The Long-Term Effects of Income for At-Risk Infants: Evidence from Supplemental Security Income[*]

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Abstract

This paper examines whether a generous cash intervention early in life can "undo" some of the long-term disadvantage associated with poor health at birth. We use new linkages between several large-scale administrative datasets to examine the short-, medium-, and long-term effects of providing low-income families with low birthweight infants support through the Supplemental Security Income (SSI) program. This program uses a birthweight cutoff at 1200 grams to determine eligibility. We find that families of infants born just below this cutoff experience a large increase in cash benefits totaling about 27% of family income in the first three years of the infant's life. These cash benefits persist at lower amounts through age 10. Eligible infants also experience a small but statistically significant increase in Medicaid enrollment during childhood. We examine whether this support affects health care use and mortality in infancy, educational performance in high school, post-secondary school attendance and college degree attainment, and earnings, public assistance use, and mortality in young adulthood for all infants born in California to low-income families whose birthweight puts them near the cutoff. We also examine whether these payments

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had spillover effects onto the older siblings of these infants who may have also benefited from the increase in family resources. Despite the comprehensive nature of this early life intervention, we detect no improvements in any of the study outcomes, nor do we find improvements among the older siblings of these infants. These null effects persist across several subgroups and alternative model specifications, and, for some outcomes, our estimates are precise enough to rule out published estimates of the effect of early life cash transfers in other settings.

1 Introduction

A large literature demonstrates that poor early life health has detrimental effects on later life health and achievement. For example, studies of within twin pair differences in birthweight find better long-term outcomes associated with higher birthweights related to cognition and educational attainment, employment, income, health, and reliance on public assistance (Black et al., 2007; Oreopoulos et al., 2008; Lin and Liu, 2009; Bharadwaj et al., 2018). Meanwhile, a small but growing literature shows that positive policy interventions can successfully improve long-run and even intergenerational outcomes. For example, cash payments of as little as $1,300 made to families during the first year of their child's life improve that child's educational outcomes and earnings in young adulthood (Barr et al., 2022). Given these findings, a natural question is whether the outsized, harmful impacts of poor health in infancy or *in utero* can be remediated by timely interventions that support the families of these children. If such interventions are successful at improving life-long trajectories in health, human capital, and earnings, well-chosen policy may be able to undo the adverse consequences that arise from poor early life health.

In this paper, we examine a generous and sustained intervention that provides cash transfers to infants with poor health and little family income, and evaluate whether this intervention can remediate the disadvantaged circumstances into which these infants are born. Specifically, we analyze eligibility for the Supplemental Security Income (SSI) Program, the United States' primary income support program for low-income persons with disabilities, which provides generous cash transfers (typically equaling 48% of child recipients' family income, Rupp et al., 2005) and, in most states, eligibility and automatic enrollment in the Medicaid public health insurance program. We take advantage of a program rule that infants with birthweights of less than 1200 grams (or approximately 2.6 pounds) are considered to have a qualifying disability for the purpose of SSI eligibility in order to evaluate this intervention for the marginal infant. Infants with birthweights close to the eligibility cutoff have similar underlying health, but receive very different access to this safety net program depending on which side of the cutoff they fall.

To conduct this analysis, we take advantage of new large-scale linkages between several different administrative data sources. We link California birth certificate records, which contain birthweight information for the universe of births in the state, to earnings and income data from the Internal Revenue Service (IRS), SSI and Medicaid benefit information from federal agencies, state hospital and emergency department records, mortality information from federal and state sources, detailed K-12 educational performance records from a large number of districts in California, and information on post-secondary school attendance and degree attainment from the National Student Clearinghouse. With this large and comprehensive new dataset, we are able to identify infants born into low-income households with birthweights near the eligibility threshold (our "targeted sample") and follow them throughout childhood and early adulthood. In addition, our use of administrative records provides objective measures of outcomes that do not rely on parental or self reports, and removes any concerns about selective attrition over time that might be present in panel survey data.

