The Effects of Expanded Public Funding for Early Education and Child Care on

Preschool Enrollment in the 1990s

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Abstract: Although the share of all 3- and 4-year old children enrolled in preschool has grown steadily in recent decades, gaps in enrollment have persisted between children from low- and high-income families. Steady growth in public funding for compensatory preschool education and means-tested child care assistance during this period had the potential to close these gaps by increasing the availability of free or low-cost arrangements. Merging repeated cross sectional data on preschool attendance from the October Current Population Survey with data on state-level funding, we find that increases in public funding explain as much as half of the rise in low-income young children's preschool attendance during the 1990s, amounting to 8 to 11 percentage points. We conclude that in the absence of public investments, the gaps in preschool enrollment between low- and high-income families would have widened.
Key words: Early Education, Head Start, Child Care Subsidies

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INTRODUCTION

The share of children participating in nonparental care or education during their preschool years has grown substantially in recent years, and the majority of young children now attend an early education program before they enter formal schooling. Estimates from the National Household Educational Survey (NHES) suggest that the share of 3-to 5 year olds attending preschool was about 56% in 2002. However, children in low-income families are less likely than their higher income counterparts to be in center-based arrangements (Meyers et al., 2004). In 2002, NHES estimates suggest that the gap between poor and non-poor children's preschool attendance was 11 percentage points (Forum on Child and Family Statistics, 2004).

Children's cognitive abilities are also very unequal by the time they start school. Baseline data from the Early Childhood Longitudinal Survey, Kindergarten Class of 1998-99, for example, indicate that low-income children score lower than higher-income children on all four measured dimensions of school readiness – cognitive skills and knowledge, social skills, physical health and well-being, and approaches to learning (Lee and Burkham, 2002; West, Denton, and Germino-Hausken, 2000). These early disparities in academic outcomes are likely to persist into later childhood and adolescence (Caneiro and Heckman, 2003).

Although sorting out the causes of educational disparities is complex, research suggests that differential exposure to high quality early education may be one contributing factor. A large body of evidence demonstrates that children who attend an

early education program enter school with better academic skills (Shonkoff and Phillips, 2000; Smolensky and Gootman, 2003). Disadvantaged children who attend early education programs experience the largest, and most lasting, benefits (Currie, 2001; Karoly et al., 1998; Magnuson et al., 2004). Given this evidence, disparities in children's exposure to educationally enriching early care are worrisome because of their implications for social and economic equality. Children in lower-income and less well-educated families may be "doubly disadvantaged" by living in less educationally stimulating homes and having less access to educationally-enhancing early child care (Meyers, Rosenbaum, Ruhm and Waldfogel 2004).

Both federal and state governments have adopted policies in recent years to increase access to early childhood education and care among low-income families. Most notably, public funding has grown substantially for compensatory education programs, such as Head Start, and means-tested child care subsidies. Whether and to what extent this expansion has increased enrollment of low-income children into educationally-enriching programs, or has closed the gap in enrollment between higher- and lower-income children, remains unknown. Whereas Head Start monies, by definition, are used to fund children attending Head Start programs, means-tested child care subsidies may be used for many types of child care, and some features of the subsidy program may encourage parents not to use preschools (which tend to be the most expensive).

In this paper, we make use of repeated cross-sectional measures of preschool[1] enrollment between 1992 and 2000 to estimate the contribution of public funding to enrollment levels among low-income children and to income-related enrollment

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[1] We define preschool broadly throughout this paper to include enrollment in public preschools, public pre-kindergarten programs, private preschool and nursery schools, and enrollment in child care centers that parents designated as "school" for 3- and 4- year old children. It excludes care in family child care homes and sitting by friends, relatives, or nannies.

disparities. We find that the expansions in public funding had an important effect on low-income children's preschool enrollment, explaining nearly half of the substantial increase during this time. Although enrollment disparities persist, we conclude that the income-related gaps in early education would likely have been larger in the absence of these funding increases.

BACKGROUND

Enrollment Disparities

The share of children experiencing nonparental care or education during their preschool years, and the share in some form of school or center-based preschool program, has grown substantially in recent years. Using data from the CPS, Bainbridge and colleagues (in press) find that preschool enrollment grew substantially between 1968 and 2000: the enrollment rate of 3-year-olds rose from 8 to 39 percent and that of 4-year-olds from 23 to 65 percent.

Although enrollment rates have increased among all children, disparities persist by family income and other socio-economic characteristics. In studies using data collected during the 1990s, Hofferth and collaborators (1993) and others (West et al., 1992) find large disparities in preprimary enrollment by race/ethnicity, income, and parental education. Hispanic children are less likely to be enrolled than black or white children. Three and four year-olds from families with incomes greater than $50,000 are more likely to be enrolled than those in lower income brackets. Finally, a strong positive correlation between parents' educational attainment and the preprimary enrollment rates of their children persists even after controlling for employment status and other differences.

The cost of private arrangements contributes to these disparities. There is substantial evidence that high child care costs depress maternal employment and the use of child care, particularly among low-income, low-skilled, and single mothers (Anderson and Levine, 2000). With the cost of full-time private preschool or center-based care in recent years averaging $4,000 to $6,000 per year, early education or formal child care arrangements are prohibitively expensive for many low-income families, for whom such costs would often represent as much as a quarter of their total household income (Blank et al., 1999).

Parents substitute more formal modes of care for less formal arrangements when prices are lower or family income is higher (Blau, 2001; Michalopoulos and Robins, 2000; Michalopoulos, Robins, and Garfinkel, 1992; Powell, 2002; Hofferth and Wissoker, 1992). Blau (2001), for example, concludes that both maternal wage and family income elasticities are positive for center care and negative for other forms of care, suggesting that as wages and family income rise, families tend to switch from less formal to more formal care arrangements (including preschool). As he suggests, "parents feel most 'priced out' of center and family day care and would prefer these types over other nonparental care and parental care if they were equally as cheap" (p. 74).

Child Care Policies

The U.S. has pursued two parallel policy tracks to address disparities in enrollment in preschool and in child care more broadly.[2] Compensatory early education programs are most explicitly targeted at reducing inequality in early education. These

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[2] Federal and state tax credits also provide support for families purchasing private care. Although these tax expenditures constitute a large share of total public spending on early care and education, we do not include them in the present analysis because they are not expected to have a significant effect on enrollments in preschool programs among low-income families due to their relatively low benefit levels and non-refundability.

programs aim to increase preschool enrollment among poor 3- and 4-year-old children and thus to increase school readiness and decrease human capital deficits.

