Abuse)	ln(Other Abuse)	ln(Foster Care)
Fraction of children urban	−.099	−.106	−.205	−.056	−.027	−.217	−.418	−.029
	(.060)	(.104)	(.115)	(.120)	(.142)	(.126)	(.319)	(.108)
Fraction of children black	.220	−.301	−.081	.514	−.493	.388	−1.138	−.054
	(.294)	(.516)	(.569)	(.594)	(.700)	(.620)	(1.631)	(.520)
Fraction of children nonwhite and nonblack	−.445	−.957	−1.402	−2.882*	−2.129*	−.426	4.824*	−.813
	(.398)	(.699)	(.771)	(.805)	(.950)	(.845)	(2.213)	(.694)
Fraction with mother with less than a high school degree	−.076	−.504	−.580	−.563	−.141	−.742	−2.765*	−1.222*
	(.253)	(.444)	(.489)	(.511)	(.603)	(.539)	(1.401)	(.450)
Mean unemployment rate	.002	.000	.002	.065*	−.005	−.015	.151*	−.031
	(.010)	(.017)	(.019)	(.019)	(.023)	(.020)	(.051)	(.017)
Mean ln(per capita income)	.082	.605*	.687*	.445	.494	.875*	1.272	−.173
	(.123)	(.216)	(.238)	(.249)	(.293)	(.260)	(.682)	(.217)
Fraction of children below .75(poverty line)	.569	1.741*	2.310*	1.402*	1.660*	1.907*	2.718	.210
	(.323)	(.568)	(.626)	(.654)	(.771)	(.687)	(1.810)	(.581)
Fraction of children with a working mom	.141	−.095	.045	−.204	.480	−.556	−.317	−.080
	(.175)	(.306)	(.338)	(.353)	(.416)	(.372)	(.939)	(.310)
Fraction of children with an absent dad	.410	.731	1.141*	1.376*	.891	1.164*	5.668*	−.197
	(.234)	(.411)	(.453)	(.473)	(.558)	(.496)	(1.315)	(.438)
Fraction of children with a nonworking dad	.802*	.353	1.154*	1.048	.909	.601	3.112*	1.119*
	(.276)	(.485)	(.535)	(.559)	(.659)	(.586)	(1.506)	(.493)
Mean ln(monthly foster care payment)								.374*
								(.116)

NOTE.—All dependent variables are in logarithms. All models also include year dummies, ln(population), ln(population age less than 18), fraction children age 3–4, fraction children age 5–13, and fraction children age 14–17. The sample has 318 observation for cols. 1–5. Some states do not have separate categories for sexual abuse or "other," and in these cases the maltreatment measures are missing. There are 314 observations for sexual abuse, 284 for "other" abuse, and 314 for foster care. Standard errors are in parentheses.

* Statistically significant at the 5% level.

Table A3
Estimates of Models with Dependent Variables in Rates rather than Logarithms

	Victims of Physical Abuse/Children (Mean = .0038)	Victims of Neglect/ Children (Mean = .0090)	Victims of Sexual Abuse/Children (Mean = .0022)	Victims of Other Abuse/Children (Mean = .0030)	Children in Foster Care/Children (Mean = .0059)
Mean ln(per capita income)	.005	.021	.004*	.017*	−.000
	(.002)	(.011)	(.001)	(.006)	(.003)
Fraction of children below .75(poverty line)	.019*	.125*	.007*	.027	.011
	(.008)	(.034)	(.004)	(.016)	(.008)
Fraction with working mom and absent dad	.018*	.091*	.007	.023	.011
	(.008)	(.036)	(.004)	(.016)	(.007)
Fraction with nonworking mom and absent dad	−.010	−.081*	−.000	.021	−.019
	(.009)	(.041)	(.004)	(.018)	(.013)
Fraction with working mom and nonworking dad	−.000	.052	−.007	−.017	.007
	(.011)	(.047)	(.005)	(.034)	(.012)
Fraction with nonworking mom and nonworking dad	.025*	.117*	.013*	.026	.007
	(.010)	(.045)	(.005)	(.022)	(.010)
Fraction with working mom and working dad	−.007	.005	−.001	.007	−.006
	(.005)	(.020)	(.002)	(.007)	(.004)
Mean ln(monthly foster care payment)					.003*
					(.001)

NOTE.—Models correspond to cols. 1–3 of table 4. The sample has 318 observation for cols. 1–2, 314 observations for sexual abuse, 284 for "other" abuse, and 314 for foster care. Year effects, state effects, and all variables in table 1 regressions are included. Standard errors are in parentheses.

* Statistically significant at the 5% level.