Using the newly linked administrative data, we find that infants in these targeted, low-income households with birthweights just below the eligibility threshold receive, on average, an additional $146 per month in SSI benefits during their first year of life, $141 per month at ages 1 and 2, and $33 per month between ages 3 to 10, when compared to infants with birthweights just above this threshold. These transfer amounts are large relative to family income, representing an increase of about 27 percent compared to average pre-birth income at ages 0 through 2, and an increase of about 6 percent at ages 3 through 10. The cumulative amount received in cash benefits by these families far exceeds transfers studied in other work (e.g. de Gendre et al., 2021; Borra et al., 2022; Barr et al., 2022), with expected benefits totaling more than $8,000, or approximately 129 percent of pre-birth income in our targeted sample. In contrast to other studies of cash transfers (e.g. Dahl and Lochner, 2012; Akee et al., 2018), most of the payments are weighted towards the very earliest years of childhood, when we might expect the effects to be largest. We also find significant increases in Medicaid enrollment throughout childhood (between 2.5 and 5.1 percentage points) for children with birthweights below the cutoff. Taken together, our first stage analysis demonstrates that the families of infants who fall just below the eligibility cutoff enjoy substantial support and benefits beyond those received by the families of infants whose birthweight puts them just above this cutoff, despite similar underlying health and medical care needs.

Despite the empirical and theoretical evidence suggesting that these early life investments may improve outcomes in childhood and adulthood, we do not find evidence that children who just miss the eligibility cutoff do any worse on a variety of outcomes compared to children whose birthweight qualified them for this support. We find a small increase in the number of days spent in the hospital at the time of the birth for infants who gain SSI eligibility, but no difference in the number of days hospitalized after the birth, emergency department visits, or in infant mortality. We also do not find any improvements in a large number of educational outcomes measured during childhood including high school GPA, enrollment in gifted and talented programs, enrollment in math or science courses, or AP course completion, associated with early life low birthweight SSI eligibility; although we do find that early life SSI eligibility at the cutoff generated higher usage of special education services. We also find no evidence of changes in the probability that an infant grows up to attend college or other post-secondary degree programs, or that they receive a college degree, at the eligibility cutoff. Finally, we track infants over time and observe their earnings, transfer program use, and mortality in early adulthood (up until age 29). With the caveat that the cohorts we study are still young, we do not find any evidence that those who benefited from the program in infancy experience better outcomes along these dimensions. We also do not find any evidence of increased welfare dependency in adulthood, which runs contrary to a narrative that use of social programs encourages prolonged reliance on these services.

These null results are not sensitive to specification or sample choices and also hold across a large number of subgroups, including some groups who experienced much higher increases in average payments at the cutoff (such as non-Hispanic Black children) and groups for whom previous research has found particularly large effects of early life cash transfers (such as males). Our estimates are precise enough to rule out changes in earnings and educational outcomes found for similar cohorts who received smaller cash interventions in infancy documented in existing studies (Barr et al., 2022). Considering summary measures, we can rule out improvements in a composite measure of high school educational outcomes of about 0.035 standard deviations and in adult economic outcomes of about 0.038 standard deviations using a two-sided test. Further, analysis of family resources suggests that our null effects are not driven by reductions in parental labor market earnings or receipt of the Earned Income Tax Credit (EITC), another important source of income support for low-income families.

Our rich data also allow us to examine how aspects of this program "spill over" onto other children in the family. We conduct an analysis of these spillovers by examining the outcomes of older siblings of the focal child, who may also benefit from the increase in family income. We assess whether older siblings were more likely to enroll in Medicaid and SSI during childhood if their younger sibling was medically eligible for SSI on the basis of birthweight, and whether their outcomes in adolescence and young adulthood were affected by their siblings' SSI eligibility. We show that siblings did not change their use of public benefits, nor did they experience improved outcomes across the many dimensions we consider, if their younger sibling's birthweight was just below versus just above the eligibility threshold, despite infant SSI eligibility resulting in substantially higher cash transfers to the household. These results are also consistent across a variety of alternative specifications, suggesting that spillovers of the program to the older siblings of low birthweight infants are likely minimal.