Head Start remains the single largest compensatory early education effort. Federal appropriations for Head Start increased 250 percent between 1990 and 2000, and totaled nearly $5.3 billion in 2000 (Administration for Children and Families, 2001).[3] Head Start funding is disbursed directly to about 1,500 private and public non-profit organizations, which served 857,644 poor or disabled children in 2000 (Butler and Gish, 2002; Administration for Children and Families, 2001).

Means-tested child care assistance reduces the cost of nonparental care for low-income families by subsidizing private, market-based child care arrangements, including preschool. The federal government currently funds means-tested assistance through three block grants to the states. These funds assist families by directly paying private providers or (more commonly) by offering vouchers that reimburse private providers or parents for the fees. States contribute their own funding through maintenance of effort (MOE) expenditures, and some states choose to further supplement federal monies.

Federal and state funding for means-tested assistance has grown sharply in recent years as a result of welfare reform policies, which seek to promote employment among welfare recipients. The single largest federal block grant is the Child Care and Development Fund (CCDF) created in 1990. States can use CCDF funds to serve working families with incomes up to 85 percent of the state median (although many set a lower threshold). States must offer parents a choice of care types and providers but are

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[3] In recent years, states have also expanded state-funded early education programs; thirty-six states now provide funding for pre-kindergarten services. Although expanding, these programs continue to enroll a relatively small share of preschool children in most states. We do not include them here primarily due to data limitations.

free to set parental co-payment and provider reimbursement rates as well as procedures for establishing and recertifying eligibility.

The second major current funding stream for means-tested assistance is the Temporary Assistance to Needy Families (TANF) block grant, which replaced the Aid to Families with Dependent Children (AFDC) program in 1996. States may transfer up to 30 percent of their TANF funds to the CCDF program, and about half the states commit some TANF funds to CCDF (Gish, 2002). States can also use TANF funds directly to provide child care (largely through vouchers) for welfare-reliant families who are preparing for work and for employed current and former welfare recipients. Prior to 1996, two other sources of child care subsidies provided support to low-income families. Assistance was available to families transitioning from welfare to work (Transitional Child Care) and families "at risk" of receiving welfare (At Risk Child Care).

The Social Services Block Grant (SSBG) is the third and smallest source of federal child care assistance for poor families. In 1999, approximately 13 percent of SSBG funds were used for child care services or vouchers (Gish, 2002).

Taken together state and federal funding for child care subsidies increased dramatically during the 1990s, from $ 1.7 billion in 1992 to $ 9.5 billion in 2000 (Gish, 2002). Federal investments eclipse state funding, with spending for the three block grants combined approaching $7 billion in 2000 and constituting 42 percent of all federal early childhood care and education investments (Gish, 2002).

Unlike Head Start funding, child care subsidies may be used to offset the costs of a variety of child care and early education arrangements. The primary purpose of the subsidy programs is to support the employment of low-income parents by reducing their child care costs. To the extent that state program operators want to stretch available

dollars to cover as many recipients as possible, they may encourage families to use types of care that are less expensive than preschools. States may set reimbursement rates lower than preschool fees. Thus, it is not clear to what extent increases in child care subsidy programs will translate into increases in preschool enrollment, as opposed to enrollment in other forms of care.

Child Care Policy and Preschool Enrollment

To the extent that high prices serve as a barrier to preschool enrollment for low-income families, we would expect that the expansion of income-targeted assistance during the 1990s would increase enrollment among the lowest income children, and in turn close the enrollment gap between less- and more-advantaged children. Estimating the contribution of public investments to reducing enrollment disparities is complicated, however, for several reasons.

The expansion of compensatory education programs, such as Head Start, is predicted to have the most direct effect on preschool enrollment by expanding the supply of low-cost or free preschool slots. By lowering the cost of child care, means-tested child care assistance could also increase preschool enrollments. However, as discussed above, unconstrained subsidies (that permit parents to use any type of care) could increase the use of informal care by family, friends, and family child care providers as well as formal care, in preschools or similar settings.

Prior research suggests that subsidy receipt does increase the use of formal care (as compared to informal care) by allowing parents to substitute more expensive (often formal) modes of care for less expensive, informal arrangements (Powell, 2002; Blau and Hagy, 1998). Recent work by Tekin (2004) finds that receiving a subsidy is closely

linked with the use of formal child care, including preschools, among low-income single mothers with young children. Indeed, he finds that subsidy receipt increases the use of center-based care by 33 percent.

The effects of CCDF and TANF expenditures on preschool enrollment may also be influenced by specific state child care policies and administrative procedures. For example, low provider reimbursement rates may limit the supply of preschool programs available to low-income families; high family co-payments may steer parents away from more expensive modes of care such as preschools; or referral procedures in agencies authorizing subsidies may affect parents' knowledge of care alternatives (Adams, Snyder, and Sanfort, 2002; Gennetian et al., 2004; Meyers et al., 2002).

In the case of both compensatory education programs and means-tested subsidies, the net increase in preschool will also depend on the extent to which these low- or no-cost alternatives are substituted for existing arrangements. If low-income parents were entirely "priced out" of preschools, the availability of subsidized preschool slots and means-tested vouchers could lead them to substitute preschool for parental care or less formal care arrangements.   If, however, in the absence of subsidized care low-income parents were able to arrange for preschool, for example, by using public school-based prekindergarten for 4-year olds or negotiating the price with the provider, the availability of free or lower cost alternatives might shift children between preschool settings or offset the costs of existing arrangements, but would not increase overall levels of preschool enrollment.

Finally, estimating the effect of public investments on income-related enrollment disparities is complicated by secular trends in enrollment among all groups.   Policies that are successful in increasing enrollment among low-income children may still fail to close

income-related gaps if early education enrollment is rising even faster among higher-income families, or if other factors – e.g. changes in employment demand – are having offsetting effects on the child care arrangements of low-income parents.

In this paper, we make use of repeated cross-sectional data to address the question of whether, and to what extent, increases in public spending for compensatory education programs and means-tested assistance reduced the gap in preschool enrollment between low- and high- income children.   With such large increases in funding during the 1990s, have rates of early education increased among low-income children? If so, to what extent do increases in Head Start and child care funding explain the increased levels of early education among low-income populations? Do effects differ according to children's age or their mother's marital status? And how did these policy-induced increases affect the gap in enrollment between low- and high-income children?

DATA

We use microdata from the October Current Population Survey (CPS), which includes an education module that has surveyed the school attendance of 3- and 4-year-olds annually since 1968. We combine these microdata with state level information on child care and Head Start expenditures, as well as other state demographic, political, and policy measures. We limit our sample to children surveyed in the CPS between 1992 and 2000, because these are the years for which we could obtain consistent and reliable state level data about child care and early education funding.

Key Microdata Variables

Early education. The October CPS tracks school enrollment by asking

respondents whether children aged 3 and older attend school. We code a child as being in "early education" if the child's parent answered yes to this question. Thus, the term early education refers to any "school" program in which a young child is enrolled.

