Safety Net Investments in Children

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ABSTRACT

In this paper, the researchers examine what groups of children are served by core childhood social-safety net programs—including Medicaid, EITC, CTC, SNAP, and AFDC/TANF—and how that's changed over time. They find that virtually all gains in spending on the social safety net for children since 1990 have gone to families with earnings, and to families with income above the poverty line. This is the result of welfare reform and the expansion of in work tax credits. The researchers review the available research and find that access to safety net programs during childhood leads to benefits for children and society over the long run. This evidence suggests that the changes to the social safety net may have lasting negative impacts on the poorest children.

I.   Introduction

A persistently large number of children in the U.S. live in poverty, despite sustained economic growth. Recognizing the social and moral imperative to alleviate child poverty, we have a patchwork of tax and transfer programs targeting low-income families with children aimed at reducing child poverty. In 2016, the federal government spent about $200 billion on such programs, and they had a substantial impact on reducing childhood poverty.[1] Including the value of government tax and transfers reduces child poverty from 25 percent (no taxes or transfers) to 15 percent (current law) (Shapiro and Trisi 2017)—lifting 7.4 million children out of poverty, yet 11.1 million remain in poverty. Growing up poor not only harms children in the short run, but by limiting investments in their human capital it also harms them in the long run.

Thus, considerable government tax and transfer spending on children is aimed at reducing poverty—with a justification primarily on humanitarian grounds. In contrast, another substantial public sum is spent on child human capital policies where an *investment* (rather than humanitarian) criteria is employed. In a standard human capital investment model, resources are spent upfront that generate returns over the longer run across a variety of measures—potentially including better labor market outcomes, improved health, and higher educational achievement. Early childhood education programs are promoted within this framing, and more generally the provision of public education is a primary mechanism for our investments in children. Many compelling studies have found that there is also a substantial investment component to safety net programs that alleviate childhood poverty, suggesting that it is also appropriate to

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[1] This includes spending on to families with children through the EITC, the Child Tax Credit, SNAP, TANF, and public housing and spending on children in Medicaid and SSI. Our data and these calculations are discussed below.

consider a portion of safety net spending through the investment framework. Yet to date, the investment component of safety net spending has not been widely discussed.

Our paper is motivated by the interest in summarizing what is known about the long-run benefits of childhood safety net benefits and in reevaluating current policies in light of this evidence. There are three components to the paper. First, we review the research evaluating the long-run effects of social safety net benefits, which shows that investments in early life can have large impacts on later-life outcomes—perhaps strong enough to suggest that reallocation of investments over the life course to earlier periods can be efficiency-enhancing. Recent research has focused on quantifying the benefits to health and productivity in adulthood of the social safety net. In particular we review the available evidence about the three pillars to the U.S. social safety for families with children: the Supplemental Nutrition Assistance Program (SNAP), the Earned Income Tax Credit, and Medicaid. These studies suggest that in addition to the humanitarian and social insurance reasons to have a safety net, there is also a supply-side case. That is, providing certain safety net programs ends up benefiting children and society over the long run. Both private and public benefits result from these investments. These findings imply that the benefits of the social safety net are broader than is commonly assumed, and indeed that this spending yields impacts that have downstream benefits to taxpayers (through increased tax revenues and potential declines in spending on healthcare and the safety net), in addition to the affected families.

A second part of the paper analyzes the data on government spending on children, how it features in broader public spending, and how it has changed over time. Overall, we find that government spending is not in line with our increasing understanding of

the importance of resources during early life, and the positive spillovers from safety net spending on children.[2] The U.S. spends a relatively low level on children, and spending has remained relatively flat over the last two decades at between 1.5 to 2 percent of GDP (Isaacs et al. 2017). In contrast, per capita spending on the elderly in the U.S. has grown substantially over the same timeframe and in 2015 amounts to 9.3 percent of GDP.[3] U.S. child spending is very low by international standards: the U.S. is near the bottom of OECD countries in "family benefits public spending" as a share of GDP (third from the bottom above only Mexico and Turkey) with a share less than half the OECD average (OECD 2018a). Yet U.S. spending on the elderly, based on "pension spending" as a share of GDP, is just below the OECD average (OECD 2018b).

We also analyze how the composition of spending on children has changed over time. Fundamental changes have occurred in the social safety net for children in the past 25 years. The Earned Income Tax Credit expanded substantially creating subsidies to work, welfare reform dramatically reduced the availability of cash assistance, and health insurance for low income children expanded dramatically through Medicaid. We use a unique approach, based on administrative data, to examine who is benefiting from changes to the social safety net and who is being left behind. In particular, we estimate the changes over time in how government spending is allocated across the income distribution (e.g. those below poverty versus those above poverty) and how it is allocated across working and nonworking families. This analysis shows that there have been substantial shifts over the past 20 years in their composition. We find that an increasing share is going to children near and above the poverty threshold, while a

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[2] The 2017 tax reform legislation includes an expansion of the Child Tax Credit, including the refundable portion that is targeted to lower-earning families.

[3] To be sure some of the elderly spending may have spillovers onto children. For example, providing Social Security to grandparent frees up some family resources that may be spent on children.

decreasing share is directed to the poorest children living below the poverty threshold despite a relatively stable share of children living in poverty. Additionally, there has been a massive shift towards in-work transfers and health insurance, with a declining share in unrestricted cash benefits. Our approach, which uses administrative data wherever possible, makes an important contribution because it circumvents the well-documented undercounting of safety net spending in survey data, the source of data typically used to examine the composition of spending.

Pulling the two parts of the paper together, we evaluate the state of the social safety net for families with children. The literature is not sufficiently developed to provide strong guidance on precisely how to optimally allocate funds across eligible groups, and across different programs. Nonetheless the broad patterns are clear: the research shows there are important benefits to having access to the safety net during childhood that should be considered by policymakers. Furthermore, there are strong returns across the cash, tax based, near cash and health insurance programs that we examine, with potentially larger impacts for the most disadvantaged children. These consistent findings imply that there are substantial potential social and individual benefits from spending on children and their families. Additionally, the decline in availability of benefits for the most disadvantaged children, primarily due to welfare reform, is likely to lead to worse outcomes for these children in adulthood. Any cuts to current programs that will reduce resources going to children would have direct, negative impacts on children in both the short- and long-term. It is also crucial to recognize that the modal recipient family is combining safety net use with employment; the view that all spending is welfare and going to out of work families is not the case. Instead the social safety net is acting to top up earnings to help families make up for stagnating and declining wages (Autor 2012). In light of this, it is important to make sure that

policies can work with the labor market. Specifically, there are costs to adding work disincentives to programs—such as eligibility notches that abruptly remove access to benefits above an income threshold. Furthermore, policies that require labor market participation do not provide rapid response in replacing income lost during recessions.

II. An Overview of the Private and Public Safety Net for Children

We begin by describing the broader set of social safety net programs for children in the U.S., how they compare to spending for other groups, and how this has changed over time. Figure 1, reproduced from Isaacs et al. (2017), reports federal expenditures on children in 2016. The spending takes the form of tax expenditures (e.g. Earned Income Tax Credit, Child Tax Credit, dependent exemption, and tax exclusion of employer-provided health insurance), direct transfers to families (e.g. SNAP, Social Security, TANF, and SSI) and transfers from the federal to state and local governments (e.g. Title 1, special education). Note that this graph focuses on *Federal* spending on children, and omits the sizeable transfers made by states, including the state share of Medicaid and child welfare services, state EITCs, and education spending.

There are a number of programs that provide benefits to low-income children ranging from cash to insurance. Medicaid, which provides public health insurance to low-income children, is the largest program, with $89 billion spent on children (after removing the share spent on the elderly and disabled). The Children's Health Insurance Program or CHIP ($14 billion) is another public health insurance program; it supports children in families with income above the Medicaid eligibility limits. The Earned Income Tax Credit or EITC ($61 billion) is a refundable tax credit for working families

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with children.[4] In 2017 the maximum EITC credit was $5,616 for families with two children, and $3,400 for those with one child. More than 40 percent of tax filers with children received the EITC. The Child Tax Credit or CTC ($50 billion) is a partially refundable tax credit of $1,000 for each child in working families.[5] The CTC provides important benefits to low-income families with children, but a substantial share of the CTC cost goes to families much higher up the income distribution.[6] Supplemental Assistance for Needy Families or SNAP ($31 billion) provides vouchers for food assistance and eligibility is generally limited to those with income below 130 percent of the federal poverty line. In 2017, the average monthly SNAP benefit is $125 per person. In contrast to the tax credits, both working and nonworking families are eligible for SNAP. The other child nutrition programs ($22 billion) include Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) as well as school feeding programs.

Historically, a cornerstone of the safety net was Aid to Families with Dependent Children (AFDC), a cash welfare program not tied to work. The program was overhauled in 1996 into Temporary Assistance to Needy Families (TANF), block granting it to states who were allowed tremendous flexibility in terms of how to administer the program, with funds frozen at their 1996 level in nominal terms, and strict work requirements and lifetime time limits enacted (Bitler and Hoynes 2016). Today only 2.4 percent of the child based safety-net spending goes to TANF (Figure

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[4] There is also a small credit for low-income working families without children; those dollars are excluded from the calculations presented here.

[5] The refundable portion of the CTC is known as the Additional Child Tax Credit (ACTC) and is limited to 15% of earned income above $3,000. Throughout this paper we present the combined CTC and ACTC and refer to it simply as the CTC.

[6] In 2017, the $1,000 credit is phased out starting at incomes of about $80,000 ($120,000) for single parent (married couple) families. The credit is fully phased out at incomes of about $100,000 ($130,000) for single parent (married couple) families. The recent tax bill expands the CTC to raise the credit amount and expand the range of income over which families are eligible.

1), and the program's reach is low—only 23 percent of children in poor families received TANF cash assistance in 2016 compared to 76 percent in 1996 (Floyd et al. 2017).[7] Supplemental Security Income (SSI) is another cash welfare program, providing benefits to low-income disabled and elderly persons. Following a court decision in 1990, the definition of disability was expanded to allow more children to receive SSI (Duggan et al. 2016). Notably, Figure 1 shows that cash welfare is a very small share of U.S. social safety net spending on children. Instead, most spending on children consists of public health insurance, tax credits that are linked to paid work (EITC, CTC), and SNAP.

Figure 2, adapted from Isaacs et al. (2017), contrasts trends in federal spending on children and the elderly for 1980-2015.[8] To account for trends in population size, each category is presented in terms of spending per capita (e.g. per child, per elderly), in inflation-adjusted 2015 dollars. Per capita federal spending on the elderly is currently $35,000 and has doubled over this time frame. To be sure, spending on the elderly is not entirely analogous to spending on children—for example, part of spending on the elderly is a pension linked to prior work and payroll taxes, and a higher share comes in the form of health insurance. However, two points to recognize are that spending on the elderly is relatively generous, and it also involves substantial redistribution to the lower-income elderly. Per capita federal spending on children is only about $5000 per year. When spending on public elementary and secondary schools is included—

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[7] TANF is 2.4% of all spending items in Figure 1. If we limit the set of programs to cash and near cash direct transfers to households (dropping Medicaid/CHIP, Title I, Special Ed) and omit the tax reductions (e.g. dependent exemption, value of untaxed employer sponsored insurance, etc.) TANF still remains below 5% of spending.

[8] A large share of the federal spending on the elderly is for Medicare and Social Security. Those programs also serve some non-elderly (primarily disabled adults); the trends in Figure 2 omit the spending on adults. Although much smaller, we also limit SSI to the spending on the elderly (dropping spending on disabled children and adults). Child spending is the total of programs shown in Figure 1.

$11,222 per pupil in the most recent year spent at state and local levels—total spending on children increases, but a large gap in per-capita spending remains (Figure 2). At the end of this period, in 2015, federal spending on children is only 2.1 percent of GDP compared to more than 9 percent for the elderly. More striking is the significant growth in per-capita spending for the elderly alongside the modest spending levels and upward trends for children. This imbalance has implications for future productivity given the fact that spending on children can be viewed as an investment while spending on the elderly is not.

Trends in public spending should be analyzed alongside trends in private resources available to children. By some measures, including parental time with children (proxied by number of parents in the household) and income, children in lower income households have stagnant or fewer private resources available. As shown in Figure 3, over the past 40 years there has been a marked decline in the share of children living with married parents among children whose mothers have less than a college education; by 2016, only 60 percent of children with mothers without a college degree lived with married parents, compared with 85 percent of children with college-educated mothers. Over the same period, large numbers of both single and married mothers have joined the workforce, as shown in Figure 4. Since 2000, single mothers' labor force participation has been nearly identical to single childless women's (Black et al. 2017) and above the participation rate of married women with children (Figure 4). However, real wages among workers with low education levels have been stagnant or declining, as shown in Figure 5. As we show below in Section IV, an increasing share of benefits is going to families that combine work with safety-net use, and the safety net is supporting families that face stagnant economic opportunities. Finally, along some other dimensions, there have been *positive* changes in private resources available to

children, including a decline in the total number of children per family, and an increase in parental education.[9]

As we proceed below, our analysis focuses on a subset of Federal safety net programs with substantial spending on low-income children. We are particularly interested in discussing those programs and policies for which we have evidence on their long-run impacts on children. Therefore, in the rest of the paper we cover Medicaid, EITC, CTC, SNAP, TANF and SSI.[10] As shown in Figure 1, this captures four of the top five programs (in terms of expenditures).

III.   Findings from the recent literature

In recent years, researchers have made strong advances toward understanding the long-run impacts of safety net spending and other early-life events. Reviewed recently by Almond, Currie and Duque (forthcoming), this research shows that there are critical times both during the prenatal period and in early childhood that deserve particular policy focus. This line of inquiry was built off of a large literature spanning research in public health, epidemiology, and more recently economics that documents important later-life impacts on health and mortality of extreme negative shocks—such as famines,

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[9] Over this period, parental educational attainment has increased. Whereas the median mother had a high school education in the early 1990s, beginning in 1995, the median mother had some college education. Due to these educational attainment changes, the trend for the low education group may partially reflect compositional changes rather than structural trends. In fact, if we instead reexamine Figure 3 for women with below median (versus above median) educational attainment, the trends in child living arrangements are much more stable. Throughout the period, about 60 percent of children with a low-educated mother (below median educational attainment) lived with married parents. The increase in employment among low educated mothers (Figure 4) is similar over our period under both measures but rises slightly less for high-educated mothers using the alternative definition (above median).