Our analysis contributes to multiple strands of literature within economics and public policy. First, we provide new evidence on the role of targeted cash transfers to families with infants. In the wake of the COVID-19 crisis, policymakers have increasingly experimented with cash transfers to alleviate poverty and reduce disparities, including transfers targeted specifically to the most economically disadvantaged families and to those with COVID-related health burdens.[1] Our analysis of the SSI program, which also serves families who are highly disadvantaged on multiple dimensions, may be informative of the impacts of these type of targeted cash transfers more broadly. Second, we build on work examining the impacts of childhood SSI benefits specifically. SSI provides benefits to over one million low-income children with disabilities and represents a non-trivial public investment, with expenditures on child SSI exceeding those of other poverty alleviation programs, such as Temporary Assistance to Needy Families (TANF) benefits to children (Tambornino et al., 2015). Despite its importance for families with children with disabilities, there are relatively few papers documenting how SSI receipt early in life affects beneficiaries and their families both during participation and after leaving the program. Our analysis complements previous research on the short-run effects of infant eligibility, which relied on survey data (Guldi et al., 2022) or data for continuously enrolled Medicaid recipients (Ko et al., 2020). We contribute to this previous work by bringing a large, linked administrative dataset covering the full population of births in California and providing us access to multiple policy-relevant outcomes across several domains extending through young adulthood. We provide further discussion of these papers, and other relevant work related to childhood SSI, in Section 2.1. Third, our work provides novel evidence on spillovers of SSI benefits to siblings, an important but under-explored dimension of this policy.

Overall, our results show that despite the large increase in cash transfers received by infants just below the SSI eligibility cutoff, there are no discernible improvements across the broad set of early life, childhood, and young adult administratively measured outcomes we study. These results indicate that current level of support targeted to populations endowed with especially high levels of need across multiple dimensions are likely insufficient to achieve the earnings and health gains observed

[1] E.g., the Chicago Resilient Communities cash transfer program specifically targeted low-income residents with COVID-related health and economic problems, see https://www.chicago.gov/city/en/sites/resilient-communities-pilot/home.html.

in more advantaged samples.

2 Background

2.1 Early life cash benefits and long-term outcomes

A large literature in economics and epidemiology has demonstrated that early childhood is a period during which a child is uniquely receptive to investments, and that investments in health, human capital, and general well-being that occur early in childhood have the potential to yield substantial payoffs later in life (see Almond et al., 2010, 2018). These patterns have been posited to reflect the persistence, or self-productivity, of these investments, as well as dynamic complementarities, in which investments early in life spur future investments in childhood and throughout the lifecycle (Cunha and Heckman, 2007). Studies focused on health, nutritional, and educational interventions–such as access to health insurance coverage through the Medicaid program, food supplements via WIC, home nurse visits following the birth of a child, or high quality preschool interventions–have found that these programs improve later-life educational and labor market outcomes for the children who benefited in infancy or even *in utero* (e.g., Michalopoulos et al., 2017; Miller and Wherry, 2019; Chorniy et al., 2020).

A growing empirical literature in economics and psychology supports the idea that cash payments in early childhood may also improve health and economic outcomes throughout childhood and into adulthood. For example, de Gendre et al. (2021) find that infants whose families (quasi-randomly) received a $3,000 one-time payment at birth had significantly fewer hospitalizations in the first year of life as a result. In addition, Barr et al. (2022) take advantage of a discontinuity in the amount of tax refunds received based on a child's date of birth. The authors find that lump sum tax refund payments in the first year of life of approximately $1,300 result in measurable improvements in educational outcomes and earnings in adulthood as early as ages 23 to 25. In the area of cognitive neuroscience, a recent randomized controlled trial that provided unconditional cash transfers of $333 per month for the first 52 months of their child's life to low-income mothers found suggestive evidence of increased infant brain activity as a result (Troller-Renfree et al., 2022). In contrast, Borra et al. (2022) find no beneficial effects associated with a one-time transfer of a €2500 "baby bond" issued by Spain in 2007. However, the majority of these studies provide empirical support to the idea that even a small increase in income early in life could have major later life benefits.[2]

[2] There is also evidence for beneficial effects of cash transfer interventions that occur at later ages or throughout childhood.