Comparisons of the October CPS data with more detailed data from the National Household Education Survey (NHES) (1999) and the National Survey of America's Families (NSAF) (1999) indicate that the early education measured in the October CPS includes the vast majority of center-based care, Head Start, nursery school, and pre-kindergarten. Our comparison also indicates that family child care, even that which is licensed, is not included in what parents report as "school" in the CPS.[4]

Prior to 1994, parents were asked "does your child attend regular school?" In 1994, the CPS added a prompt to clarify that "regular school includes nursery school, kindergarten or elementary school." The addition of this prompt might influence reported enrollment rates, and we handle this by including year fixed-effects in the analysis. Trends in enrollment for low and higher-income children in our sample are provided in the top panel of Table 1.

Income. The October CPS collects categorical income data, asking which income range represents the total combined income of all members of the family during the preceding 12 months. Because of inflation, family income categories are not strictly comparable across years, and as a result we classify families according to income quartiles for families with young children ages 3 and 4. If the rank order from rich to poor is roughly correct in each year, we can reliably distinguish between low-income families (the bottom quartile, representing the lowest 25 percent of family incomes) and higher-income families, (the top three quartiles, representing the highest 75 percent of

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[4] We are not able to use the NHES or NSAF for this analysis because those datasets are available only for selected years.

family incomes). From 1992 to 1995, families in the lowest quartile had family incomes

less than $15,000; from 1996 to 1998 these families had incomes of less than $20,000;

and for the following years they had incomes less than $25,000.

Microdata Control Variables

In linking early education enrollment to state spending, it is important to control

for other factors that may affect enrollment in early education. Therefore, we include a

set of child and family characteristics in our analyses as covariates. The October CPS has

a nested structure and although we can identify some family characteristics (such as

family income) directly from the child's record, other information is on the parent's

record. Thus, we matched children to their parents' record in order to obtain more

detailed family information.

Our set of child and family covariates include dichotomous variables for:

maternal employment (working during survey week=1); racial/ethnic background

(black=1, Hispanic=1, or other=1); child's age (four=1), child's gender (boy=1);

household size (two people is omitted category, series of indicators for 3 to 7 or more);

maternal education (less than high school is omitted category, high school degree=1,

some college=1, college degree=1), mother's marital status (married=1).[5] We also

include a continuous variable for the mother's age. Descriptive statistics for child and

family covariates are listed in the top panel of Appendix Table 1.

State Level Variables

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[5] We have missing data on maternal education for 1,174 children. We use missing data dummy variables so that we can include cases with missing data in the sample.

Early education and child care funding. We measure each state's fiscal year expenditures on CCDF and TANF from information collected by the Congressional Research Service (Gish 2002).[6] The fiscal year begins on October 1 of the prior calendar year, so there is a presumed lag in the data, in that enrollment in October is linked to subsidy spending in the 12 months prior.

We measure state specific Head Start fiscal year funding with data provided by the Head Start Bureau. We use only federal portions of funding for Head Start because state contributions are not systematically reported. The fiscal year for Head Start begins in September, reflecting its adherence to a school-year calendar. Hence, children's enrollment in early education in October is linked to funding from the prior month and throughout the remainder of the school year.

Both child care subsidies and Head Start funding are adjusted for inflation (using the consumer price index) and for the state population (we divide spending by the number of poor children under age 13 calculated from the March Current Population Survey).[7] In addition, we scale spending measures in $100 increments.

In most analyses, we combine all sources of funding into a measure of total early education and child care funding, which is the sum of Head Start and all types of child care funding. We combine expenditure streams because they are hypothesized to have similar effects, and because increases in funding for these programs within states are

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[6] After welfare reform, states have been able to count their Maintenance of Effort (MOE) expenditures on welfare families toward both AFDC/TANF and CCDF programs, and are not required to report how much their MOE spending for these programs overlaps. Because of concerns that this might lead states to overstate their expenditures, the Congressional Research Service only counts the portion of a state's MOE TANF spending that exceeds their MOE CCDF spending.

[7] We adjust for the number of poor children under age 13 because children up to age 13 are eligible for child care subsidies. We use the same scaling for Head Start for ease of interpretation. However, the pattern of findings is not sensitive to our choice of denominator. About 60 percent of CCDF funds are provided to children under age 6 (Child Care Bureau, 2002).

highly correlated over time (r=.79). Trends in these expenditures are reported in the

bottom panel of Table 1, and descriptive statistics are provided in Appendix Table 1.

State Level Control Variables

Because of the concern that changes in child care and Head Start spending might

be correlated with changes in other state characteristics that might also have influenced

preschool enrollment, we include a set of state demographic, political, and policy

characteristics as control variables. Descriptive statistics for these variables are presented

in the second panel of Appendix Table 1, and a detailed explanation of the sources for

these data is provided in Appendix Table 2.

The demographic measures include continuous measures of the log of the state

population and per capita median income, the poverty rate for children under age six, and

the male unemployment rate. The proportion of the population that is black, elderly (age

65 and older), and female (over age 16) are also included. Finally, we include two

variables that measure the political climate of the state, the proportion of the state's house

and senate that are elected from the Republican political party.[8]

Given that large changes in welfare policies during the 1990s were designed to

promote employment among low-income parents, we include covariates that measure key

dimensions of these changes. Prior to 1996, several states were granted waivers from the

federal welfare guidelines to implement more restrictive policies, and in 1996 The

Personal Responsibility and Work Opportunity Reconciliation Act transformed cash

entitlements into a temporary safety net by mandating recipients engage in work or work-

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[8] Utah is the only unicameral state. We replace the missing data for Utah's percentage of Republicans in the state senate with a value of zero. We do not include a missing data dummy variable, because it is collinear with a state indicator, and our analyses include state fixed effects.

preparation activities. To capture these changes, in our fully specified model, we include an indicator for whether the state has been granted a federal waiver or has implemented welfare reform (TANF) policies. Finally, we include a continuous measure of the welfare cash benefits (from AFDC or TANF) for a family of four.

METHODS

To estimate the effects of increases in early education and care expenditures on children's enrollment, we estimate the following equation:

(1) $\qquad$ Pr(Early Education$_i$ =1| β_0Funding.$_{jt}$+ β_1X$_{ijt}$+ β_2StateCh.$_{jt,}$)

We model the probability that child i is enrolled in early education as a function of a vector of child and family characteristics (X) and state j's early education and care funding (Funding) and characteristics at time t (StateCh). Given the dichotomous dependent variable, we employ probit models. For ease of interpretation, we report marginal effects rather than coefficients. The marginal effect of the coefficient of interest, β_0, provides an estimate of how an additional \$100 of funding per child would change the probability of a child's enrollment in early education.