[10] Below, when we present more detailed data on the CTC, we consider expenditures on the tax credit that go to families with income below 200 percent of the federal poverty line. This allows us to incorporate this relatively large program but to limit it to our population of interest.

wars, and the 1918 Pandemic Flu. Much of the early work focused on *prenatal* exposure to shocks, and tested Barker's "fetal origins" hypothesis. Barker argued that a poor prenatal environment (in particular inadequate nutrition) "programs" the fetus to be at higher risk of metabolic conditions and disease risk in adulthood (Barker 1990). The economic literature subsequently documented that these extreme negative shocks also impact economic well-being—including educational attainment, IQ, and earnings.[11] As the literature has continued to evolve, it has turned to testing more mild, commonplace shocks, encompassing positive as well as negative shocks. These studies have further documented the importance of the *post-natal* environment—particularly early childhood—leveraging variation in access to nutrition, maternal stress, exposure to alcohol and tobacco, and environmental toxins and public health interventions to identify impacts. The literature clearly supports the conclusion that relatively mild early-life shocks can have impacts on later-life health and labor market outcomes. It is more recent that this literature has turned to evaluating the impacts of the social safety net on long run outcomes.

To do this work, a number of factors must come together. First, adequate longitudinal data are necessary, including information both about childhood circumstances and adult outcomes. In some cases, year of birth and the location of birth or residence in early life is sufficient to determine whether the individual had access to a program. In other cases, information on measures or proxies for family income during childhood is also necessary. Much of the path-breaking work on early-life influences and later-life outcomes has come from countries with extensive population-level panel data like Norway and Sweden, but such data are typically harder to come by in the United States.

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[11] For excellent reviews of the early literature, see Almond and Currie 2011a, 2011b.

Because safety net programs typically serve people who need the program when they need it, it is empirically difficult to disentangle the (likely positive) impact of the safety net from the (likely negative) impact of the circumstances that made a family eligible for the program. To overcome this challenge, researchers need a credible research design that allows them to isolate the impact of the program—and that can be implemented with the available data.

Of course, long-term effects can only be measured after an appropriate amount of time passes; this is true broadly across the literature evaluating the long-term impacts of early life events. Prior to the availability of longer-term outcomes, many studies examined short-term proxy measures such as birth weight—which has been shown to be an important marker of long-run outcomes and which is often more readily available. There is consistent evidence, for example, that links birth weight to cognitive outcomes in childhood (Figlio et al. 2014; Bharadwaj et al. 2013) as well as a wide range of adult outcomes such as wages, disability, adult chronic conditions, and human capital accumulation (Almond et al. forthcoming). Other studies use educational measures as short-term proxies, such as test scores. As longer-term data become available, many studies have revealed larger long-term impacts across a wider variety of measures than the short-run proxies would have implied (Krueger and Whitmore 2001; Ludwig and Miller 2007; Deming 2009; Chetty et al. 2011). In particular, outcomes in adulthood need not operate solely though health at birth (Almond, Chay, and Lee 2005; Almond and Currie 2011a). This suggests that a complete analysis of the long-run effects of the social safety net for childhood requires observing outcomes for affected children when they reach adulthood. Because of the time lag required for measuring long-term outcomes, the evidence we report here is necessarily related to

programs that were implemented or expanded two decades ago or longer. To the extent that these policies have been similar over time, or that the impacts measure basic economic channels through which policies flow, these evaluations of older programs are still relevant today. On the other hand, if circumstances or policies have changed dramatically, then the inference to today's policies may be more limited.

Below we present evidence from the four primary types of safety net programs for low-income families, covering in-kind food benefits, tax credits linked to paid work, unconditional cash transfers, and public health insurance.[12] We include studies that produce causal estimates of the impact of the safety net on long-run outcomes, and related work on short- and medium-run effects. As described below, each program type has been evaluated using credible research designs that are capable of identifying the causal impact of program access or participation on a range of outcomes.

a. In-Kind Food Benefits: The Supplemental Nutrition Assistance Program (SNAP)

SNAP is a means-tested voucher program designed to supplement low-income families' food budgets. The vouchers are structured to fill the gap between the resources a family has available to purchase food and the resources required to purchase an inexpensive food plan. Eligible families typically have income below 130% of the poverty line. A maximum benefit is extended to those with zero income and the benefit is phased out at a 30 percent rate with increases in income (after deductions). Vouchers are paid monthly and can be used to purchase most foods at grocery stores and farmers' markets that are intended to be taken home and prepared. In 2016, 13.6 percent of the population participated in SNAP, and average monthly benefits were

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[12] See Almond et al. (forthcoming), Butcher (2017) and Sherman and Mitchell (2017) for other reviews of these studies.

$255 per household, or $126 per person. After accounting for the underreporting of benefits, SNAP is estimated to have lifted 3.8 million children out of poverty in 2015 (Wheaton and Tran 2018).

Economic theory predicts that inframarginal participants—that is, those who receive SNAP benefits in an amount less than they would otherwise spend on food, who comprise the vast majority of participants—will treat their benefits like cash. There is some empirical debate about whether SNAP benefits are spent in the same manner as an equivalent cash transfer would be, or if instead the marginal propensity to consume food is higher out of SNAP than from regular income (Hoynes and Schanzenbach 2009; Hastings and Shapiro 2017). In any case, SNAP represents a sizeable income transfer to participants, and is expected to change the amount and/or quality of food purchased. Like any means-tested income transfer that is not conditioned on work, there are potential disincentive effects on work effort. Understanding the effect of a program on work is relevant for quantifying the impact on total household financial resources and also for parental time spent with children. Studies find that such effects for SNAP are small in practice (Hoynes and Schanzenbach 2009; East forthcoming).

There have been relatively few expansions or other changes in SNAP that yield a credible research design to study the impacts of the program. Benefit levels do not vary by geography (except Alaska and Hawaii), and eligibility is universal, typically conditioned only on income and assets. One source of variation leveraged by researchers is the program's gradual, cross-county introduction during the 1960s and 1970s. Another source was the temporary exclusion of legal immigrants from the program that was adopted in 1996 as part of the welfare reform law and reversed in 2003.

Using cross-county variation in the timing of the introduction of SNAP and Vital Statistics data on the universe of births in the U.S., Almond, Hoynes, and Schanzenbach (2011) find that SNAP reduced the incidence of low-birth weight by 7 percent for whites and 5-11 percent for blacks. In addition, although results are not statistically significant, point estimates suggest the introduction of Food Stamps reduced neonatal mortality. Examining legal immigrants' loss of benefits in the years after welfare reform, East (2017) finds that parental access to SNAP during pregnancy improves the child's health at birth, as measured by birth weight. She also examines the impact on medium-run health, finding that a child's SNAP access before age five improves the child's parent-reported health in adolescence. She finds suggestive evidence that SNAP reduces school absences, doctor visits and hospitalizations, all of which are suggestive of long-term benefits.

Hoynes, Schanzenbach and Almond (2016) provide direct evidence, finding that childhood access to SNAP improves adult health status and economic outcomes. In particular, individuals with access to food stamps in childhood had better health in adulthood—as measured by a "metabolic syndrome index" combining measures of obesity, body mass index, and the presence of chronic conditions such as diabetes and high blood pressure. There are similarly positive overall impacts on economic outcomes, as measured by a "self-sufficiency" index measure that includes their current earnings and family income, and indicator variables for whether the individual graduated from high school, is currently employed, is currently not living in poverty, and is not participating in the TANF and SNAP safety net programs.

Impacts were largest among those who had access at the youngest ages, particularly ages 0-5, underscoring the importance of providing protection in early childhood (Barker 1990; Heckman 2006). While health improvements were similar across gender, the economic self-sufficiency improvements were present only for women (with small and statistically insignificant effects for men). The long-term impacts were largest in for those who spent their childhoods in the most disadvantaged counties.

The Special Supplemental Nutrition Program for Women Infants and Children (WIC) is another food and nutrition program, providing vouchers for purchases of specific food items (e.g. fortified cereal, eggs, cheese, milk, juice, dried legumes, etc.) to pregnant and postpartum women, infants, and children under 5. Families with income below 185% of poverty are eligible for WIC. Despite the relatively low budget cost of WIC ($6 billion in 2016), the reach of the program is significant, especially to the youngest children—about half of births are to WIC recipients (Hoynes and Schanzenbach 2015). There is a large set of studies with robust evidence that WIC benefits for pregnant women leads to improvements in birthweight and infant health. This is suggestive that WIC may also lead to long-run improvements, though this has yet to be tackled in the research.

b. Tax Credits Tied to Paid Work: EITC

A large and increasing share of safety net programs are tied to employment. The most important of these programs is the Earned Income Tax Credit (EITC). The EITC is available to lower-income families with positive earned income. It is refundable, so when a family's income is too low to generate tax obligations, the family receives a refund check from the Internal Revenue Service. In 2017, a single mother with two children with earnings between $14,040 and $18,340 (a full time-full year minimum

wage worker earns $15,080) would receive the maximum credit of $5,616, fully 40 percent of pre-tax earnings. In 2015 the average benefit for families with children was $3,189 (IRS 2017). The Child Tax Credit (CTC) is similar in structure to the EITC but is available to families earning substantially more than the EITC. The CTC is also not fully refundable, which limits the reach of the program to lower income families (Hoynes and Rothstein 2016). Together these tax credits represent the largest anti-poverty program for children; the EITC (and the child tax credit) raised 4.8 million children out of poverty in 2015 (Renwick and Fix 2016).[13]

Because the EITC is only available to families with positive earned income, the credit is expected to lead to increases in employment, especially among less-skilled workers.[14] The research finds consistent evidence that the EITC leads to increases in employment (for recent reviews see Hoynes and Rothstein 2016; Nichols and Rothstein 2016). For example, Meyer and Rosenbaum (2001) find that the EITC raised employment by more than 7 percentage points for single women with children relative to those without children between 1984 and 1996. As shown by Hoynes and Patel (forthcoming), the household earnings gain as a result of the increase in employment is as large a component to the increase in household (after tax) income as the government outlay from the EITC. This is important as it establishes a strong "first stage" for the effect of the EITC on family resources. More generally, changes in maternal employment may have direct effects on children—potentially positive to the extent that employment brings more income to the family, or potentially negative to the extent that the child attends low-quality childcare or receives fewer time investments from his or her

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[13] There is little research on the CTC, though one would expect similar impacts as the EITC where the two programs overlap. All of the studies on the short- and long-term benefits of the tax credits come from analysis of the EITC.
[14] One exception is secondary earners married to low income primary earners; hours of work are predicted to fall for those secondary earners (Eissa and Hoynes 2004).

parents. In sum, because the EITC provides both a direct income transfer to families and a boost to maternal employment, studies of the EITC are measuring a dual "treatment".

There is a recent and growing literature that uses the increase in after-tax income generated by the EITC to examine impacts on downstream outcomes. These studies use quasi-experimental approaches leveraging legislated expansions of the credit. Many studies focus on the 1993 expansion of the federal credit, when the maximum credit more than doubled for families with two children and increased by more than 40 percent for those with one child. This policy variation is leveraged using a difference-in-difference approach with comparisons across time and family size. The EITC has been expanded several other times (in 1986, 1990, and 2009), providing additional variation for researchers. Other researchers use the schedule of the credit—which is phased in at low earnings levels, level across some income range, and then is phased out above a higher earnings level, providing variation that can be used for research—to estimate its impacts. In addition, 29 states (plus Washington, D.C.) have adopted state add-on EITC programs, providing another source of variation.

Several studies find that the EITC leads to increases in infant health, including an increase in average birth weight (Baker 2008; Strully et al. 2010). Hoynes, Miller, and Simon (2015) find that a $1,000 induced increase in after-tax income due to the EITC leads to a 2-3 percent reduction in low birth weight births. Evans and Garthwaite (2014) find that the EITC leads to improvements in maternal health, including reducing the incidence of risky biomarkers such as measures of inflammation, high blood pressure and elevated cholesterol and improving mental health, and suggesting an income pathway for a reduction in stress.

Additionally, there are several studies documenting a link between the EITC and cognitive and human capital outcomes. Dahl and Lochner (2012, 2017) use an instrumental variables approach leveraging the EITC expansions and find that a $1,000 increase in family income due to the EITC leads to an increase in combined math and reading test scores by 0.04 standard deviations. Chetty, Friedman, and Rockoff (2011), using the nonlinearity of the EITC schedule and administrative data from New York City public schools, find that $1,000 in income due to the EITC leads to a 0.06-0.09 standard deviation increase in test scores.[15] Bastian and Michelmore (2018) find that a larger EITC during childhood leads to an increase in completing high school, college attendance and employment in young adulthood. These effects are more important, they find, for the EITC received in the teen years. Additionally, Manoli and Turner (2014) and Maxfield (2013) look at the contemporaneous effects of a more generous EITC on education and the transition to college. Both studies find that the impact is larger for children affected at younger ages, while Maxfield additionally finds larger effects for boys and minority children. Manoli and Turner (2014) use the universe of federal tax records and the nonlinearity of the EITC schedule to examine the effect of the EITC in the senior year of high school on college attendance. They find that an additional $1000 in EITC leads to a 2-3 percentage point increase in college going. Although direct evidence on longer-term outcomes beyond educational attainment is limited, we would expect that the increase in human capital shown in the literature will result in better adult economic and health outcomes, similar to those found for other interventions.

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[15] A related paper using variation across Canadian provinces in the generosity of child tax benefits over time and finds quantitatively similar effects on children's cognitive test scores (Milligan and Stabile 2011). They also find positive contemporaneous effects on mental health and some physical health outcomes.

c. Unconditional Cash Transfers

AFDC provided cash assistance to poor families (primarily single mother families) with children beginning in 1935. There is little evidence on the long run effects of the AFDC program, though Currie and Cole (1993) find that AFDC leads to improvements in birth outcomes. Federal welfare reform took place in 1996 and, as discussed above, replaced AFDC with TANF leading to a reduction in funding and a shrinking role of cash assistance. A large literature examines the effects of welfare reform on short-term outcomes such as maternal employment, family income, and health (see reviews by Grogger and Karoly 2006; Moffitt 2003; Ziliak 2016). However, the evidence on the long-run impacts of providing cash transfers to needy families or the long-term impact of welfare reform is limited. The best evidence we currently have on the impacts of the welfare policies on children are from research syntheses that combine the data in several state welfare experiments in the years prior to federal welfare reform. For example, the results in Duncan et al. (2011) imply that an additional $1,000 in family income increases student achievement by 0.05-0.06 standard deviations—a similar magnitude as the impacts of the EITC described above.[16] This achievement gain would be predicted to raise subsequent earnings by about 1 percent.