One important distinction in our setting when compared to other evaluations of early life cash transfers is that the SSI payments we study target infants who are disadvantaged on both economic and health dimensions. To medically qualify on the basis of low birthweight, the infants we study must weight less than 1200 grams, or 2.65 pounds. This size is often accompanied by severe infant and childhood impairments, including cerebral palsy, and vision, hearing, and cognitive impairments. These types of chronic health conditions can require intensive healthcare and educational services (Mandy, 2021; Purdy and Melwak, 2012). Furthermore, families with a child whose birthweight falls near the cutoff and with incomes qualifying them for the maximum SSI benefit amount typically earn less than the federal poverty line,[3] in addition to the other likely constraints they face in terms of the time and costs associated with the care and support necessary for their high-needs child.

There is relatively little work examining the effects of child SSI receipt on either short- or long-term outcomes. Two existing studies examine the effects of SSI receipt on early childhood health for the infants who qualify on the basis of the 1200 gram eligibility cutoff. Guldi et al. (2022) examine child health and development as measured using parental survey responses when the infant is approximately 9 months of age. The authors do not find significant changes in child development or parent-reported health associated with SSI eligibility, although the direction of point estimates tend to suggest potential improvements. Meanwhile, Ko et al. (2020) examine the presence of chronic health conditions using administrative data for children enrolled in Medicaid from birth through age 8. They find reduced rates of acute and chronic conditions among children who were SSI eligible due to birthweight, with evidence of both a decrease in the number of conditions and delayed onset. If we expect short-term health benefits to translate into better longer term outcomes, then both of these studies suggest there may be beneficial long-term effects of SSI receipt in early childhood. However, interpretation of the results in Ko et al. (2020) are complicated by the fact that the authors use a sample

Quasi-experimental analyses of expansions of the Earned Income Tax Credit (EITC) have found that a $1000 annual increase in EITC payments improves test scores by about 0.06 standard deviations in a sample of school-age children (Dahl and Lochner, 2012). Consistent with these results, an analysis of household income shocks via payments from the Eastern Band of Cherokee Indians tribal government found that such payments improved educational, behavioral, and emotional outcomes for children whose families benefited (Akee et al., 2010, 2018). And, analysis of the Canadian child benefit system showed that a $1000 increase in benefits resulted in substantial improvements in educational and cognitive outcomes for children between the ages of 4 and 10 (Milligan and Stabile, 2011). Finally, analysis of a pre-WWII cash welfare program in the US, the Mother's Pension program, found that it resulted in long-run improvements in health, income, and educational attainment for male children (Aizer et al., 2016). In contrast, however, Cesarini et al. (2016) found no impact of lottery winnings on children's educational or cognitive outcomes using data from large Swedish lotteries. Similarly, Price and Song (2018) found no changes in children's outcomes for low-income families randomized to receive a guaranteed minimum income through the Seattle-Denver Income Maintenance Experiment. A large literature in development economics also assesses the impact of unconditional and conditional cash transfers on outcomes in low and middle income countries; see e.g. Fiszbein and Schady (2009); Bastagli et al. (2019) for some reviews. However, given the different economic and social milieus of the countries studied in this literature, the extent to which these results generalize to the US context is not clear.

[3]Based on our calculation that 93 percent of our targeted sample earns less than the federal poverty line prior to the birth.

of children continuously enrolled in Medicaid during their first eight years of life. Since SSI provides eligibility and automatic enrollment in Medicaid in most states (including their study state of New York), birthweight relative to the eligibility cutoff may also change the probability a child enrolls in Medicaid and remains enrolled throughout childhood, as we demonstrate to be the case in our setting.