We present results from three specifications with increasing number of covariates. In the first model, we include only child and family characteristics and a set of year and state dummy variables. The advantage of using the CPS microdata is that we have measures of important child and family characteristics related to early education enrollment such as the child's ethnicity and race. By including these variables we hope to remove any spurious correlations that might result from the changing characteristics of our sample being correlated with changes in early education funding.

One puzzle we face is how to handle maternal employment and household

income. If increasing rates of maternal employment or rising incomes are driving both
increases in state expenditures and early education attendance, then we would want to
control for these confounds so as not to misattribute the effects of maternal employment
to early education funding. However, if funding promotes both maternal employment and
parental earnings by making child care more affordable, then we would not want to
include either as controls. We take a conservative approach and include in the analyses
presented in the tables a dichotomous measure of maternal employment. We do not
include the measure of household income because inflation makes the categories
incomparable over time, and because we control for maternal education, which is highly
correlated with family income. Nevertheless, we find that results are not sensitive to
excluding maternal employment or including a set of income dummy variables (for the
categorical levels of family income).

Our second estimation model adds in the measure of early education and care
funding, and in the final model, we add a set of state characteristics. We conduct
analyses first with the full sample, and then separately for the low- and higher-income
samples. Next, we conduct a set of alternative specifications to see how robust our
findings are to changes in the definition of the spending variables and the years from
which our sample is drawn.

Finally, to explore whether spending has differential effects depending on
children's age and their mothers' marital status, we include interaction terms (age four by
spending and married by spending) in the regression analyses. We expect that there may
be age differences, such that the enrollment of 3-year olds would be more strongly
affected, given the much wider availability of low-cost programs for 4-year olds. We
would also expect differences by marital status, given that single-mother families would

be more strongly affected by child care expansions related to welfare reform (although these subsidies would have been available to all low-income families, regardless of marital status).

The use of state and year fixed effects is particularly important in this analysis. States with higher levels of funding for early education may differ from states with lower levels of funding in unobserved ways that would lead to both higher levels of funding and child enrollment, and thus would bias estimates. By using state fixed effects, any bias due to persistent unobserved differences across states is removed. We include year fixed effects to remove bias from any trends common across states due to unobserved events.

State and year fixed effects do not control for state characteristics that change over time, thus the inclusion of measured state characteristics is also central to our estimation strategy. Because the vast majority of Head Start and means-tested child care subsidies are federally funded and increases in spending are largely due to larger federal appropriations it seems unlikely that state characteristics would be correlated with per child spending measures. However, the discretionary portion of the federal disbursement is based on the state's share of children under age 5, the share receiving free or reduced lunch, and the state's per capita income. Consequently, we adjust spending estimates for the number of poor children under age 13, and include in our analyses variables that proxy for related state characteristics (young child poverty rate, log of the state population, log of the state per capita income).

Other state characteristics are intended to capture shifts in state demographics that might be related to early education spending and enrollment such as the proportion of women of childbearing age, proportion black, and proportion elderly as well as the political climate. In addition, with large changes in welfare policies during the 1990s,

which affect low-income populations, we include covariates to capture changes in welfare policy.

In choosing state characteristics to include as controls, ideally we would select all state characteristics that are *spuriously,* rather than causally correlated with preschool enrollment through their effects on child care funding. However, determining which characteristics are exogenous in this regard is difficult. To the extent that state characteristics included in our models have some direct effects on spending, our model may over-control for state factors and bias our estimates (of spending) downwards.

Fixed effects methods compare children within states over time, so one concern is that we have sufficient numbers of observations within a state during each year. Small numbers of observations in a state for a particular year will lead to measurement error. Using the full sample of three- and four- year olds, sample sizes appear to be adequate. However, when we conduct analyses separately for low-income children, sample sizes for some states in some years are very low.[9] In order to reduce the possibility that associations will be obscured by small sample sizes, we limit our sample to children residing in states in which at least 15 low-income children were observed during at least two years. Imposing these criteria reduces our sample from 36,805 to 23,796, and limits our sample to children residing in 28 of the 50 states (see Appendix Table 3 for details on the composition of sample).[10] Although the choice of 15 for the minimum number of observations is somewhat arbitrary, we found that our estimates were not sensitive to alternative cutoffs of 20 or 30 low-income observations per state/year.

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[9] For example, in 5 out of the 9 years Vermont had 5 or fewer children in poverty, and perhaps not surprisingly year to year fluctuations in enrollment rates of up to 25 percentage points.
[10] Because of the selective nature of our data we present results from analyses conducted without sampling weights, however, findings do not differ with the inclusion of weights.

RESULTS

We hypothesize that because of the eligibility guidelines, early education and care funding should have a positive association with low-income children's preschool enrollment, but no influence on the enrollment of higher-income children. Looking at trends in funding (shown in the bottom portion of Table 1), we find that, for the most part, levels of early childhood education and care funding have been increasing steadily over time.[11] Total federal funding for early education and care (per poor child under age 13) appears to have nearly tripled. Prior to 1996, per-child funding increased at a roughly similar rate for both types of funding. Beginning in 1997, however, funding for child care subsidies grew at a much higher rate than that for compensatory education, such that subsidy funding accounted for about one-half of total funding in 1992 but over two-thirds by 2000.

Mean levels of early education enrollment show strong upward trends from 1992 to 2000 for both low-income and higher income children (top portion of Table 1), although year to year changes in enrollment and funding are not always positive. Low-income children remain less likely than their higher-income peers to attend early education. Yet, the increase in enrollment over this time period appears to be larger for low-income children with enrollment gains of over 16 percentage points compared with 8 percentage points for higher-income children.[12] The large increase in early education and care funding coupled with a relatively large increase in enrollment among low-income children suggests that public funding might be promoting early education enrollment for low-

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[11] The decrease in 1996 child care subsidy funding is due to inflation and our sample composition. Total combined unadjusted spending increased very slightly over this time period.

[12] The year to year enrollment rates for lower and higher income children differs slightly in our sample compared with the full sample, but the gain is nearly identical for the low-income sample and 3 percentage points larger for the higher-income sample. Changes in average enrollment from 1999-2000 favor low-income children, but even considering the time period from 1992-1999 low-income children would have a slightly larger increase in enrollment than higher-income children.

income children.

　　With hypothesis in mind, we turn to results from multivariate regressions. We first consider results from analyses conducted with the full sample of children. Findings, reported in Table 2, indicate that public funding for early education and care is not associated with early education enrollment for the full sample. The effects of child and family characteristics are consistent with findings from previous studies. Comparing coefficients for the year dummy variables in the first model to those in the third model, it is apparent that the inclusion of state characteristics seems to explain almost the entire upward trend in preschool enrollment during the 1990s. Significant predictors include the log of state population as well as the percent of the population that is female and elderly (findings not shown in Table 2).