Prior to AFDC, some states operated cash welfare programs for families with children—termed Mothers' Pension programs. Aizer et al. (2016) use unique historical data to evaluate the effect of child access to cash welfare on wide range of long term outcomes. The researchers digitize records from social service agencies in many states

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[16] These results come from pooling data across randomized experiments across U.S. states (and one from Canada) where one group received the welfare reform program and the other the pre-existing AFDC program. The impact of income on child outcomes is identified using variation across different programs and an instrumental variables approach (the instrument is random assignment across states).

to determine who either applied for or received benefits and use a research design that compares children in families that were accepted into the program to children in families that were rejected from the program. Using data from the military, death records and several state historical censuses, they find that receipt of cash assistance has a host of positive impacts, including reducing the probability of being underweight by half (data available only for men), increasing educational attainment by 0.4 years, and living an additional 1.5 years of life. There is suggestive evidence that the impacts may be larger for children exposed at younger ages. While this evidence, from more than 100 years ago, may have limited applicability to the benefits from current programs, it provides a unique and comprehensive set of findings measuring the impact over the very long run of providing additional cash resources to disadvantaged children.

An interesting set of studies sheds additional light on the impact of additional cash income to disadvantaged populations. Akee et al. (2010) trace the effects of a casino opening among the Eastern Band of Cherokee Indians in North Carolina. Using the casino revenues, the tribe initiated "per-capita payments"—a sort of universal basic income provided to tribe members. Using variation across cohorts over time, compared to a geographically proximate control group, the researchers found that an additional $4000 per year in income to the poorest households led to sizeable improvements in educational attainment and a reduction in criminal activities, with no adverse impact on employment. Additionally, the cash transfer led to more parental investment and positive interactions between the parent and child, and beneficial effects on children's emotional and behavioral health and personality traits during adolescence (Akee et al. forthcoming).

d. Public Health Insurance: Medicaid

Medicaid provides public health insurance to children (and others) in low-income families. Originally, only families receiving cash welfare were for eligible for Medicaid, but federal law led to significant expansions in the 1980s and 1990s (Gruber 1997). Though states were required to meet particular expansion targets (e.g. OBRA 1989 required states to cover pregnant women and children under 6 in families below 133% of the federal poverty level), the states took very different expansion paths—leading to variation in coverage across states, time, family income and child age. A large literature takes advantage of these expansions estimating difference-in-difference models to investigate the long-run effects of access to health insurance and medical care. Another approach takes advantage of the fact that the Medicaid expansion legislation stipulated that states had to expand coverage only to children born after September 30, 1983, creating a sharp increase in Medicaid eligibility that is used in a regression discontinuity design. For example, poor children born in October 1983 experienced 5 more years in Medicaid eligibility compared to a poor child born in September 1983 (Card and Shore-Sheppard 2004; Wherry and Meyer 2015). A few studies discussed below examine the introduction of Medicaid in 1965 which allows for investigation of the impacts over a much longer period.

Using the significant policy expansion in the 1980s and 1990s, work on the short-term impacts of Medicaid eligibility found sizeable impacts on infant health, including reduced infant mortality and low birth weight (Currie and Gruber 1996). Infant health impacts were stronger when expansions were restricted to low-income women, compared with broader expansions. By expanding eligibility and breaking its link to AFDC, the reforms also resulted in decreased AFDC participation and an increase in employment among affected mothers (Yelowitz 1995).

A large literature has recently emerged examining the effects of childhood exposure to Medicaid on health and economics outcomes in the teen years through young adulthood. Currie and Schwandt (2016) find that over this time period, mortality for infants and children declined overall, and inequality in mortality fell as well (in contrast to the trends among older adults). Currie et al. (2008) find that Medicaid coverage in early childhood (ages 2-4) leads to an improvement in self-reported health in later childhood. Wherry and Meyer (2015) find that additional Medicaid in late childhood (ages 8-14) leads to a 19 percent reduction in mortality rates from internal causes among blacks ages 15-18. They do not find any significant mortality change among whites, or blacks at non-teen ages, although death rates for children older than age 1 and younger than 15 are quite low. Additionally, Wherry et al. (2015) find that Medicaid eligibility during childhood is associated with fewer hospitalizations and emergency department visits in early adulthood for blacks, with largest reductions for visits related to chronic conditions and among individuals living in low-income neighborhoods. Miller and Wherry (forthcoming) find that Medicaid eligibility between conception and age 1 results in lower rates of chronic conditions and fewer hospitalizations related to diabetes and obesity in young adulthood. East et al. (2017) find that Medicaid's health benefits extend to the next generation: children of mothers who had more exposure to Medicaid in their childhood themselves go on to have healthier infants.

The positive effects of Medicaid are not limited to health outcomes. Brown et al. (2015) use administrative tax data and find that increased exposure to Medicaid during childhood increases education and earnings through age 28. Miller and Wherry (forthcoming) find that expansions in Medicaid between conception and age 1 lead to increases in high school graduation. These results are also supported by Cohodes et al.

(2016) who find that increased Medicaid eligibility during childhood reduces high school dropout rates and increases and college completion, and Levine and Schanzenbach (2009) who find it increases standardized test scores in fourth and eighth grade.

Since these policy expansions are relatively recent, the population of treated people are still in young adulthood. Examining the mid-1960s introduction of Medicaid allows for a longer-run evaluation of health insurance. Using the timing of the rollout of Medicaid across states, Bourdreaux et al. (2016) find that increases in Medicaid exposure between ages 0-5 leads to reductions in chronic conditions (particularly high blood pressure) in adulthood. Using cross-state variation in AFDC rules and the introduction of Medicaid, Goodman-Bacon (2016) finds that additional childhood exposure reduces adult mortality and disability and increases adult employment.

Overall, this recent research on Medicaid, documents a strong link between greater access to public health insurance during childhood and improved health and economic well-being in adulthood. There is much more to learn, including the mechanisms for these improved long-run impacts.

e. Implications of Safety Net Research

Overall, the literature across programs finds positive long-run benefits of having access to safety net programs in childhood, leading to improvements to both health and economic productivity in adulthood. Prior to the emergence of this recent literature, the discussion of the costs and benefits of the social safety net was focused on the narrow lens of the short run. Many of the long-run benefits are private (improved own earnings and own health), though public benefits are also present due to increased

taxes and decreased in health-related government outlays. While the literature does not suggest that the benefits "pay for themselves" in the long run, these programs nonetheless have substantial positive external benefits that have been quantified. Additionally, many additional aspects have not yet been quantified—for example, impacts on criminal activity and longer-term impacts on health—which have large public components to them and may further increase the benefits.

The literature points to some findings that could be helpful in considering the design or redesign of the social safety net. First, in the limited number of cases that have explored differential returns by child age of exposure, the evidence points to greater long-run returns to exposure in early childhood than later childhood. Second, the benefits are larger for more disadvantaged groups, especially African Americans. One caveat on this finding, though, is that it can be difficult to disentangle whether the larger effects for more disadvantaged groups are due to higher rates of *exposure* to these programs or larger *returns* to exposure. Other dimensions—such as whether long-run returns differ across cash transfers, in-kind benefits, or health insurance—are important to ascertain but as yet the evidence is too incomplete to be able to make such comparisons to inform better design of policy.

IV.   The Recent Evolution of the Safety Net for Children

Having summarized the recent findings documenting long-run benefits of childhood exposure to the social safety net, we now examine in more detail what population these core programs are serving and how this has changed over time. In particular, we use administrative data to examine aggregate trends in social safety net spending, how the spending varies across working and non-working families, and how it varies across the income distribution. We do this for seven programs (Medicaid, EITC, CTC, SNAP,

AFDC/TANF, SSI and public housing) and our analysis covers the period 1990 through 2015. In light of the evidence presented in the previous section, not only may these trends have implications for the welfare of children, families and the economy today, but they may also impact individuals and the aggregate economy in the long run.

The analysis of trends in safety net spending for different subgroups is complicated by the well-documented fact that social safety net income is increasingly under-reported in household surveys (Meyer et al. 2009; Meyer et al. 2015). Since this underreporting has increased over time, relying on household survey data may be particularly unsuitable for examining trends in the social safety net. Therefore, our analysis relies as much as possible on program-specific administrative data.[17] In general, we begin with administrative aggregates and identify the total spending on families with children. For programs that serve populations beyond families with children, we use available administrative data to identify the amount that goes to families with children.[18] We then apportion total child spending into four groups based on the share going to those families with incomes less than 50% poverty, 50-99% poverty, 100-149% poverty, and 150-199% poverty.[19] We also apportion total child spending into the amount going to families with earned income and families without earned income. Unlike the data in

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[17] Administrative data are not perfect. They are generated as part of program administration and as such and often have limited demographic information and only capture family members and family resources that are part of eligibility and benefit determination. The advantage of household survey data is that it provides a more comprehensive picture of the household.

[18] To be more specific, the EITC, CTC, SNAP, TANF and housing provide benefits to "family units" – our case families with children. Two programs, Medicaid and SSI, provide benefits targeted to particular individuals. We count spending on the entire family (parents and children) for the family unit programs and count spending for the children for Medicaid and SSI. For more detail, see the appendix.

[19] The CTC extends to families earning far above 200% of the poverty line – we estimate that almost 40% of the $54 billion in CTC spending in 2015 goes to families above 200 percent of the poverty line. Among the other social safety net programs little or no spending goes to families above 200% of the federal poverty line. To maintain our focus on programs targeting the low-income population, throughout our analysis in this section we limit CTC spending to families below 200% of poverty.

Figures 1 and 2 (which contain only federal data), our administrative aggregates for state-federal programs (AFDC/TANF, Medicaid) consist of the combined federal and state spending.

To construct the spending across the four income-to-poverty bins requires a definition for family resources and the poverty threshold (a family is poor if resources<poverty threshold). For the poverty threshold, we use SPM poverty thresholds, projected back to 1990 using methods in Wimer et al. (2014). The SPM threshold bases needs on a broader array of necessary expenditures and makes other technical improvements relative to the official poverty measure (which is based on food costs alone). For reference, the SPM threshold for a family with two adults and two children in 2016 is $26,104, compared to $24,300 for the official poverty threshold. We define resources to be earned income plus cash transfers plus in-kind transfers (excluding Medicaid) minus taxes (including the EITC and CTC)—essentially after-tax and transfer income following Bitler and Hoynes (2016) and Bitler, Hoynes and Kuka (2017). This definition of resources is aligned with—though not identical to—the resource measure in the Supplemental Poverty Measure (SPM) measured by the Census since 2011.[20] However, each administrative data source provides a different subset of these resources elements. We come as close as we can to measure after tax and transfer income consistently across the administrative data sources, imputing missing elements in some cases. Note that poverty is typically defined based on annual resources. While the EITC and CTC measures contain annual income data, the administrative data for SNAP and

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[20] The SPM resource measure subtracts medical out-of-pocket expenditures and work-related expenses (including child care and other expenses). These elements are not measured in the administrative data and thus excluded from our resource measure. Additionally, each of our administrative data cover different income and transfer measures. For example, the tax data which we use for the EITC and CTC, does not include any nontaxable income sources (such as SNAP). The SNAP administrative data, does not include measures of tax credits (EITC). We make an effort to calculate resources consistently across sources; see the Appendix for details.

AFDC/TANF only measure monthly income, which we then use to approximate annual income by multiplying it by 12. We are able to apportion spending into the four poverty and two earnings groups relying solely on administrative data for SNAP, EITC, CTC, and AFDC/TANF. For the remaining three programs (Medicaid, SSI, and public housing) no suitable administrative data are available; we instead use the Current Population Survey to apportion aggregate spending into the groups. For more detail on our approach, see the data appendix.

Figure 6 plots the real aggregate spending on families with children between 1990 and 2015, by program.[21] Overall total spending is increasing, from under $100 billion in 1990 to about $270 billion in 2015 (in real 2015 dollars). However, the overall trend masks substantial differences across individual programs. Cash welfare (not tied to work) for families with children declined substantially following 1996 federal welfare reform; cash assistance through AFDC totaled $34 billion in 1990 compared to $8 billion (under TANF) in 2015.[22] In contrast, the introduction of the CTC and expansion of both tax credits (EITC and CTC) have led to large increases in spending – from $12 billion in 1990 (for the EITC) to about $100 billion in 2015 for the combined EITC and CTC.[23] SNAP spending had been fairly consistent over the first two decades of the time series, before increasing sharply during the Great Recession. Medicaid spending has also increased substantially over this twenty-five-year period, reflecting the policy expansions that led to increases in health insurance coverage among children. Housing assistance and SSI, by contrast, have remained fairly small contributors to overall

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[21] Here, and throughout the rest of the paper, we limit CTC spending to that going to families with income below 200% of poverty.

[22] This is labeled TANF but it spans the period in the transition from AFDC (1990-1996) to TANF (1997-present).

[23] In 2015, the total CTC cost was $54 billion, the cost limited to those with income below 200% of poverty was $33 billion.

federal child spending. In sum, the composition of the social safety net for children have changed substantially over this time period. In 1990, the majority of spending was received by families with children receiving cash welfare.[24] Today there is minimal unconditional cash welfare spending, instead the vast majority of public expenditures are for tax credits tied to paid work and health insurance.

To further investigate these changes, we next examine how social safety net spending has changed across the income distribution. To do this we apportion total spending in each program into four bins of after-tax and transfer income relative to the SPM poverty threshold (<50%, 50-99%, 100-149%, 150-199%) and sum up across the programs. Figure 7 presents the tabulations based on spending on SNAP, EITC, CTC and AFDC/TANF. We limit to these four programs because apportioning into poverty (and earnings) groups is possible using only administrative data. Appendix Figure 1 presents a comparable figure that also includes public housing, SSI and Medicaid (where apportioning into groups relies on the Current Population Survey). In the top panel we plot aggregate spending (by poverty category) year by year, in real 2015 dollars, and in the bottom panel we plot the share of total spending each year going to each of the four poverty categories. These figures show that overall spending has increased most dramatically for families between 100 and 149 percent of the poverty line, from less than $10 billion in 1990 to $54 billion in 2015. Spending directed to families between 150 and 200 percent of poverty has also notably increased, from essentially zero in 1990 to $14 billion in 2015. Spending on families between 50 and 100 percent of poverty dropped in real terms from 1995 to 2002, then increased sharply during the Great Recession before coming down again in recent years. Panel (b) shows that the share of the social safety net going to families with children in

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[24] Prior to welfare reform, Medicaid was limited to families receiving cash assistance (AFDC or SSI).

poverty (particularly 50-99% poverty) has declined substantially over this period; the share of spending on families with income below poverty has fallen from 87 percent in 1990 to 56 percent in 2015. This has been replaced by gains in the share going to families with income in 100-149% of poverty and to a lesser extent 150-200% poverty.