This paper provides the first look at the effects of early life SSI receipt on longer-term outcomes. Three prior studies examine the long-term effects of SSI receipt among school-age children who benefited from an expansion in the SSI disability qualifying criteria in the early 1990s.[4] These studies have conflicting results: Levere (2021) finds negative effects on later adult earnings and increased reliance on SSI, Singh (2020) finds increased years of schooling, yet reduced probability of college completion and increased likelihood of welfare receipt, and Coe and Rutledge (2013) finds greater labor force attachment and less welfare receipt, for those who gained SSI as children under the expanded disability criteria. In addition to the mixed evidence these studies provide, they also do not tell us how targeted SSI receipt at the very beginning of life affects long-term outcomes for those infants identified as high-risk for long-term disability. Our research design and large administrative dataset provide a unique opportunity to credibly investigate both the short- and longer-term effects of early life SSI participation. We study the effects of child SSI eligibility on a range of important outcomes, including outcomes not previously studied using administrative data such as educational performance, college attendance and completion, and Medicaid enrollment.

2.2 SSI and low birthweight infant eligibility

The Supplemental Security Income (SSI) program is a means-tested program that provides income transfers to the elderly and individuals with qualifying disabilities. The SSI program has provided benefits to children with disabilities since 1974; and, the number of children participating in the program has grown considerably over time. Today there are approximately 1.04 million child beneficiaries who receive, on average, $687.17 per month in cash benefits (Social Security Administration, 2021). Children receiving SSI also qualify automatically for Medicaid benefits in most states, including California. At the same time, in California prior to June 2019, SSI beneficiaries were ineligible for SNAP benefits and not included in the calculation of the assistance unit for the purpose of determining SNAP benefits or eligibility (California Department of Social Services, 2018).[5]

[4] In addition, two studies find that losing benefits once child SSI recipients reach adulthood result in higher earnings but greater criminal justice involvement compared to child recipients who remain on the program in young adulthood (Deshpande, 2016a; Deshpande and Mueller-Smith, 2022).

[5] SSI payments are similarly excluded from the calculation of household income for the purpose of determining SNAP benefits (Legislative Analyst's Office, 2018).

The Social Security Administration considers both a child's financial situation and their impairment in determining eligibility for SSI. For children living with their parents, a portion of parental income and resources is considered available to the child through a process called "deeming."[6] Deemed parental income is added to a child's own income to determine the child's financial eligibility for SSI and payment amount. Typically, children's families must have low incomes to qualify for SSI. For example, a single parent with one SSI eligible child, no unearned parental income, and no child income, may not earn more than $3,299 a month ($39,588 annualized or about 212% of FPL for a family of two) for the child to be financially eligible for SSI payments in 2021.[7] In addition, the benefit amount is determined by a formula that subtracts income from the maximum federal benefit rate, after taking into account various exclusions and allocations based on family structure.[8]

After determining a child's financial eligibility for SSI, state agencies assess the child's medical eligibility. To be SSI eligible, a child's impairment must be "a medically determinable physical or mental impairment or combination of impairments that causes marked and severe functional limitations, and that can be expected to cause death or that has lasted or can be expected to last for a continuous period of not less than 12 months" (Social Security Administration, nd). Following SSA rules, a state agency first applies a medical screen to deny applicants without a severe and long-lasting impairment. Next, they determine if the child's impairments meets or is medically equivalent to one of the listings of impairments provided by SSA, along with their medical criteria for this determination.[9] Lastly, if the child has a severe impairment, but one that does not meet or medically equal a listing, they will consider the child's ability to function at home, in school, and in the community. At this point the state agency determines if the impairment "functionally equals" a listing (Wixon and Strand, 2013).

As a way of targeting infants at high risk for long-term disability, SSA simplified the process for infants with low birthweights to medically qualify for SSI starting in the 1990s (Social Security Administration, 1991). On February 11, 1991, SSA made low birthweight a condition functionally equivalent to a listing. Note that SSA defines low birthweight as weighing less than 1200 grams, which is well below the clinical definition of low birthweight of 2500 grams.[10] In 1993, low birthweight

[6] For SSA parental deeming rules, please see here https://secure.ssa.gov/apps10/poms.nsf/lnx/0501320000 and Hemmeter (2015).