　　Next, we conduct separate analyses for the low and higher-income children in the sample. The first three columns of Table 3 present results from analyses with low-income children and the latter three columns present results for higher-income children. Findings suggest a positive and significant effect of public early education and care funding on low-income children's enrollment, such that an additional $100 of funding per poor child under age 13 increases the early education enrollment rate by 1 percentage point (from the base rate of 41 percent).[13] Expenditures appear to explain a large portion of the positive linear trend in enrollment for low-income children over this time period. With an increase in funding of about $800 per child during the 1990s, our estimates suggest that early education is accounting for 8 percentage points of the 16 percentage point gain in low-income children's early education enrollment.

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[13] Results from regression analyses with child and family controls but without state and year fixed effects suggest slightly larger effects on low-income children's enrollment. The spending coefficient in a model without any fixed effects or with only state fixed effects is about 0.017; for a model with only year fixed effects the coefficient is 0.013.

Moving from model 2 to model 3, we find that the effect of state spending is slightly larger when changes in state characteristics are taken into account. An effect of this magnitude translates into a 1.4 percentage point increase in enrollment per $100 increase in early education funding.[14] Given the magnitude of the funding increase during this period, public funding for early education and care might account for as much as 11 percentage points of the 16 percentage point enrollment gain for low-income children during the 1990s. In addition, in model 3 we see a large change in the coefficients for the year dummy variables. The large negative coefficients result from the inclusion of the measure of log per capita income, which is positively related to early education and increasing over time. Removing this variable from the analysis yields coefficients for the year variables that do not suggest an upward trend in early education enrollment for low-income children; in fact, the year coefficients are not statistically significant.[15]

In contrast, we find that public funding for early education and care has no effects on the enrollment of higher-income children. In these models, the coefficient for spending is not statistically significant, and does not explain the time trend evident in coefficients for the year dummy variables. Interestingly, including state characteristics also does not uniformly reduce the coefficients for the set of year variables; however, it does increase their standard errors. Finally, we note that the coefficients for several child and family characteristics differ across the low- and higher-income populations. For example, college educated mothers are much more likely than less educated mothers to place their children in preschool among the higher income sample, whereas employed

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[14] Analyses with a larger set of welfare policy measures included as controls (severity of sanctions, shortness of time limit, immediate work requirements, and family cap policies) yielded coefficients of a similar magnitude (.013, p<.10).

[15] In models that do not contain either the per capita income or expenditure measure, only one year coefficient estimate (1997) is significant, and coefficients for the set of year dummy variables estimates range from .01-.12.

mothers are more likely than non-employed mothers to place their children in early education in the lower income sample. These differences suggest that preschool selection processes may depend on family's socioeconomic resources.

To check the robustness of our results, we next conduct a set of similar analyses but with differing year specifications. First, to examine possible differences in the pre- and post-welfare reform eras, during which child care funding mechanisms and our data source for TANF expenditures differed, we ran our models separately for these years. Although in both the earlier and later time periods the estimates are as large as those for the entire time period, we find that estimated effects appear to be somewhat larger prior to 1997 (first two panels of Table 4). Indeed, these coefficients suggest that prior to 1997 an additional $100 would have resulted in a more than a 3 percentage point increase in enrollment. Separate analyses (not shown) find similar effects for this period when we include only subsidy spending.

Second, to check whether the addition of a question prompt in the 1994 October CPS might influence our results, we estimated models in which we limited our analyses to years in which respondents responded to the exact same item (1994 to 2000). Again, we find that our results are robust (results not presented in tables).

We were also interested in seeing whether the effects of Head Start and child care subsidy funding differed. To explore this, we entered each type of funding separately into models with low-income children (Table 4). In these analyses, we find that the effects of child care subsidy funding, which includes welfare and CCDF monies, mirror prior findings for total child care funding. This is hardly surprising given that child care subsidies are the largest component of the total funding. The coefficients for Head Start expenditures are larger than those associated with subsides, but standard errors are also

large. This is also not surprising given that Head Start eligibility is restricted to children below the poverty threshold, and our low-income sample is more broadly defined as the lowest quartile of family income. When we limit our sample to children in the bottom 13 percent of the income distribution, which would more closely match the poverty sample, we find that Head Start funding is significantly associated with early education enrollment (results not shown in tables).[16]

Finally, we explored whether the effects of spending on enrollment for low-income children differed by the children's age and their mother's marital status. Low-income 3-year-old's enrollment rates were much lower than those of 4-year-olds, reflecting the greater availability of programs for the older children. From 1992 to 2000, 3-year-olds' enrollment increased from 17 to 35 percent in our sample, whereas 4-year-olds' enrollment increased from 48 to 63 percent. As expected, results from the interaction analyses suggest that each $100 of child care subsidies had less of an effect on the enrollment of 4-year-old children (.007) than 3-year-old children (.019) (top panel of Table 5).

With regard to differences by marital status, just over one third of the mothers of low-income children in our sample were married. In the early 1990s, rates of preschool enrollment differed by marital status among low-income children. In 1992, married mothers were slightly less likely to have children enrolled in preschool (28 percent versus 34 percent). However by 2000, this gap had slightly increased with nearly 50 percent of children of single mothers attending preschool compared with only 40 percent of children of married mothers. We did not find strong evidence that the effects of child care

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[16] In analyses with the bottom 13 percent of the income distribution, we limited our sample to children residing in states and years with at least 15 children in families with incomes in the bottom 13 percent of the distribution.

subsidies were lower among married mothers, although the estimate was in the expected direction (bottom panel of Table 5).

DISCUSSION

The main focus of this paper was to learn whether the increases in public funding for early education and child care in the 1990s had any effect on narrowing the gaps in preschool enrollment between low and higher-income 3- and 4-year-old children. Our results suggest that public funding did play an equalizing role over this period, accounting for between 8 and 11 percentage points of the actual 16 percentage point increase in enrollment for low-income children, but having no effect on enrollment among higher income children. These estimates are robust to the inclusion of measures of state characteristics that may be correlated with child care and early education funding and enrollment.

We find that the effects of funding were greater between 1992 and 1996, than between 1997 and 2000. One possible explanation is the faster growth of subsidies, relative to compensatory education, in the years following welfare reform. A similar period effect is observed, however, when we consider only subsidy funding, suggesting that there may have been changes in child care markets or state policies and administrative practices in the late 1990s. The increased emphasis on rapid employment for welfare-recipient families, for example, may have increased parents' need for – and welfare agencies' encouragement of -- the use of subsidies to purchase informal arrangements that were both more readily available and less costly for parents exiting welfare than formal preschool arrangements. Program enhancements within Head Start, including the expansion from part- to full-day services in many programs, may have

diluted the effect of funding increases on the creation of new enrollment slots.   It is also possible that we are measuring child care subsidy expenditures with more error after the transition to TANF; if so, such measurement error would bias our estimates towards zero.