The qualitative findings are similar for the results on the full set of seven programs (Appendix Figure 1). While there are gains in the level of spending in each income-to-poverty group, the share of spending for families below the poverty threshold has fallen steeply.

Another lens to examine this change is to apportion spending to families with earned income compared to families without earned income. We present those results (excluding Medicaid, SSI and public housing) in Figure 8 (and with these programs in Appendix Figure 2). These striking results show that virtually all of the gains in spending on the social safety net for children since 1990 has gone to families with earnings (Figure 8A). In real terms, spending on families without earnings has fallen from $45 billion in 1990 to $33 billion in 2015. The share of total spending going to families without earnings has fallen even more—from almost 70 percent of spending in 1990 to 20 percent in 2015 (Figure 8B). The same patterns are evident for the full set of 7 programs (Appendix Figure 2).

The results in Figures 7 and 8 show that the distribution of spending has changed substantially over time—away from the lowest income levels and away from non-workers. Part of this is the result of the contraction of some programs (e.g. AFDC/TANF) and the expansion of others (EITC, CTC). Figure 9 provides a summary of the policy changes between 1992 (Figure 9A) and 2015 (Figure 9B). Each figure shows

the sources of support for a hypothetical family consisting of a single mother with two children. We simulate the benefits (e.g. AFDC/TANF, SNAP, EITC, CTC, etc.) for a range of annual earnings; all benefits and earnings are in 2015 dollars.[25] In 1992, welfare reform has not yet occurred, the EITC is quite small, there is no CTC, and the benefits are targeted at the bottom of the earnings distribution. In 2015, in contrast, TANF is no longer an entitlement (so is excluded here), the EITC has expanded, the CTC has been introduced, and SNAP remained much the same. On net resources have shifted away from the lowest earnings levels and moved up the income distribution. These illustrative policy changes are born out in the empirical analysis in Figures 7 and 8.

A natural question to ask is to what extent are the trends in spending across poverty and work categories (Figures 7 and 8) driven by changes in the number of children across these groups? These changes may be a direct result of the changes in the policies illustrated above as well as other factors. However, the administrative data do not allow for this measurement, and so counting the number of children by poverty group (or by parental work status) requires using the CPS data which are known to contain substantial measurement error. Nonetheless, Figure 10 presents the percent of children in each of the poverty groups, using CPS data from 1990 to 2015. The percent of children below 50% of poverty has remained quite steady. The share in 50-99% of poverty dropped sharply in the 1993-2000 period due to welfare reform, the EITC expansion and the rise in employment (Meyer and Rosenbaum 2001; Grogger 2003) and has slightly trended up before falling at the end of the period. We can use the poverty counts underlying Figure 10 (and for earnings, Figure 4) and convert the

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[25]These figures exclude income taxes paid (only include positive elements). AFDC/TANF benefits are calculated under the rules of the state of Colorado.

spending in a poverty group (or earnings group) into spending per number of children in that group. As shown in Figure 11A, per-child spending in all the income-to-poverty groups exhibits a steady upward trajectory, particularly for the highest income-to-poverty groups—for example from under $1000 in 1990 to more than $4000 in 2015 for those between 100-149% of poverty (real 2016 dollars). The trends for the lower two groups are quite flat, by comparison, except for increases in the Great Recession and its aftermath. This is particularly apparent when the trends by poverty group are expressed relative to their 1990 levels. Figure 11B shows the relatively small changes for the lower poverty groups in per capita spending compared to the six fold increase for those with incomes between 100-149% (in fact we had to omit the relative trend for the highest income group as it increases 45 times over this period, from a very low baseline in 1990).

As we showed in Figure 4, children are much more likely to live in families with working parents. This is important to take into account when viewing the trends over time in spending by earnings group (Figure 8). Figure 12 presents per capita spending by earnings group in levels (Figure 12A) and growth in per capita spending relative to 1990 (Figure 12B). These graphs clearly show that the spending per child has increased dramatically for children in families with earnings (increasing fivefold over this period) compared to a (small) decline in per capita spending for children without working parents.

To gain more insight into how these changes in the social safety net break down along the different programs, Figure 13 presents spending for those below poverty (pooling <50% and 50-99%) and above poverty (pooling 100-149% and 150-199%) in 1990 and 2015, program by program. This figure reveals several important facts. Welfare reform

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and the decline in unconditional cash assistance is fully felt by those with the lowest incomes. More than half of the increased spending for the EITC and more than three-quarters of the increased spending for the CTC goes to those with income between 100-199% of poverty. Most of the increases in Medicaid spending are also going to those above poverty. Additionally, Figure 14 shows that across each program, the increases in spending are going to those with earned income.

Ours is not the first study to examine the evolution of the social safety net for children and families. However, to our knowledge, we are the first to rely almost exclusively on administrative data to analyze data by poverty status and work status. For example, Moffitt (2015) in his Presidential Address to the Population Association of America, presents similar calculations by poverty status where he uses the Survey of Income and Program Participation to apportion spending into poverty bins. The Congressional Budget Office (2013), in their analysis of the distribution of taxes and spending across income quintiles, uses the IRS's Statistics of Income Public Use Tax File (for taxable transfers, EITC, CTC and other taxes—as we do) but uses the Current Population Survey for nontaxable transfers. Meyer and Mittag (2015) show that relying on household surveys such as the CPS have important misclassification of the level and composition of families defined as poor. Isaacs et al. (2017) use the Urban Institute TRIM3 model to adjust for underreporting of transfers, but their study focuses on aggregate trends and does not show the results by poverty or work status. In Appendix Figure 3, we compare the CPS and administrative estimates of the share of social safety net spending by poverty group. The CPS shows much higher amounts of spending on the above-poverty group than does the administrative data, consistent with underreporting among lower-income survey recipients. The CPS underreporting

is also becoming greater over time for the below-poverty group—the ratio of CPS to administrative counts fell from almost 50 percent in 1990 to 27 percent in 2015.

In summary, the level and composition of the social safety net for families with children has changed substantially over the past 25 years. One major finding is the decline of cash assistance and the rise of Medicaid and tax credits that are linked to paid work. Spending on Medicaid and tax credits have grown both absolutely and as a share of total expenditures, and they now represent three quarters of all spending on low income families with children. A second major finding is the shift in spending to work-contingent programs away from traditional out-of-work assistance. A third finding, related to the first two, is the shift in spending from the most disadvantaged to somewhat higher up the income distribution. Finally, through this period of change, SNAP has remained steady and significantly important for low-income families.

An implication of this shift is less protection to negative (labor market and other) shocks among disadvantaged families. In fact, building a safety net around work leaves families with little protection during times of high unemployment. Bitler, Hoynes and Kuka (2017) show that spending on tax credits is (pro) cyclical and thus provides little protection against economic downturns. Bitler and Hoynes (2015, 2016) show that an implication of the massive shift in the social safety net is that deep poverty increased by more in the Great Recession than we would have predicted from prior downturns.[26] This shift would also be expected to increase income volatility for the most

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[26] The Bitler and Hoynes work estimates regressions of the relationship between the state-level unemployment rate and (poverty and) deep poverty rates, finding that in the Great Recession deep poverty increased by more than would be predicted based on the relationship from prior recessions. The Bitler and Hoynes data are not adjusted for underreporting. Sherman and Trisi (2015) find that the overall rate of children's deep poverty, after adjusting for underreporting, did not rise between 2007 (2.7%) and 2010 (2.6%).

disadvantaged. Because unemployment rates are higher and more cyclical for African Americans, this reorientation of the safety net is likely to have particularly harmful consequences for black children (Hoynes, Miller and Schaller 2012). The mounting evidence presented above on the long-term impacts of resources in childhood, however, suggests that children's additional vulnerability to economic downturns likely will have downstream costs in terms of worse later-life health and economic outcomes.

V.   Conclusions and Future Research

Increasing income and resources at bottom of the distribution may generate substantial benefits, both private and public, in the longer run that have only recently begun to be quantified. There may be particularly large returns to these investments when children are young and to the most disadvantaged children. This implies that the benefits of safety net are broader than previously thought and that there are positive external benefits to taxpayers. With interest in more "evidence-based policy making," it is important to keep in mind that the costs are easily measured today but many of the benefits are harder to measure and may not appear until the longer run.

Moving forward there is much more we would like to know. There are more outcomes to be quantified, including outcomes that, if improved, would yield substantial public cost savings such as disability, crime, and later-life health. There are programs with demonstrated positive short-run impacts (WIC, SSI) where we have no research on long-run impacts. In addition, it is important to determine whether there are interactions between programs, and if so, are they substitutes or complements? What is effective for remediation for early childhood deprivation? How do these investments vary across children? When and for whom are the benefits the greatest? Are the returns consistently greater in early life? Are there differences by gender, or gender-by-race?

Finally, we need to fill in gaps in our understanding of the effects of programs between early life and adulthood; this should help us learn about mechanisms.

Given the early stages of this research, we do not think it is possible at this point to make conclusions about the rates of return, their magnitudes or how they vary across different programs. Given the emerging evidence, we don't think it is likely that these long-run benefits will be sufficiently large for the programs to "pay for themselves." However, these long-run benefits currently are largely ignored in policy discussions, and it may be important for gaining insight into the nature of material depravation and the gains to a more generous and counter-cyclical social safety net.

The research is developed enough today, though, to provide some guidance to policymakers. First, it documents the importance of a robust social safety net. Cuts to programs that reduce resources going to children, which are currently being discussed, will have direct, negative impacts on children in both the short- and long-term. Second, employment and earnings have become an increasingly important source of income for the poor, and as a result safety net programs are acting as a partial income supplement during normal economic times (extremely important given the prevalence of wage stagnation in the lower half of the wage distribution), and consumption insurance when earnings are lost or fewer hours are available. As such, maintaining the strong work incentives (Kosar and Moffitt 2017) will allow for support of a broader population and also to ensure that programs can respond quickly to replace lost income during recessions. This suggests that reforms such as block grants that are unchanged during downturns—or require Congressional approval and the delays that come with it—are less effective than programs that can automatically respond and quickly enroll families once they become eligible for benefits. Third, devoting more effort to raising

enrollment among eligible children will increase the the long-run benefits of these programs. Fourth, building a safety net based largely on work contingent programs means they provide incomplete insurance against earnings and employment losses. The fact that we lack a significant out of work social safety net means higher rates of deep poverty (less than 50% poverty) that harms children in the short and long run. Putting this all together, since there is a substantial investment component to safety net spending, and because there have been positive returns on expansions in spending, the evidence suggests there could be further returns to additional safety net spending for the young.

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Data Appendix

This paper documents how the social safety net for children has changed over time, including (1) aggregate spending; (2) spending across different parts of the income distribution and by work status; (3) spending across cash assistance versus in-kind programs. One issue affecting much of the literature in this area is underreporting of benefits in household surveys. Therefore, this analysis relies as much as possible on administrative data.

The basic approach is as follows; program-specific details are provided below:

1. Using administrative total spending for program i in year t for all persons, E_{it}^{all}, we limit the program to spending on children and their families, $E_{it}^{kid} = E_{it}^{all} * S_i^{kid}$. All annual expenditures are presented in 2015 dollars and adjusted for inflation using the CPI-U-RS.
2. **Apportion** the aggregate spending going to families with children into five groups based on after-tax-and-transfer income (ATTI) and Supplemental Poverty Measure (SPM) status into five bins (<50% poverty, 50-99% poverty, 100-149% poverty, 150-199% poverty, and 200+% poverty).

For all programs except Medicaid and SSI, E_{it}^{kid} is defined as expenditures going to families with children. We limit Medicaid and SSI expenditures to payments to children.

ATTI is defined as earned income plus cash and near-cash assistance (AFDC/TANF and SNAP, respectively), minus taxes paid (payroll taxes, as well as federal and local income taxes, including tax credits such as the EITC and CTC; and the employee's share of payroll taxes). As information on all resources available to families are not available in each administrative source, this income definition is less comprehensive than the measure used to estimate SPM poverty. For example, our ATTI does not include child care expenses, housing assistance, medical out-of-pocket expenditures, or work-related expenses. In cases where the administrative data do not include information on each income source, we impute this information based on statutory program eligibility and take-up rates. Details on each program are provided below and in Appendix Table A1.

We use an "anchored poverty threshold", defined as the average SPM poverty threshold in calendar year 2014 for renter families, adjusted for family size; for each

year we adjust the threshold for changes in prices using the CPI-U-RS following the approach of Wimer et al (2014).

Tax credits

EITC: The Internal Review Service Statistics of Income (IRS SOI) publishes data on total federal EITC expenditures by number of children and family type for tax years 1996-2015. For those years we have a direct measure of E_{it}^{kid}. For tax years 1994 and 1995, we multiply the published total federal payments going to all families with children by the estimated the share of total EITC payments going to families with children using the IRS SOI Public Use microdata file (SOI PUF). Prior to tax year 1994, only families with children were eligible for the EITC; all EITC expenditures for 1990-1993 are allocated to families with children.

CTC: This analysis includes the refundable (ACTC) and non-refundable component (CTC) of the Child Tax Credit, which we refer to throughout as the "Child Tax Credit." The IRS SOI publishes data on both the refundable and non-refundable component for tax years 1998-2015.

We estimate the fraction of EITC and CTC payments going to families in each income-to-poverty bin using SOI PUF files for 1990-2011. These data provide information on earned income and taxes paid. We assume that families receiving refundable credits do not have AFDC/TANF income. We estimate SNAP payments by calculating potential benefits under the statutory benefit formula and assuming monthly income is one-twelfth annual income. We randomly assign SNAP receipt to credit recipients so that the share of SNAP-eligible credit recipients matches the overall SNAP take-up rate each year.[27] For years 2012-2015, we hold the share of benefits going to each income-to-poverty bin at the 2011 shares (the most recent PUF year).[28] As this analysis focuses on safety net programs to families with children, our aggregate figures limit CTC expenditures to the fraction of the credit going to families below 200 percent of poverty.

Filers must have earned income to receive the EITC and CTC. Therefore, all EITC and CTC expenditures are allocated to working families.

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[27] During our period of analysis, overall SNAP take-up rates among the eligible population range from 53 percent in 2001 to 83 percent in 2012.

[28] Beginning in tax year 2009, the IRS public-use files top-code the number of dependents (and EITC children) at three for all households (in previous years, the topcode only applied to high-income households). We estimate the income-to-poverty ratio based on the number of reported dependents. As 97 percent of filers with children have three or fewer children in 2008, this calculation affects relatively few filers.