Table A4
Female Legislators and Child Maltreatment

	ln(Physical Abuse)	ln(Neglect)	ln(Sexual Abuse)	ln(Other Abuse)	Foster Care
Fraction state house female	−.135	.787	−.844	−2.201	.822
	(.787)	(.845)	(.731)	(1.829)	(.586)
Fraction of state senate female	1.620	.815	1.508	−3.672	−.020
	(.846)	(.895)	(.799)	(2.238)	(.602)
Mean ln(per capita income)	1.123	1.142	1.790*	2.335	−.237
	(.599)	(.642)	(.569)	(1.695)	(.463)
Fraction of children below .75(poverty line)	4.727*	4.776*	3.997*	5.212	1.976
	(1.863)	(1.973)	(1.739)	(4.914)	(1.520)
Fraction with working mom and absent dad	4.745*	5.604*	2.220	8.507	.460
	(2.030)	(2.189)	(2.028)	(5.348)	(1.410)
Fraction with nonworking mom and absent dad	−1.967	−2.740	1.295	17.978*	−3.632
	(2.285)	(2.419)	(2.061)	(5.856)	(2.335)
Fraction with working mom and nonworking dad	−2.052	−1.958	−3.279	11.536	2.194
	(2.668)	(2.846)	(2.490)	(11.780)	(2.388)
Fraction with nonworking mom and nonworking dad	5.799*	6.739*	5.530*	4.334	.848
	(2.513)	(2.678)	(2.571)	(7.227)	(1.908)
Fraction with working mom and working dad	−1.459	.142	−.500	1.269	−1.551
	(1.088)	(1.157)	(1.015)	(2.378)	(.832)
Mean ln(monthly foster care payment)					.509*
					(.144)

NOTE.—All dependent variables are in logarithms. Models correspond to cols. 4–6 of table 4. The sample has 318 observation for cols. 1–2, 314 observations for sexual abuse, 284 for "other" abuse, and 314 for foster care. Year and state effects and all variables in table 1 regressions are included. Standard errors are in parentheses.

* Statistically significant at the 5% level.

Table A5
Cocaine Arrests and Child Maltreatment

	ln(Physical Abuse)		ln(Neglect)		ln(Sexual Abuse)		ln(Other)		ln(Foster Care)	
	No FE	FE	No FE	FE	No FE	FE	No FE	FE	No FE	FE
Fraction of state house female	−.594	−.206	.900	1.568	1.270*	−1.334	1.392	−3.655	1.194*	1.165
	(.597)	(.778)	(.909)	(1.209)	(.602)	(.688)	(1.659)	(2.264)	(.446)	(.668)
Fraction of state senate female	.125	1.417	1.348	1.719	.544	1.244	4.974*	−4.492	−.256	.291
	(.629)	(.853)	(.957)	(1.323)	(.638)	(.769)	(1.774)	(2.680)	(.469)	(.696)
ln(adult female cocaine possession arrests)	.327*	.098	.636*	.074	−.218	.005	1.194*	.578*	−.061	−.019
	(.134)	(.085)	(.204)	(.132)	(.136)	(.073)	(.367)	(.266)	(.099)	(.073)
ln(adult male cocaine possession arrests)	−.236	−.145	−.481*	−.184	.241	.051	−.925*	−.592*	.016	−.026
	(.140)	(.089)	(.213)	(.137)	(.145)	(.080)	(.380)	(.264)	(.104)	(.076)
Mean ln(per capita income)	.077	.551	1.319	1.993	−1.144*	.980	−4.660*	2.389	.375	−.355
	(.597)	(.664)	(.909)	(1.045)	(.580)	(.550)	(1.584)	(2.209)	(.441)	(.574)
Fraction of children below .75(poverty line)	1.115	3.841	8.621*	8.595*	−5.022	3.712*	4.323	10.546	−2.609	1.839
	(2.735)	(1.997)	(4.170)	(3.155)	(2.556)	(1.558)	(7.308)	(6.615)	(2.045)	(1.742)
Fraction with a working mom and absent dad	5.497*	3.254	10.553*	4.600	7.594*	1.030	−6.009	7.795	.825	−.405
	(2.458)	(2.054)	(3.746)	(3.143)	(2.636)	(1.892)	(6.921)	(6.741)	(1.815)	(1.745)
Fraction nonworking mom and absent dad	5.401*	−1.207	3.402	−8.929	1.498	1.433	3.067	19.525*	7.651*	−5.508
	(2.620)	(3.164)	(3.987)	(5.165)	(2.500)	(1.932)	(6.725)	(7.155)	(2.153)	(3.082)
Fraction working mom and nonworking dad	5.495*	.109	8.760	−6.478	1.839	−2.266	16.378	22.496	1.341	.322
	(3.114)	(3.998)	(4.739)	(6.478)	(3.017)	(2.715)	(8.622)	(16.920)	(2.346)	(3.608)
Fraction nonworking mom and dad	8.371*	3.411	10.076*	5.670	8.057*	4.453	−3.068	.337	4.014	2.525
	(2.826)	(3.045)	(4.298)	(4.795)	(2.857)	(2.813)	(7.879)	(10.126)	(2.094)	(2.654)
Fraction with working mom and working dad	2.853*	−1.896	5.782*	−1.058	1.303	−.098	−2.343	.394	1.042	−1.569
	(1.202)	(1.256)	(1.830)	(1.903)	(1.198)	(1.084)	(3.306)	(3.347)	(.898)	(1.080)
Mean ln(monthly foster care payment)									.039	.575*
									(.138)	(.185)

NOTE.—All dependent variables are in logarithms. Models correspond to cols. 7–9 of table 4. The sample has 274 observations for physical abuse, neglect, and sexual abuse; 247 for "other" abuse; and 274 for foster care. Year effects and all variables in table 1 regressions are included. FE = fixed effects. Standard errors are in parentheses.

* Statistically significant at the 5% level.

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