[7] Authors' calculation based on SSI benefit formula and federal benefit amounts.

[8] Similar to most states, California supplements the federal benefit amount with a small supplemental payment; the maximum supplemental payment was $65 per month for a child with a disability in 2011 (Social Security Administration, 2011). This additional amount is federally administered and therefore included in our later estimates of total SSI benefit amounts using SSA administrative data.

[9] These criteria describes conditions severe enough to cause marked and severe functional limitations. The Childhood Listings can be found in the Blue Book here, https://www.ssa.gov/disability/professionals/bluebook.

[10] SSA staff can also determine low birthweight using gestational-age specific birthweight thresholds (see https:

became a presumptive disability category, allowing SSA staff to expedite payments to children while they waited for a final ruling on their application. Our analysis studies cohorts born during this year and later, when these presumptive disability rules were in effect.

The length of time infants remain eligible for SSI depends both on how their financial situation and impairments change over time. During our period of study (1993 and later), parental resources are not deemed while the low birthweight infant is in the hospital (Social Security Administration, 1997). While in the hospital or medical institution, infants are eligible for a small monthly SSI payment ($30). When the infant comes home from the hospital, family income is deemed to the child and considered to determine eligibility and monthly benefit amount. During our period of study, SSI recipients are automatic enrolled in Medicaid in most states (including California). In addition, low birthweight infants must have their SSI eligibility status redetermined within one year of birth, or later if the impairment is not expected to improve within 12 months, in a Continuing Disability Review (CDR) (Social Security Administration, 2015). In practice, most low birthweight infants have their CDR conducted between their first and third birthdays (Hemmeter and Bailey, 2015). To continue on SSI after the 1-year CDR, low birthweight infants must have an additional qualifying disability. At this CDR, SSA has historically discontinued between 34.6 and 63.2 percent of cases (median is 43.6 percent of cases for yearly determinations made between 1994 and 2016, data from Social Security Administration, 2020). Beyond this point, if the child's impairment is expected to improve, SSA generally conducts a childhood CDR every 3 years. For children whose impairment is not expected to improve, SSA conducts CDRs at least every 7 years Hemmeter et al. (2021).

2.3 Potential impact on short- and long-term outcomes

Existing research on the SSI program suggests several mechanisms through which cash assistance may improve outcomes for the population we study. First, the assistance may improve outcomes for this population if it provides additional resources for the care and support of the child. Prior work has documented an increase in total household income following child SSI enrollment, along with a decrease in rates of household poverty among recipient families (Duggan and Kearney, 2007). There has yet to be any research, however, documenting what SSI recipients use the payments to

`//secure.ssa.gov/apps10/poms.nsf/lnx/0434005100` for the rules in place during our study period). However, in practice, these gestational-age specific thresholds do not appear to be used, at least in California during our study time period. Furthermore, our analysis of the restricted-use version of the Current Population Survey linked to national respondents' SSA participation histories from the Supplemental Security Record (SSR) shows that 87.5 percent of children qualifying for SSI on the basis of low birthweight received this designation using the 1200 gram cutoff rule, rather than other gestational-age specific birthweight thresholds. See evidence of this in additional analyses reported in Appendix Section A.

fund, including whether parents use child SSI payments to invest in the child's health, education, or financial future (see discussion in Duggan et al., 2016).

Second, the program may enable parents to reduce their labor supply in order to provide more care, or higher quality care, to their child. However, the evidence on whether parental labor supply responds to a child's SSI receipt is mixed.[11] Most relevant to our study, Guldi et al. (2022) find that working mothers, but not fathers, switch from full-time to part-time work when their low birthweight infants receive SSI payments; they find no statistically significant effects on labor force participation. Back-of-the-envelope calculations suggest that the resulting decrease in maternal earnings is fully offset by the SSI payments. The authors also document an improvement in parenting behaviors,[12] suggestive of a reallocation of maternal time toward child investment.