Non-tax income assistance

AFDC/TANF: We limit AFDC/TANF payments to cash (basic) assistance payments paid for with federal funds and state maintenance of effort (MOE) dollars. Prior to welfare reform, program expenditures were almost entirely cash assistance. Under TANF, a small share of the block grant is used on cash assistance; 26% nationwide in 2015 (Bitler and Hoynes 2016). State-level annual basic assistance information comes from the Department of Health and Human Services, Administration for Children and Families. We sum expenditures for the 50 states and DC to obtain national totals.

For years 1990-1994, we estimate the share of AFDC benefits going to each income-to-poverty bin and employment status using the AFDC Quality Control (QC) files. The AFDC QC files provide detailed administrative data necessary to establish eligibility and benefits, such as family characteristics, income sources (those that count towards benefits) and so on. For these years, we observe earned income and simulate taxes using NBER TAXSIM. SNAP payments are not observed in this data as they are not countable income towards AFDC benefits. We estimate Food Stamps benefits using the statutory formula and reported earned income in each year, assuming that families take the maximum shelter deduction and no dependent care exemption. We assume full take-up among AFDC/TANF families.

For years 1995 through 2015, we estimate the share going to each income-to-poverty bin using the maximum grant amounts by state-family size-year. We assume for simplicity that earned income reduces a family's TANF grant dollar-for-dollar; therefore, the maximum grant determines a family's income level.[29] We add SNAP benefits to cash assistance by taking the reported share of the maximum SNAP benefit accruing to AFDC families in 1994 (the most recent year of the QC file estimates) and multiply this fraction by the contemporaneous Food Stamps benefit in subsequent years. Finally, we multiply these state-by-family-size bins by state total basic expenditures, and aggregate state expenditures to the national level.

HHS's "Characteristics and Financial Circumstances of TANF Recipients" provides employment rates for TANF families for 1995-1996 and 2000-2015. Over this period, most welfare recipients do not have earned income and thus receive the full benefit: the work participation rate is around 12 percent. To estimate the share of employed households for the remaining years, we assume that all child-only cases do not work and assign the adult recipient employment rate to the remaining households. For

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[29] In practice many states lowered the implicit tax rate on TANF from the 100% rate that existed under AFDC. Unfortunately, we don't observe earnings for years post-welfare reform so cannot simulate the distribution of benefits as we can in the years prior to TANF.

1995-2015, we assign equal benefits to working and non-working households, so that the employment rate is the share of cash assistance received by working households.

These AFDC and TANF calculations are all based on monthly income (that is what is used in program administration). We multiply all amounts by 12 to get annual income; which is necessary for assigning poverty.

Food Stamps/SNAP: Annual SNAP expenditure information comes from the US Department of Agriculture. We scale this total amount by the fraction of SNAP benefits going to families with children, using an estimate of E_{it}^{kid} calculated using the SNAP Quality Control (QC) files for 1990-2015.

We estimate the share of SNAP payments going to each income-to-poverty bin and household work status using information on SNAP benefit amounts and household income and cash assistance from the annual SNAP QC files. As with AFDC, the SNAP QC files provide detailed administrative data necessary to establish eligibility and benefits, such as family characteristics, income sources (those that count towards benefits) and so on. Using the QC data, we calculate after tax and transfer income using observed data on earnings and AFDC/TANF cash assistance. Estimated federal, state, and payroll taxes (including tax credits EITC, CTC) are calculated using TAXSIM. As with AFDC/TANF, the SNAP QC data contains monthly income and we multiply by 12 to get annual income.

Medicaid: We limit Medicaid expenditures to state and federal expenditures on children (excluding pregnant women and parents) with annual expenditure data from the Centers on Medicare and Medicaid Services (MSIS) from 1990 through 2011. Publicly available Medicaid expenditures for children are not available from CMS for later years.[30]

For years 2012 and 2013, we apply the percentage change in Medicaid expenditures to children estimated by the Medicaid and CHIP Payment and Access Commission (MACPAC) since 2011 to the level reported by CMS in 2011. For 2014, we estimate the percent change between 2013 and 2014 using estimates from the Kaiser Family Foundation (KFF) from 2014 and MACPAC for 2013, adjusted using the ratio of

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[30] Unlike the benefits discussed above, Medicaid eligibility is individual based, rather than family based. Therefore we measure expenditures directly for children. This is somewhat inconsistent with our measurement of the family benefits. For example with SNAP we measure the total spending to families with children, rather than carving out the benefit amount that is attributed to the child. Given the fungibility of spending within households, we think this is the best approach. The published Medicaid expenditure data does not allow us to identify pregnant women or adults in families with children. Therefore we limit the measurement to payments going to child coverage.

KFF/MACPAC estimated expenditures for 2011. For 2015, we apply the estimated percentage change in expenditures on children between 2014 and 2015 using CBO's March 2015 baseline.

Administrative data on income levels and sources for child Medicaid recipients is not available in the administrative data. In order to allocate Medicaid expenditures to each poverty bin, we use information on self-reported Medicaid receipt and family after-tax and transfer income from the Annual Social and Economic Supplement to the Current Population Survey, estimating federal, state, and payroll taxes (including tax credits EITC, CTC) using NBER TAXSIM.

Public Housing: Housing expenditures are defined as outlays to the public housing operating and capital funds, as well as project-based and tenant-based rental assistance vouchers. Historical outlays for each program are tabulated by the Office of Management and Budget. For simplicity, we assume an equal dollar value for each unit of housing. We then estimate the share of housing assistance for families with children as the fraction of total *units* received by single- and two-parent families from HUD's *Picture of Subsidized Households* dataset. We calculate this fraction separately for public housing and vouchers. Information on the share of units going to families with children is available annually from 2004 through 2015 and intermittently between 1993 and 2004. For years where HUD data is unavailable, we linearly interpolate the share of assistance units going to households with children.

Following an approach similar to allocating Medicaid dollars, we estimate the share of families with children in each income-to-poverty category using information on housing assistance receipt and family after-tax and transfer income from the Annual Social and Economic Supplement to the Current Population Survey, estimating federal, state, and payroll taxes (including tax credits EITC, CTC) using NBER TAXSIM.

SSI: Historical federal SSI payments to children are listed in the 2016 Annual Report of the Supplemental Security Income Program. We define child SSI expenditures as payments to blind or disabled individuals ages 0-17.

As with Medicaid expenditures, we estimate the share of child SSI payments going to each income-to-poverty bin by using estimates of the number of children in each family receiving SSI, as well as family after-tax and transfer income from the Annual Social and Economic Supplement to the Current Population Survey. We estimate federal, state, and payroll taxes (including tax credits EITC, CTC) using NBER TAXSIM.

Figure 1: Spending and Tax Programs with the Highest Federal Expenditures on Children, 2016
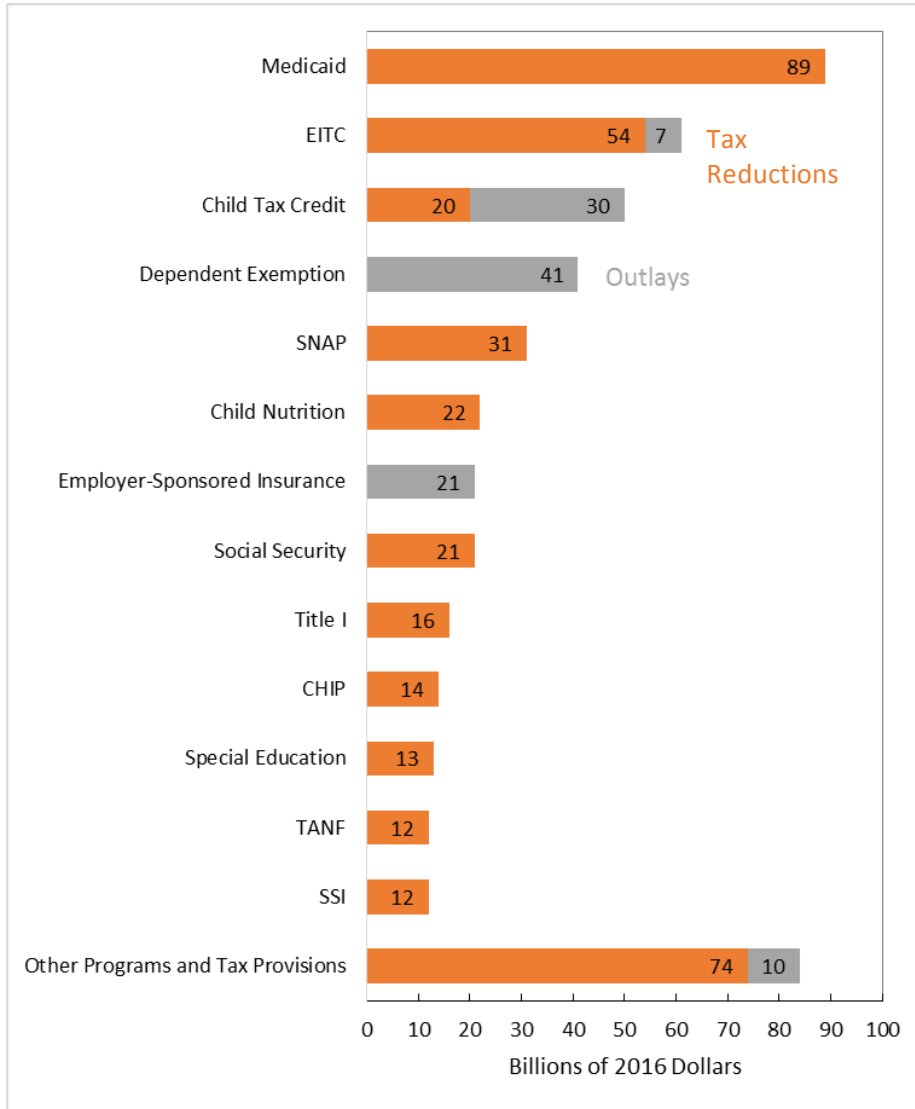
Source: Isaacs et al (2017).

Figure 2: Per-capita spending on children and elderly
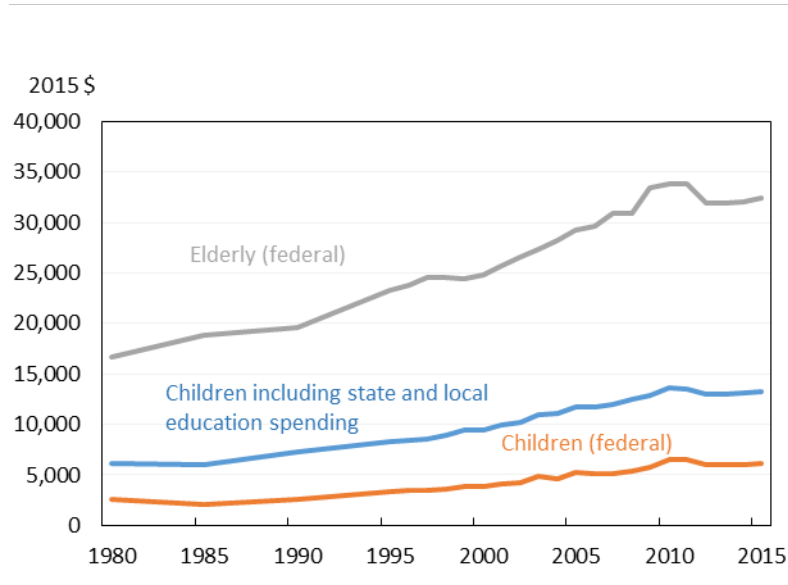
Source: Adapted from Isaacs et al (2017) with education spending from U.S. Department of Education.

Figure 3: Share of Children with Married Parents
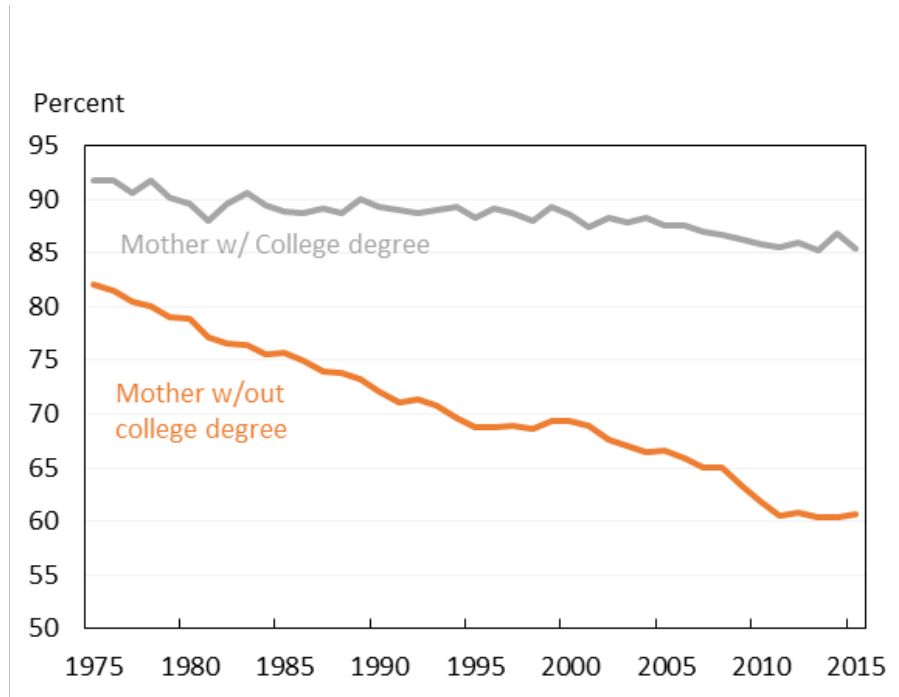
Source: Authors' calculations of the Current Population Survey Annual Social and Economic Supplement 1976-2016.