We also find that the effects of funding were larger for 3 year olds than 4 year olds.   This result suggests that more 3 year olds than 4 year olds were moved into preschool by the funding increases, which makes sense given that programs were more widely available to 4 year olds prior to the funding increases.

Is an increase of 8 to 11 percentage points in the enrollment of low-income children a large effect? An effect of this magnitude suggests that over half of the increase in low-income children's enrollment in the 1990s is explained by increases in public early education and child care funding, so in that sense, it is a large effect. But should we expect an even larger increase in enrollment from a 300 percent increase in available funding (per poor child under age 13)? The answer is not straightforward. First, parents' choice of child care is not solely determined by price. There are many other concerns that parents take into account when making child care decisions, such as convenience and consonance with their work schedule and values (Lowe and Weisner, 2004). Increasing rates of maternal employment during this period, particularly among low-income mothers in the late 1990s, may have altered the attractiveness of preschool relative to other forms of care. Second, over half of funding during this period was provided in the form of unconstrained subsidies, and funding through this mechanism grew at a much faster rate than funding specifically designated for early education. Unconstrained subsidies can be used for either informal or more formal child care, and states' administrative procedures -- such as reimbursement rates and copayment schedules -- may not be conducive to using these subsidies for costly preschools (Meyers and Heintze, 2002). Finally, the

overall amount of spending per poor child is still well below the cost of full-time center-based care or preschool. Indeed, with an average allocation of only $1,200 per poor child under age 13 even after the funding increases in the 1990s, only a fraction of low-income children would have access to full-time center based care if they wanted it.

Because expansions in child care and early education funding increased enrollment among low-income children but not higher-income children, our findings suggest that the gaps in enrollment between low and higher-income children would have been larger in the absence of the funding increases. In addition, these findings suggest that further expansions could be effective in increasing the enrollment of low-income children into preschool and similar arrangements and in closing persistent gaps in early education experiences between less- and more-advantaged children. The structure of funding will also matter. Although unconstrained child care subsidies allow parents the maximum degree of choice over the selection of child care arrangements, they may be a weaker tool for reducing gaps in preschool enrollment than investments directly targeted specifically at expanding the supply of free or affordable early education services. In addition, the equalizing effects of subsidies on enrollment gaps will be weaker still if state policies and administrative practices discourage the use of these subsidies for higher-cost, preschool-type arrangements.

Several limitations to our findings should be noted. First, because our analyses are limited to states with large populations of children, our results may not generalize to smaller states. Similar analyses conducted with a dataset that has large samples of low-income children in at least some smaller states would be a valuable extension to the research presented here. Second, we were not able to include all sources of increases in early education funding. In particular, local school districts and state prekindergarten

initiatives may have played a role in boosting low-income children's enrollment. We were not able to include those expenditures in this study because consistent over time data are lacking. However, although an increasing number of states are funding prekindergarten, funding is still quite limited with estimates suggesting $ 1.9 billion per year (Education Week, 2002).

Finally, we note that our analyses do not prove that increases in expenditures for early education *caused* increases in low-income children's enrollment. Rather, our analyses show evidence of a strong link between increases in funding and enrollment. It is possible that the causality goes in the other direction, such that increases in enrollment influenced state expenditures over time. However, given that early education is not currently an entitlement and child care subsidy assistance continues to be formally or informally rationed in the large majority of states, the availability of assistance is likely to be exogenous to the child care decisions of individual families at a point in time.   Thus, although changes in demand for services may influence political decisions about funding in the long term, we think it is reasonable to conclude that changes in enrollment in any given year were most likely due to expenditures rather than the reverse (i.e. that changes in enrollment determined public expenditures).

 Our research points to several important questions for future research. We have not been able to measure the quality of early education programs that children attend, or to track changes in enrollment in other types of child care. Ultimately, in order to assess the importance of the enrollment changes we have documented, we would want to know something about the quality of the programs children are attending, relative to what they otherwise would have attended. We would also like to know more about the implications

of these enrollment changes for children's school readiness, and for families' economic

well-being. All of these are important direction for future research.

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Table 1: Average Early Education Enrollment, and Per-Child Child Care and Head Start Funding, by Year

Year	Low-income Enrollment (%)	Higher-income Enrollment (%)	Income Gap (%)
1992	31.85	44.48	12.63
1993	35.54	43.60	8.05
1994	43.80	50.79	7.00
1995	39.82	51.92	12.10
1996	38.66	53.42	14.76
1997	46.60	54.62	8.01
1998	43.47	54.59	11.12
1999	44.47	55.75	11.28
2000	48.70	52.78	4.08
Increase in Enrollment 1992-2000	*16.85*	*8.30*	

Year	Total Funding	Child Care Subsidies	Head Start
1992	$ 407	$ 193	$ 214
1993	$ 477	$ 230	$ 247
1994	$ 541	$ 260	$ 281
1995	$ 566	$ 285	$ 281
1996	$ 754	$ 275	$ 279
1997	$ 621	$ 322	$ 300
1998	$ 812	$ 478	$ 336
1999	$ 1,001	$ 638	$ 363
2000	$ 1,203	$ 815	$ 388
Increase in Funding 1992-2000	$796	$622	$174

Note: All amounts have been adjusted for inflation using CPI rates, and divided by the number of poor children under 13 in a state.

Table 2: Effects of Federal Head Start and Child Care Funding on Children's Early Education Enrollment, Full Sample: Marginal Effects (and Standard Errors) from Probit Regression Models