Another potential mechanism for improved outcomes for child recipients is increased participation in Medicaid or enrollment in other social services during childhood. Previous work finds that child SSI receipt leads to only small increases in Medicaid enrollment and no changes in overall insurance coverage (Duggan and Kearney, 2007; Guldi et al., 2022), presumably because the majority of children on SSI would already be eligible for Medicaid due to their low family incomes.[13] Guldi et al. (2022) find that low birthweight infants eligible for SSI are more likely to receive services for special needs in childhood, and receive a greater number of these services, although these results are not statistically significant. This is consistent with prior work documenting that parents of children eligible for higher SSI payments are more likely to want to enroll, or to actually enroll, their children in special education services (Kubik, 1999; Cohen, 2007).[14] However, Ko et al. (2020) find some evidence of a decrease in Medicaid covered medical services indicated in an IEP (special education) among children with birthweights below the 1200 gram SSI eligibility cutoff.

There are a number of reasons, however, that SSI participation may not necessarily translate into improved child outcomes either in the short- or longer-term. First, it is not clear that the generosity

[11] Kubik (1999) finds that a 10 percent increase in SSI child benefit generosity decreases parental labor force participation by about 2 percent, potentially affected by a pre-trend. Duggan and Kearney (2007), however, find no statistically significant effects of child SSI enrollment on changes in household earnings, the probability of positive household earnings, or log earnings conditional on positive earnings. A newer study by Deshpande (2016b) using large administrative datasets from SSA finds that when children are removed from the SSI rolls that parental earnings increase to fully offset the benefits lost.

[12] Any improved emotional well-being of the parents that might accompany reduced financial stress could also be an important mechanism if it improves the quality of time spent with the child. Guldi et al. (2022) examine a measure of maternal mental health in their study but find no evidence of a change associated with child SSI eligibility.

[13] Ko et al. (2020) also finds no evidence of a relationship between the 1200 gram SSI eligibility cutoff and continuous Medicaid enrollment through ages 3, 6, or 8 in their study of New York infants.

[14] It is difficult to know, however, the direction of this relationship. For instance, parents who are interested in applying for SSI may first request an assessment for special education services (Cohen, 2007).

of payments is large enough to fully offset the additional expenses and labor market complications that may accompany having a high needs child (Duggan et al., 2016). Second, unconstrained cash payments are not guaranteed to be spent in ways that will improve the lives of the intended child recipients (Aizer et al., 2022). While SSA specifies that child payments be spent exclusively on the child, parents may reallocate family resources, including time or monetary resources that were previously spent on the child recipient, when the child receives SSI. Third, there are potential disincentives for work and savings generated by the program's eligibility criteria as participating families lose benefits when their income and savings increase. These income and asset limits could prevent families from generating higher earnings or saving for the future in ways that have negative consequences for both short- and longer-term resources available for the child. We are able to explore changes in income directly in the analysis that follows, but are unable to measure changes in savings or investment. In addition, parents could potentially withhold investments in the child if improvements in their health might jeopardize continuing eligibility for the program (Duggan et al., 2016). Fourth, there could be negative consequences of the diagnosis of a disability from the very beginning of life. While early recognition of a limitation could lead to treatment or interventions with positive benefits that might otherwise not be received, the flip side is that it could also negatively alter parent, teacher, or self perceptions of ability and affect educational opportunities (see discussion in Duggan et al., 2016). Fifth, families might overestimate the likelihood of their child qualifying for SSI benefits as an adult, as documented in Deshpande and Dizon-Ross (2023), with potential negative consequences for decisions regarding human capital investments during childhood or preparation for later economic self-sufficiency. However, in their randomized controlled trial testing this prediction, Deshpande and Dizon-Ross (2023) do not find evidence of this type of response in human capital investment. When they reduce parents' expectations that their children (ages 14-17 years) will receive benefits as adults, there is no change in the take-up of resources offered in the form of tutoring or job training services for their children. Finally, families and child recipients themselves might also be incentivized to hold onto the disability designation to increase the likelihood of the receipt of benefits in adulthood (Duggan et al., 2016).