Figure 4: Share of Children with a Working Mother
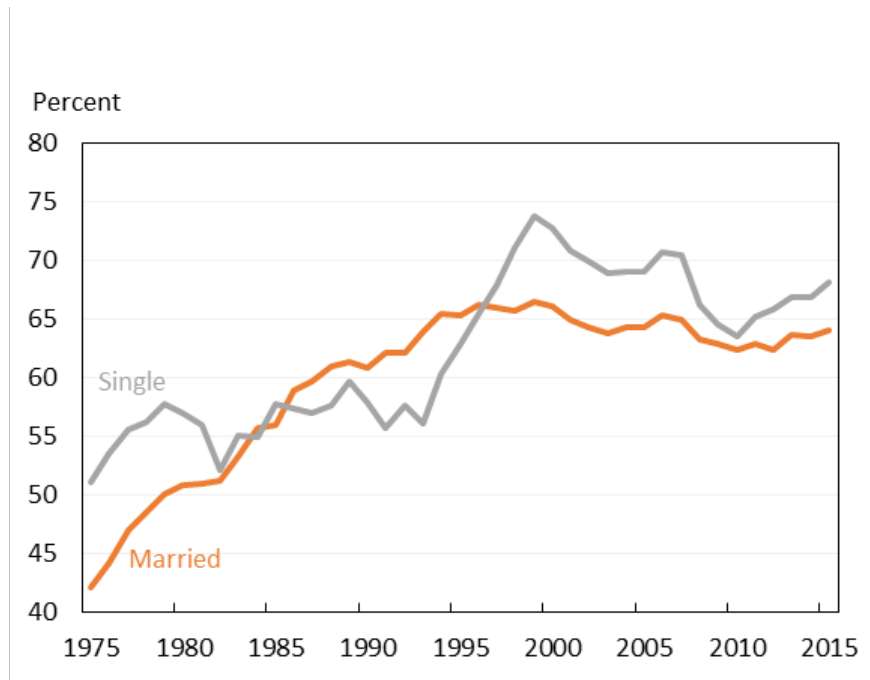
Source: Authors' calculations of the Current Population Survey Annual Social and Economic Supplement 1976-2016. Restricted to mothers age 25-54.

Figure 5: Trends in Real Wages of Full-time Workers, by Education and Sex
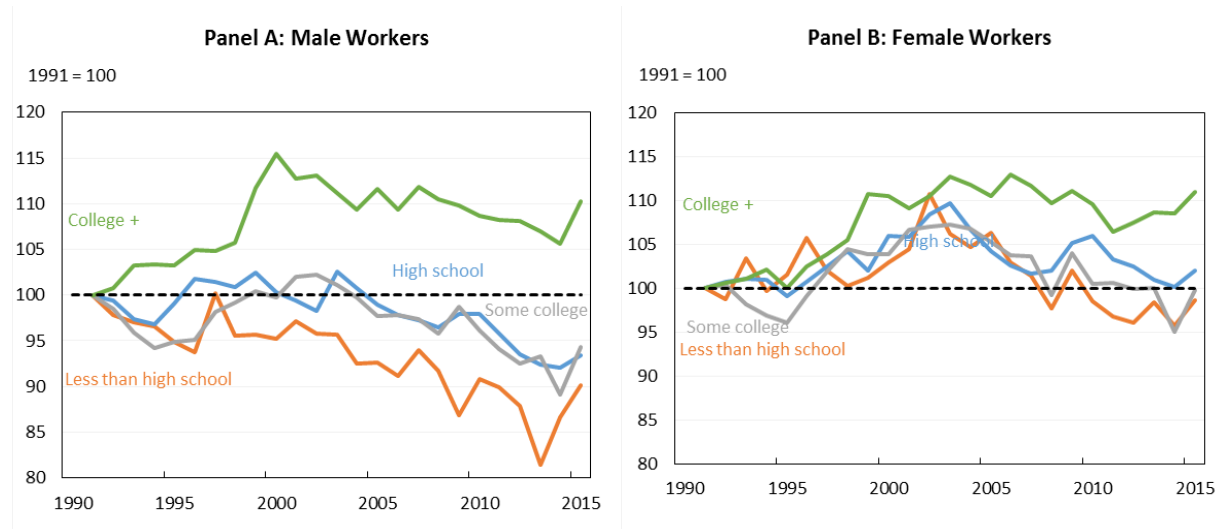
Source: Authors' tabulations based on published historical earnings by education and gender among workers ages 25 and older.

Figure 6: Spending on Children, 1990-2015, by Program (Billions of 2015$)
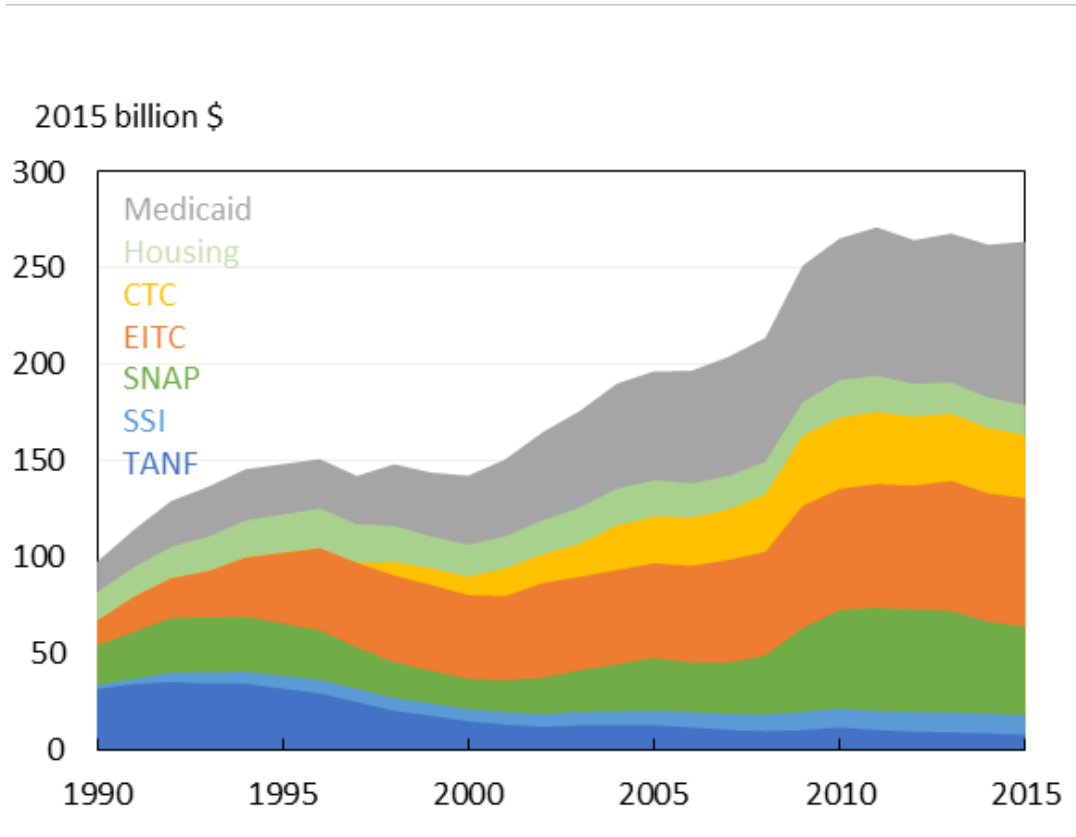
2015 billion $

Medicaid
Housing
CTC
EITC
SNAP
SSI
TANF

Source: Authors' calculations based on various administrative sources. See appendix for details.

Figure 7: Spending on Children by Family Income to Poverty (SNAP, TANF, EITC, CTC)

Panel A: Aggregate spending, by poverty
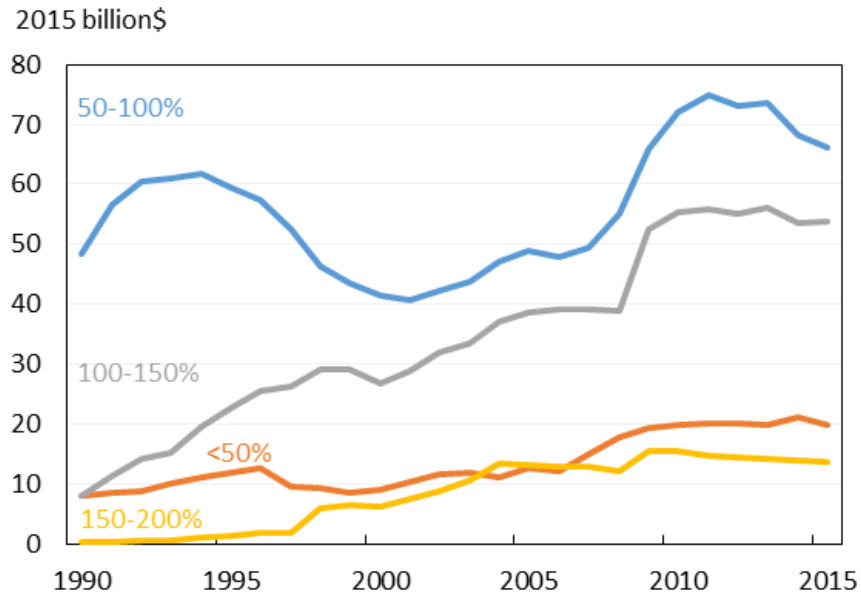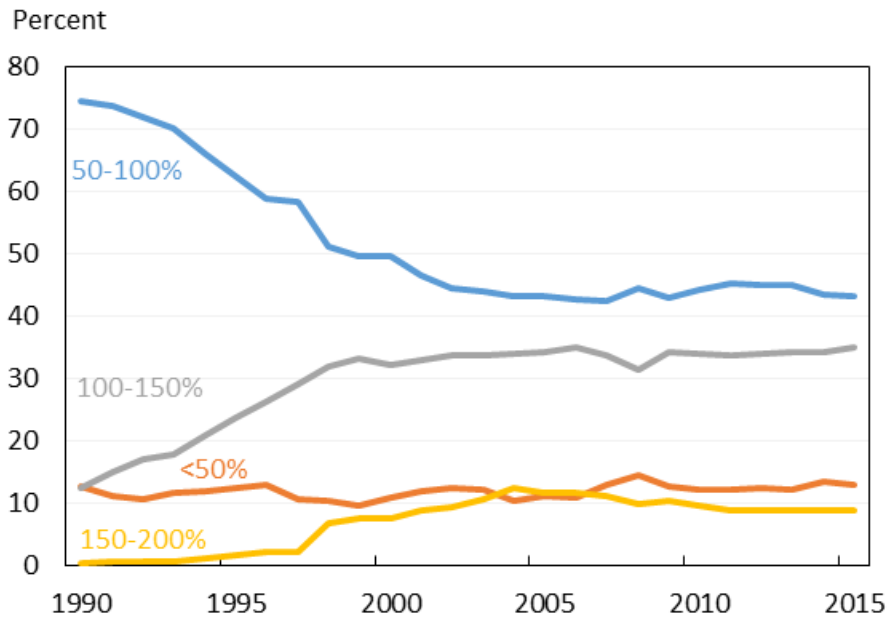
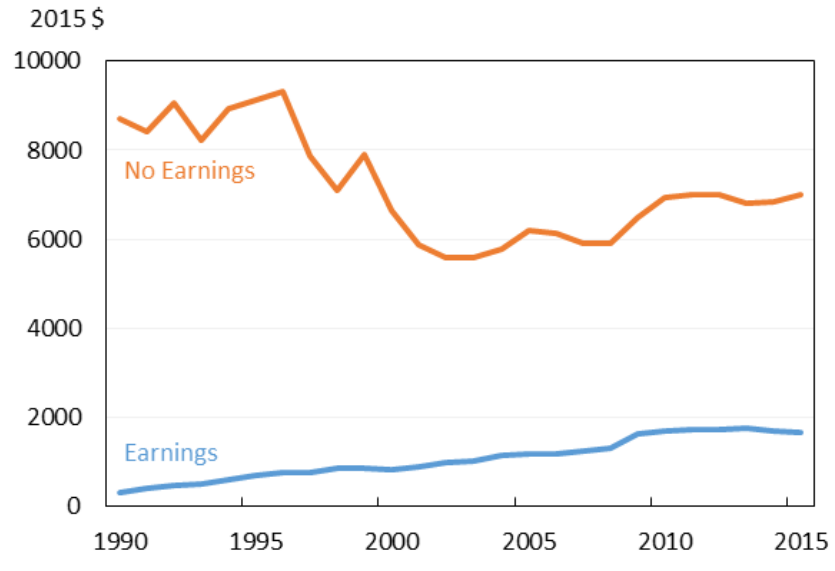**Panel B: Share of total spending, by poverty**

Source: Authors' calculations based on various administrative sources. See appendix for details.

Figure 8: Spending on Children, by Parent Earnings (SNAP, TANF, EITC, CTC)