	Full Sample (N=23,796)		
	Early Education Enrollment		
	(1)	(2)	(3)
Total Funding		0.001	0.003
		(0.002)	(0.003)
Hispanic	-0.104**	-0.104**	-0.103**
	(0.011)	(0.011)	(0.011)
Black	0.056**	0.056**	0.056**
	(0.011)	(0.011)	(0.011)
Child Age Four	0.282**	0.282**	0.282**
	(0.006)	(0.006)	(0.006)
Mother High School Degree	0.036**	0.036**	0.037**
	(0.011)	(0.011)	(0.011)
Mother Some College	0.131**	0.131**	0.131**
	(0.011)	(0.011)	(0.011)
Mother College Degree	0.251**	0.251**	0.251**
	(0.012)	(0.012)	(0.012)
Mother Employed	0.037**	0.036**	0.036**
	(0.007)	(0.007)	(0.007)
Year of 1993	0.018	0.017	-0.047
	(0.014)	(0.014)	(0.047)
Year of 1994	-0.035	-0.037	-0.120*
	(0.025)	(0.025)	(0.060)
Year of 1995	0.090**	0.088**	-0.003
	(0.014)	(0.015)	(0.070)
Year of 1996	0.104**	0.101**	-0.004
	(0.015)	(0.015)	(0.085)
Year of 1997	0.134**	0.130**	0.030
	(0.015)	(0.016)	(0.096)
Year of 1998	0.133**	0.127**	0.016
	(0.015)	(0.019)	(0.115)
Year of 1999	0.145**	0.137**	0.017
	(0.015)	(0.021)	(0.127)
Year of 2000	0.126**	0.115**	-0.010
	(0.016)	(0.026)	(0.138)
State Fixed Effects	X	X	X
Includes State Characteristics			X

Notes: Models 1-3 Contain a full set of child and family covariates listed in Appendix Table 1. Model 3 also contains a full set of state characteristics and welfare policy variables listed in Appendix Table 1. All models have state fixed effects. * p-value<=.05; ** p-value<=.01. Coefficients represent marginal effects (with standard errors in parentheses) from probit regression models.

Table 3: Effects of Head Start and Child Care Subsidy Funding on Children's Early Education Enrollment, by Income: Marginal Effects (and Standard Errors) from Probit Regression Models

	Low-income Sample (N= 5,784) Early Education Enrollment			Higher-income Sample (N=18,012) Early Education Enrollment		
	(1)	(2)	(3)	(1)	(2)	(3)
Total Funding		0.011*	0.014*		-0.001	-0.000
		(0.005)	(0.007)		(0.003)	(0.004)
Hispanic	-0.054**	-0.055**	-0.057**	-0.109**	-0.109**	-0.108**
	(0.020)	(0.020)	(0.020)	(0.014)	(0.014)	(0.014)
Black	0.074**	0.073**	0.072**	0.054**	0.054**	0.055**
	(0.018)	(0.018)	(0.019)	(0.013)	(0.013)	(0.013)
Child Age Four	0.340**	0.340**	0.342**	0.262**	0.262**	0.263**
	(0.012)	(0.012)	(0.012)	(0.007)	(0.007)	(0.007)
Mother High School Degree	0.031	0.031	0.031	0.043**	0.043**	0.044**
	(0.017)	(0.017)	(0.017)	(0.015)	(0.015)	(0.015)
Mother Some College	0.108**	0.109**	0.108**	0.138**	0.138**	0.139**
	(0.021)	(0.021)	(0.021)	(0.015)	(0.015)	(0.015)
Mother College Degree	0.156**	0.155**	0.157**	0.258**	0.258**	0.258**
	(0.037)	(0.037)	(0.037)	(0.015)	(0.015)	(0.015)
Mother Employed	0.061**	0.061**	0.061**	0.030**	0.030**	0.030**
	(0.015)	(0.015)	(0.015)	(0.009)	(0.009)	(0.009)
Year of 1993	0.030	0.022	-0.169*	0.010	0.010	-0.007
	(0.028)	(0.028)	(0.078)	(0.016)	(0.016)	(0.055)
Year of 1994	0.128**	0.110**	-0.151	-0.098**	-0.097**	-0.114
	(0.037)	(0.038)	(0.105)	(0.035)	(0.035)	(0.073)
Year of 1995	0.089**	0.071*	-0.223*	0.087**	0.088**	0.083
	(0.029)	(0.030)	(0.104)	(0.016)	(0.017)	(0.079)
Year of 1996	0.074*	0.055	-0.276*	0.110**	0.111**	0.111
	(0.031)	(0.032)	(0.108)	(0.016)	(0.017)	(0.096)
Year of 1997	0.171**	0.143**	-0.241	0.122**	0.124**	0.142
	(0.031)	(0.034)	(0.134)	(0.017)	(0.018)	(0.106)
Year of 1998	0.156**	0.105*	-0.309*	0.123**	0.127**	0.157
	(0.033)	(0.041)	(0.123)	(0.017)	(0.021)	(0.125)
Year of 1999	0.150**	0.079	-0.348**	0.142**	0.146**	0.181
	(0.031)	(0.046)	(0.116)	(0.017)	(0.024)	(0.135)
Year of 2000	0.187**	0.096	-0.365**	0.107**	0.112**	0.166
	(0.034)	(0.055)	(0.100)	(0.018)	(0.029)	(0.148)
State Fixed Effects	X	X	X	X	X	X
State Characteristics			X			X
R-squared	0.15	0.15	0.15	0.12	0.12	0.12

See Notes to Table 2. Coefficients represent marginal effects (with standard errors in parentheses) from probit regression models. * p-value<=.05; ** p-value<=.01.

Table 4: Effects of Federal Funding on Children's Early Education Enrollment, Alternative Specifications by Year and Type of Funding: Marginal Effects (and Standard Errors) from Probit Regression Models

	Early Education Enrollment	
	Low-income Sample 1992-1996 (N=3,915)	
	(1)	(2)
Total Funding	0.032*	0.042*
	(0.015)	(0.021)
	Low- income Sample 1997-2000 (N=1,868)	
	(1)	(2)
Total Funding	0.024*	0.015
	(0.011)	(0.015)
	Low-income Sample (N=5,794)	
	(1)	(2)
Child Care Spending Only	0.012*	0.014
	(0.006)	(0.007)
	Low-income Sample (N=5,794)	
	(1)	(2)
Head Start Spending Only	0.034	0.051
	(0.026)	(0.042)
State Fixed Effects	X	X
State Characteristics		X

Notes: Models 1 and 2 contain a full set of child and family covariates listed in Appendix Table 1. Model 2 also contains a full set of state characteristics and welfare policy variables listed in Appendix Table 1. * p-value<=.05; ** p-value<=.01. Coefficients represent marginal effects (with standard errors in parentheses) from probit regression models.

Table 5: Effects of Federal Funding on Children's Early Education Enrollment, by Age and Marital Status: Marginal Effects (and Standard Errors) from Probit Regression Models

	Early Education Enrollment	
	Low-income Sample (N=5,794)	
	(1)	(2)
Total Funding	0.016**	0.019**
	(0.006)	(0.007)
Age Four	0.040**	0.041**
	(.005)	(.005)
Age Four by Total Funding	-0.012*	-0.012**
	(.005)	(.005)
	Low-income Sample (N=5,794)	
	(1)	(2)
Total Funding	0.012*	0.015*
	(0.005)	(0.007)
Mother Married	.007	.006
	(.035)	(.035)
Married by Total Funding	-.006	-.006
	(.005)	(.005)

Notes: Models 1 and 2 contain a full set of child and family covariates listed in Appendix Table 1. Model 2 also contains a full set of state characteristics and welfare policy variables listed in Appendix Table 1. * p-value<=.05; ** p-value<=.01. Coefficients represent marginal effects (with standard errors in parentheses) from probit regression models.