Panel A: Total Spending by Earnings
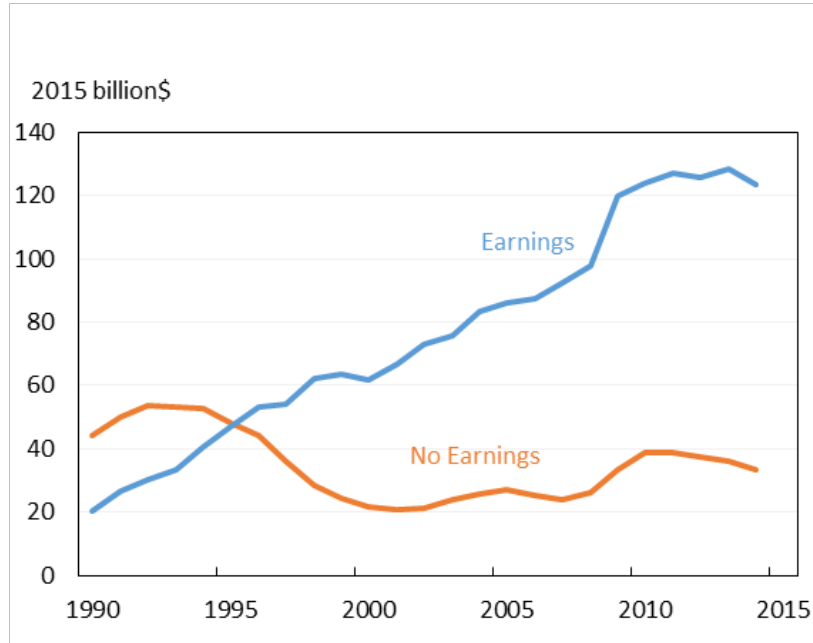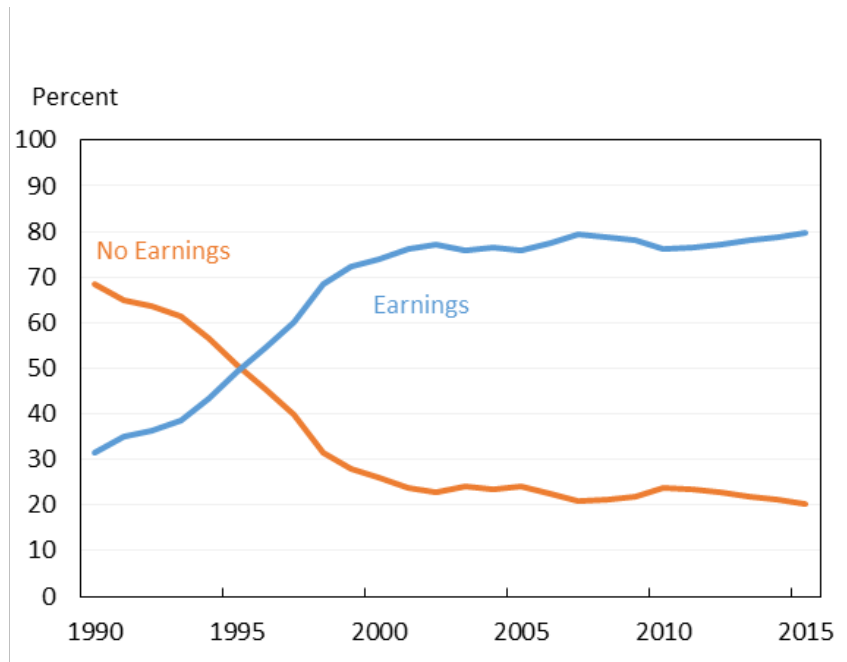
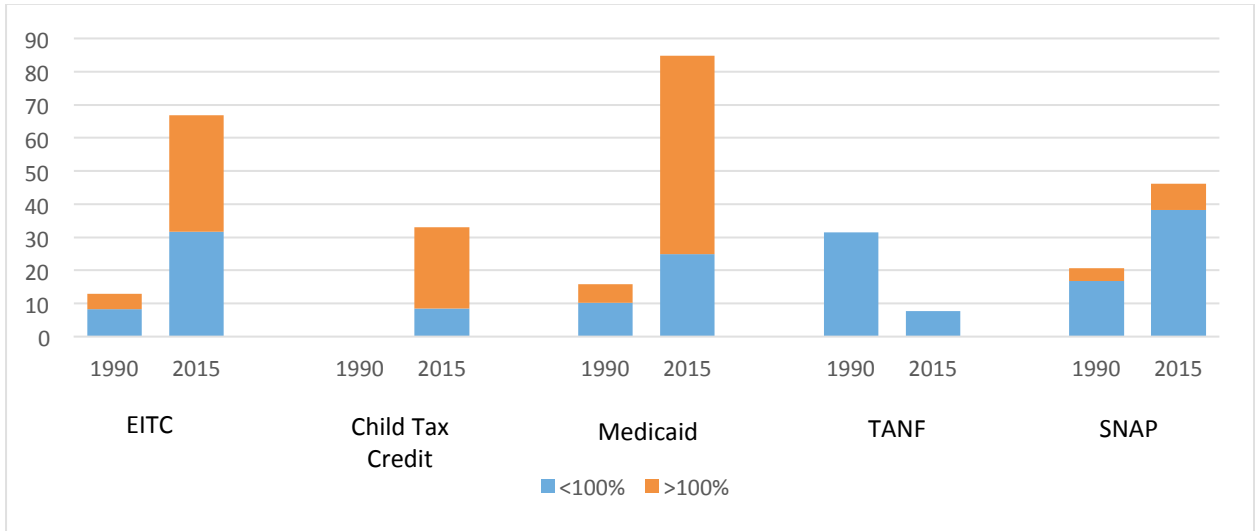**Panel B: Share of Spending, by Earnings**

Source: Authors' calculations based on various administrative sources. See appendix for details.

Figure 9: Tax and Transfer Benefits for Universally Available Cash and Near-Cash Programs, Single adult with two children, Colorado (2015 dollars)

Panel A: 1992
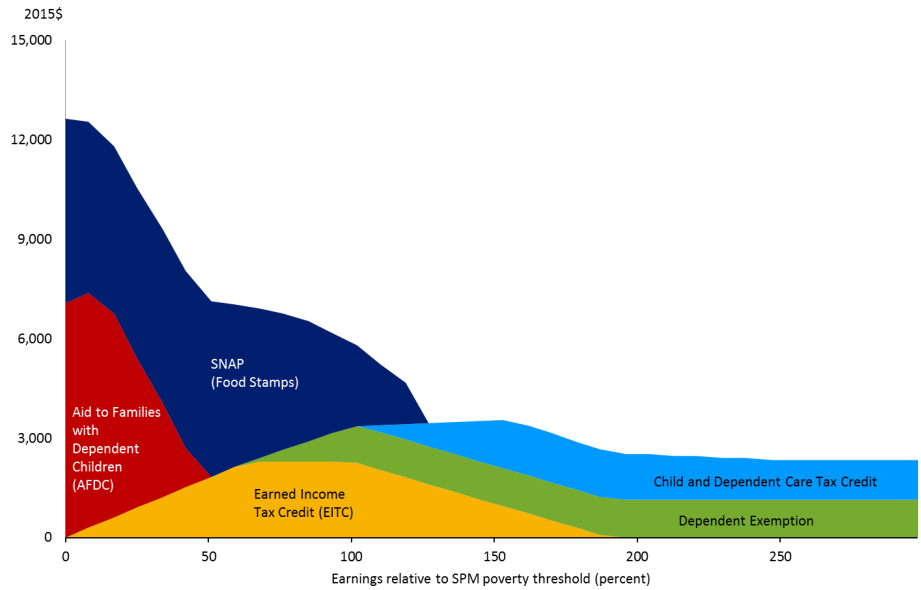
Panel B: 2015
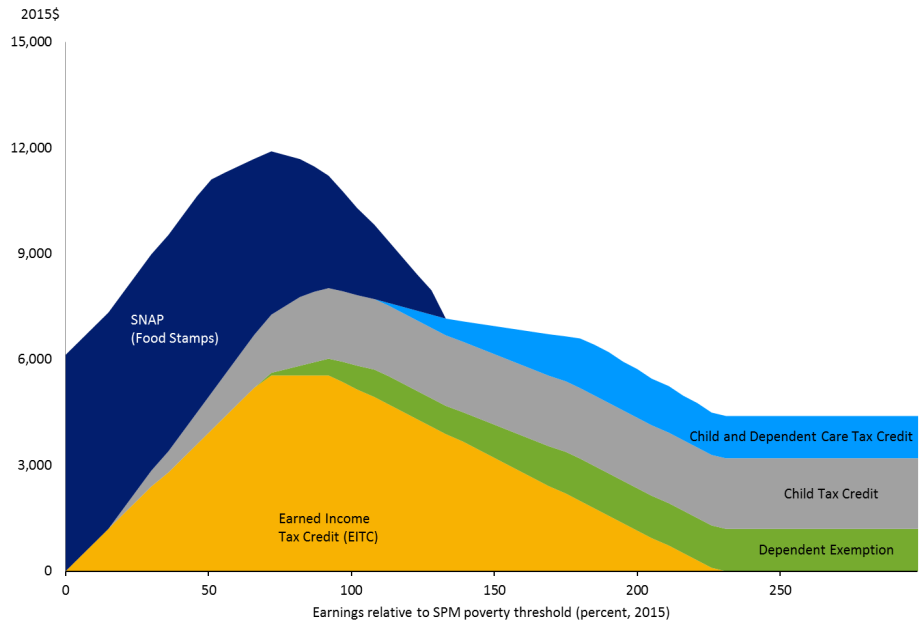
Notes: Adapted from Steuerle and Quakenbush (2015) using program parameters from Internal Revenue Service, Tax Policy Center, Ways & Means Green Book and Department of Agriculture.

Figure 10: Percent of Children in SPM Bins
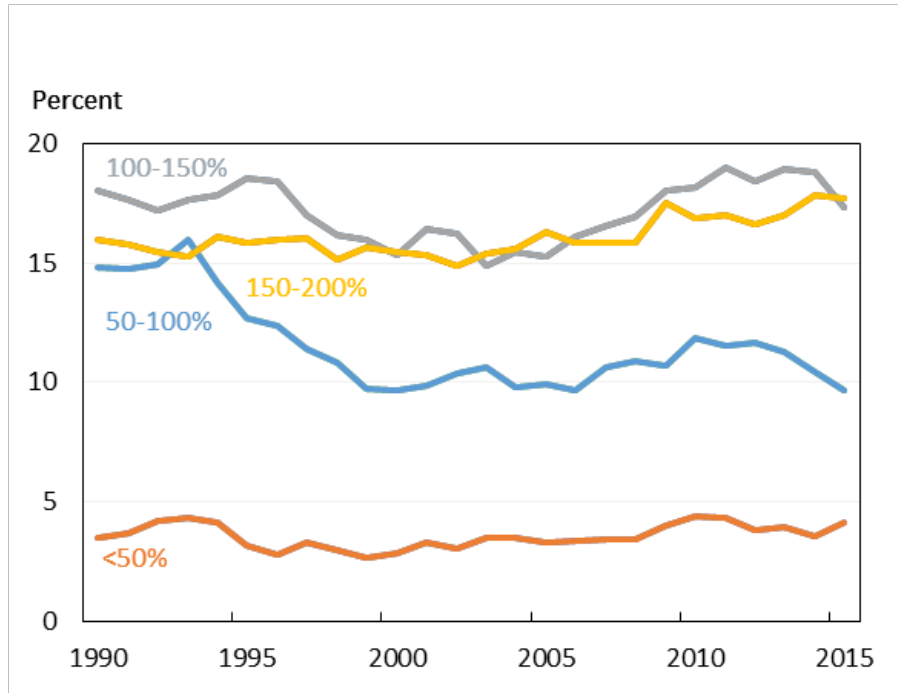
Note: The lines represent the share of all children living in households with income-to-poverty in each range. Calculated using the Annual Social and Economic Supplement to the CPS for 1991-2016; see text for details.

Figure 11: Per Child Spending on Children by Family Income to Poverty (SNAP, TANF, EITC, CTC)

Panel A: Per-child spending, by poverty group
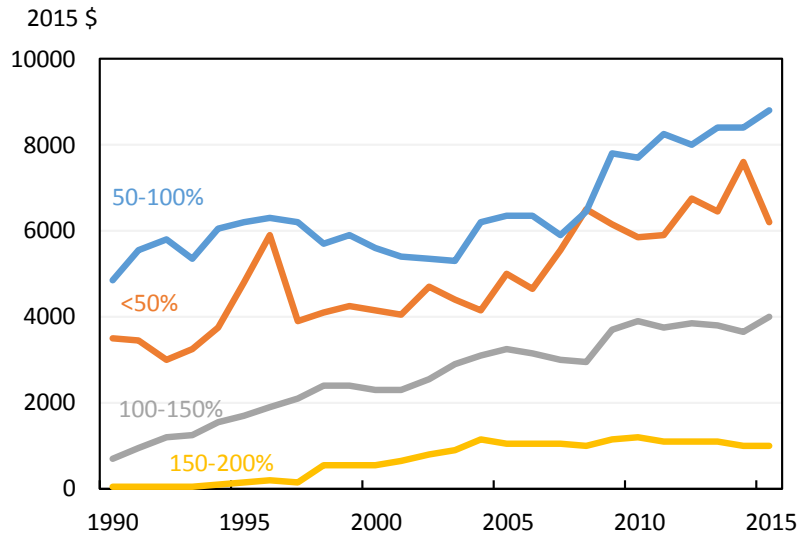
Panel B: Growth in per-child spending, by poverty group
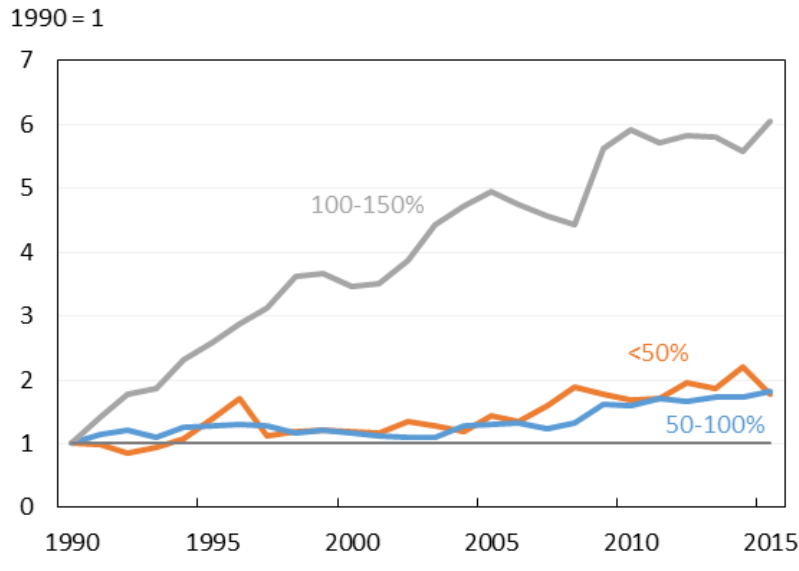
Source: Authors' calculations based on various administrative sources. See appendix for details. Note in Panel B we omit the series for 150-200% of poverty because of the very high growth rate for this group (value in 2015 relative to 1990 is 45).

Figure 12: Per Child Spending on Children by Parent Earnings (SNAP, TANF, EITC, CTC)

Panel A: Per-child spending, by earnings

Panel B: Growth in per-child spending, by earnings
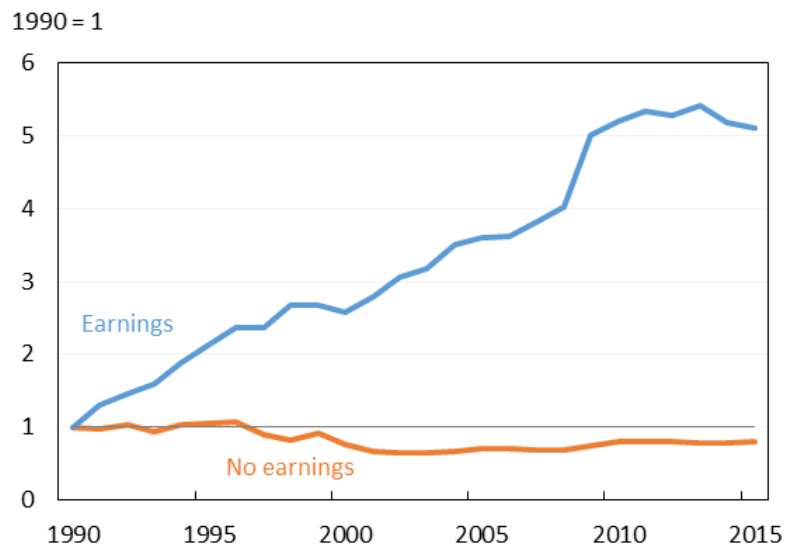
Source: Authors' calculations based on various administrative sources. See appendix for details.
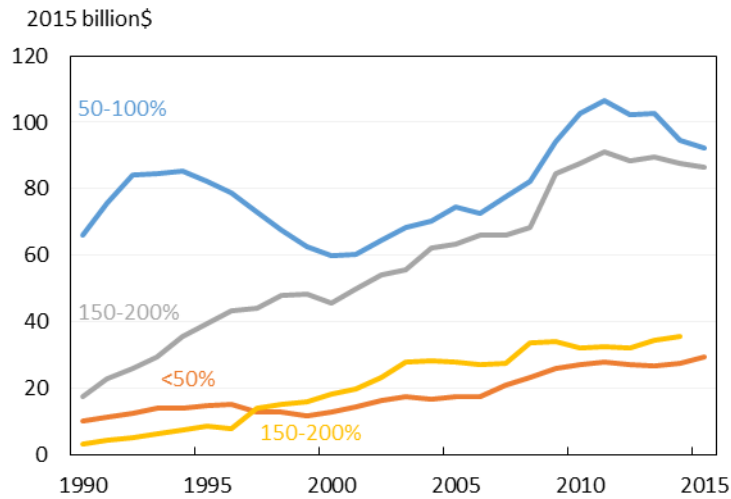
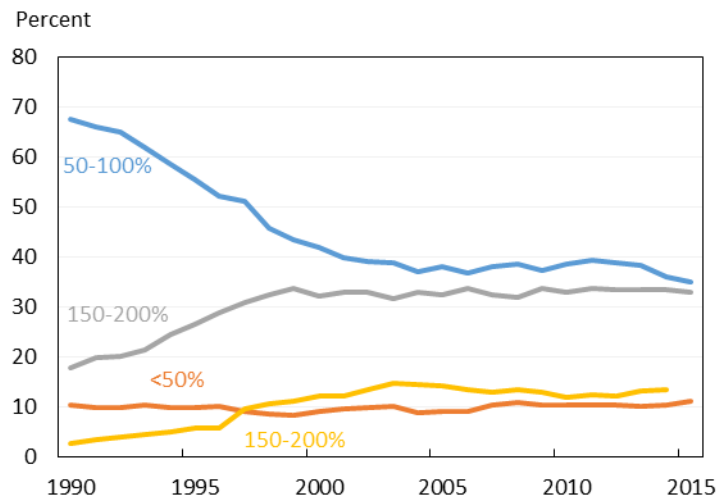**Figure 13: Spending on Children, by Poverty Status, Select Programs**

Source: Authors' calculations based on various administrative sources and (for Medicaid) the Annual Social and Economic Supplement to the Current Population Survey. See appendix for details.

Figure 14: Spending on Children, by Parent Earnings, Select Programs
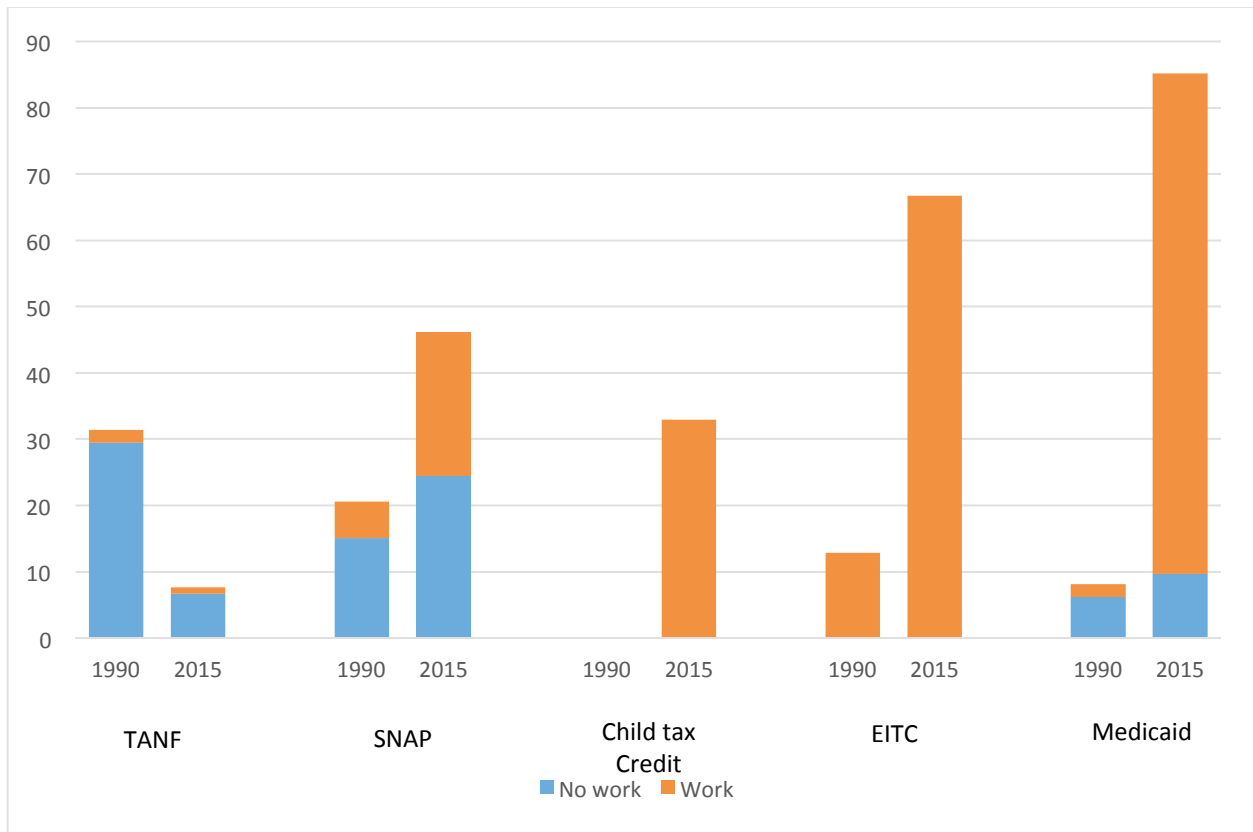
Source: Authors' calculations based on various administrative sources and (for Medicaid) the Annual Social and Economic Supplement to the Current Population Survey. See appendix for details.

Appendix Figure 1: Spending on Children by Family Income to Poverty (SNAP, TANF, EITC, CTC, Medicaid, Public Housing and SSI)
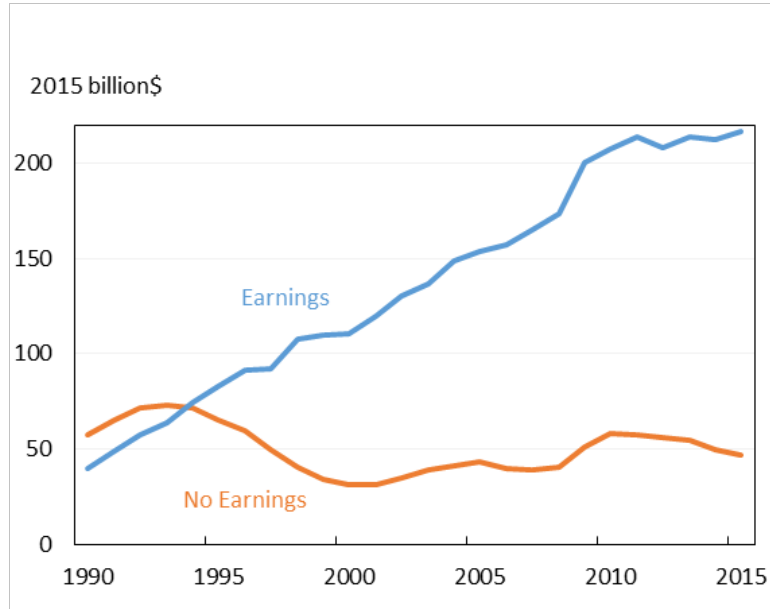
Panel A: Aggregate spending, by poverty
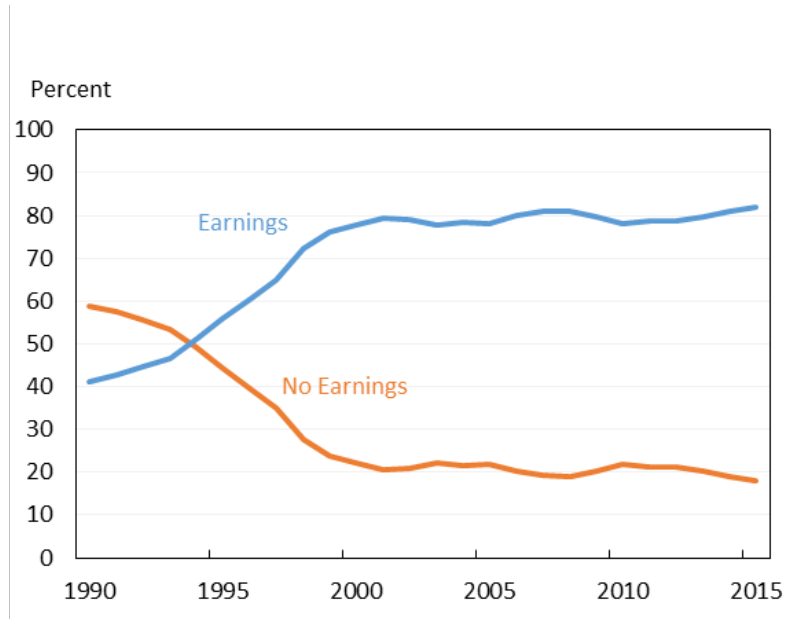

Panel B: Share of spending, by poverty

Source: Authors' calculations based on various administrative sources and (for Medicaid, SSI and public housing) the Annual Social and Economic Supplement to the Current Population Survey. See appendix for details.

Appendix Figure 2: Spending on Children, by Parent Earnings (SNAP, TANF, EITC, CTC, Medicaid, Public Housing and SSI)

**Panel A: Total Spending by Earnings**

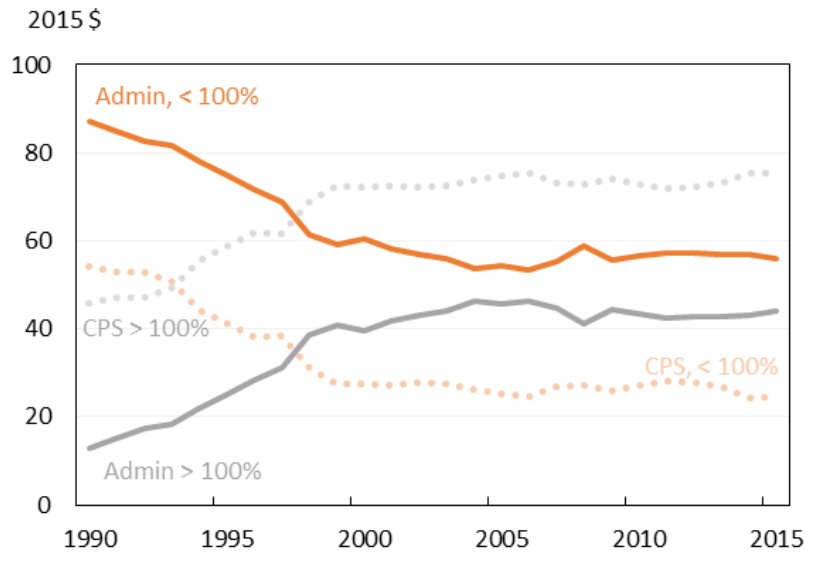**Panel B: Share of Spending by Earnings**

Source: Authors' calculations based on various administrative sources and (for Medicaid, SSI and public housing) the Annual Social and Economic Supplement to the Current Population Survey. See appendix for details.

Appendix Figure 3: Spending on Children by Family Income to Poverty (SNAP, TANF, EITC, CTC), Comparison of Administrative Data to CPS

Panel A: Aggregate spending, by poverty
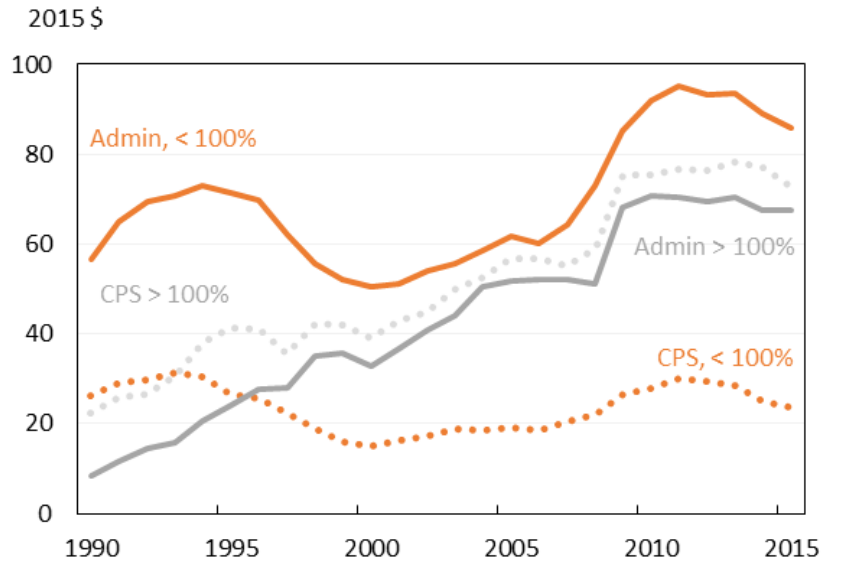
Panel B: Share of total spending, by poverty

Source: Author's calculations based on various administrative sources and the Annual Social and Economic Supplement to the Current Population Survey. See appendix for details.

Appendix Table 1: Components and sources of ATT income:

	After-tax-and-transfer income components			
	Earned income	AFDC/TANF	SNAP	Taxes
Tax credits				
CTC	Admin	assume $0	Imputed from earnings	Admin
EITC	Admin	assume $0	Imputed from earnings	Admin
Non-tax income assistance				
AFDC/TANF	Admin or $0	Admin	Admin	TAXSIM
SNAP	Admin	Admin	Admin	TAXSIM
Public Housing	CPS	CPS	CPS	TAXSIM
Medicaid	CPS	CPS	CPS	TAXSIM
SSI	CPS	CPS	CPS	TAXSIM

Note: This table summarizes the source of each component of after-tax income by program. For AFDC/TANF, for AFDC years we observe earned income and use TAXSIM to assign taxes. For the TANF period we don't observe earnings so assume they are 0. See data appendix for details.