Appendix Table 1: Means, Standard Deviations, Minima and Maxima Values for Covariates

	Mean	SD	Min	Max
Child and Family Characteristics				
Hispanic	0.16	0.37	0.00	1.00
Black	0.16	0.37	0.00	1.00
Other race/ethnicity	0.05	0.22	0.00	1.00
Boy	0.50	0.50	0.00	1.00
Four years old	0.50	0.50	0.00	1.00
Maternal Education: Less than High School	0.22	0.42	0.00	1.00
Maternal Education: High School	0.30	0.16	0.00	1.00
Maternal Education: Some College	0.26	0.44	0.00	1.00
Maternal Education: College Degree	0.21	0.40	0.00	1.00
Maternal Employment	0.55	0.50	0.00	1.00
Maternal Age	34.62	10.22	20.00	90.00
Family Size	4.40	1.23	1.00	7.00
Mother Married	0.68	0.47	0.00	1.00
Early Education Spending				
Total Funding per child ($)	760	314	254	1937
Child Care Subsidies per child ($)	436	259	69	1415
Head Start per child ($)	259	88	129	852
State Characteristics				
Log of Population	16.09	0.89	13.48	17.34
Black Population (%)	12.85	2.06	0.25	42.92
Female Population Over Age 16 (%)	22.89	1.51	17.80	27.64
Elderly Population (%)	12.91	2.07	9.60	18.60
Republicans in the State Senate (%)	46.51	14.60	2.94	88.57
Republicans in the State House (%)	42.89	13.09	9.00	82.86
Refundable Earned Income Tax Credit	0.08	0.27	0.00	1.00
Poverty Rate for Children Under Age 6	0.26	0.05	0.12	0.42
Male Unemployment Rate	5.94	1.49	2.60	11.30
Log of Per Capita Income	10.03	0.20	9.47	10.45
Welfare Policies				
AFDC Waiver or TANF Implemented	0.48	0.50	0.00	1.00
Benefit Level	$ 859.12	$ 177.22	$ 514.00	$ 1158.00

Notes: Sample Size is 23,796. Statistics are presented for cases without missing data. The sample size for maternal education variables is 22,845 and for State Senate Republican Representation it is 23,679.

Appendix Table 2: Description of State Level Characteristics and Welfare Policies

State Characteristics	Data Source
Demographic and Political Characteristics	
Log of Population	Census Bureau's *Statistical Abstracts of the United States*
Black Population (%)	Census Bureau's *Statistical Abstracts of the United States*
Female Population Over Age 16 (%)	Census Bureau's *Statistical Abstracts of the United States*
Elderly Population (%)	Census Bureau's *Statistical Abstracts of the United States*
Republicans in the State Senate (%)	Series of reports on *Partisan Composition of State Legislatures* by the National Conference of State Legislatures (www.ncsl.org)
Republicans in the State House (%)	Series of reports on *Partisan Composition of State Legislatures* by the National Conference of State Legislatures (www.ncsl.org)
Refundable Earned Income Tax Credit	Prior to 1994, individual state reports for New York, Minnesota, and Wisconsin. Data for 1994, Urban Institute *Assessing the New Federalism Database*; Data for 1996-2000 reports from Center for Budget and Policy Priorities, *State Income Tax Burdens on Low-income Families*.
Poverty Rate for Children Under Age 6	Three year moving average, constructed from March CPS data by authors
Male Unemployment Rate	Constructed from March CPS data by authors
Log of Per Capita Income	Census Bureau's *Statistical Abstracts of the United States*
State AFDC/TANF Policies Implemented	
AFDC Waiver or TANF Implemented	Data for 1990-1998 from Council of Economic Advisors Report, *The Effects of Welfare Policy and the Economic Expansion of Welfare Caseloads*. (http:/aspe.hhs.gov/hsp/waiver-policies99/policy_CEA.htm); By 1998, TANF had been fully implemented in all states.
Benefit Level for Family of Four	Data for 1990-1998 were taken from Robert Moffitt's "Welfare Benefits Data Base." Data and documentation available from: http://www.econ.jhu.edu/People/Moffitt/DataSets.html. Data for 1999-2000 were collected by personal communication with the U.S. Department of Health and Human Services.

Appendix Table 3: Sample Composition by State and Year

State	1992	1993	1994	1995	1996	1997	1998	1999	2000	Low-Income N	High-Income N
Alabama	X	X	X			X	X	X	X	*121*	*259*
Arizona		X	X	X	X	X	X	X		*118*	*335*
Arkansas	X	X	X	X	X	X	X	X		*101*	*287*
California	X	X	X	X	X	X	X	X	X	*887*	*2583*
Florida	X	X	X	X	X	X	X	X	X	*362*	*1154*
Georgia	X	X	X		X	X	X	X	X	*133*	*424*
Idaho			X	X	X	X	X	X	X	*131*	*347*
Illinois	X	X	X	X	X	X	X	X	X	*322*	*1220*
Indiana		X	X							*33*	*125*
Kentucky	X	X	X							*65*	*113*
Louisiana	X	X	X	X	X	X	X	X		*117*	*278*
Massachusetts	X	X	X	X	X					*136*	*602*
Michigan	X	X	X	X	X	X	X	X	X	*350*	*1090*
Mississippi	X	X	X	X	X	X	X	X		*184*	*322*
Montana		X	X						X	*55*	*126*
Nebraska		X		X						*33*	*84*
New Jersey	X	X	X	X	X	X				*147*	*864*
New Mexico	X	X	X	X	X	X	X	X		*209*	*317*
New York	X	X	X	X	X	X	X	X	X	*570*	*1860*
North Carolina	X	X	X	X	X	X	X	X	X	*295*	*854*
Ohio	X	X	X	X	X	X	X	X	X	*337*	*1223*
Oklahoma			X		X			X		*62*	*157*
Pennsylvania	X	X	X	X	X	X	X	X	X	*258*	*1187*
South Dakota		X	X	X						*60*	*282*
Tennessee	X	X	X							*59*	*301*
Texas	X	X	X	X	X	X	X	X	X	*525*	*1331*
West Virginia	X		X	X				X		*83*	*163*
Wisconsin		X	X							*31*	*124*
Total	*2891*	*3283*	*4551*	*2752*	*2335*	*2172*	*1979*	*2081*	*1752*	*5784*	*18012*

Note: The sample is restricted to years in which a state has at least 15 low-income children.