2.4 Potential spillover effects for siblings

Very little is known regarding the effects of child SSI receipt on recipients' siblings, despite more than 80 percent of child SSI recipients having siblings (Rupp and Ressler, 2009). While some child SSI recipients have siblings who also participate in the program, most do not. There is, however, some existing evidence of family spillovers in applications for disability benefits, with individuals more likely to apply or receive disability if a family member also received benefits (Dahl et al., 2014; Deshpande, 2016b,a; Dahl and Gielen, 2021; Bratberg et al., 2015). In addition, there is some evidence suggesting that the gain in household resources with child SSI receipt may benefit siblings. For instance, Duggan and Kearney (2007) find that child SSI receipt reduces the total number of children in poverty by more than the total number of households in poverty, indicating potential positive spillovers onto siblings. It is difficult to know, however, whether there are, in fact, positive implications for siblings without more information on how families actually use this additional income. Economic theories of how parents allocate resources among siblings with differing health endowments indicate that it can be optimal for parents to either compensate for or reinforce initial differences (see discussion in Currie and Almond, 2011), which lead to different predictions regarding how additional income may be spent. One recent study suggests that SSI child receipt has positive spillovers on the long-run outcomes of non-disabled siblings. Analyzing the expansion in child SSI disability qualifying criteria in the early 1990s, Singh (2020) finds higher rates of high school completion, increased adult income, and a higher likelihood of private health insurance coverage for the siblings of children who might have gained SSI eligibility due to their impairment and age; however, the study uses survey data with small sample sizes and the results could be driven by pre-trends and other confounding factors.

3 Data

To examine the long-run impact of eligibility for SSI, we rely on a novel data source compiled in collaboration with the California Departments of Public Health and Health Care Access and Information, U.S. Census Bureau, National Student Clearinghouse, and Educational Results Partnership, a non-profit organization that receives and harmonizes student-level data directly from public school districts in California. To construct this dataset, we link confidential birth certificate records for the approximately 14.6 million children born in California from 1993 to 2019 to a large number of administrative data sources. The birth certificate records contain detailed information on the health of the infant at birth including birthweight in grams, which we use as a running variable in our regression discontinuity (RD) model. The birth records also contain identifying information for the infant and parents that the Census Bureau used to bring these records into the Census data infrastructure via their Person Identification Validation System (PVS). This system assigns each record an anonymized unique identifier, called a Protected Identification Key (PIK), that allows researchers to link individuals across multiple datasets. For the California birth records, the PVS assigns each infant a PIK based on full name, date of birth, and address. Among infants born just under 1200 grams (between 900 and 1199 grams) during our study period, the PIK rate is 93.6 percent. Our analysis of long-term outcomes with Census-held administrative data is necessarily limited to birth records with an assigned PIK for the infant; importantly, PIK rates do not appear to vary significantly at the birthweight cutoff we study (see Appendix Table A1). Other administrative data sources were linked directly to the birth certificate records by the data providers; we provide more details below.

3.1 Parent information

Our sample construction uses parental income information assembled from Census-held administrative data sources to identify households meeting the SSI income eligibility criteria. The primary source of data on parent identity is the information for the parents on the birth certificate records, although these fields are sometimes incomplete or do not match to a PIK during the PVS process. For instance, mother's identifying information was incomplete for 0.5 percent of the birth records during our study period. However, father's identifying information needed for the PVS process is only partially available beginning in 1997 and fully available in 2005 and later. Even when full identifying information is available, father's information is missing at a higher rate than mother's information on the birth certificate record. In these instances, we supplement the birth certificate records with Census-held administrative and survey data to help identify the parents of each infant.[15] Even with these additional data sources, we are able to identify the mother of infants born under 1200 grams for 93.4 percent of births for these years, but only 73.3 percent of fathers. For this reason, our analyses focus on the mother's information to identify low-income households, who are likely to be income eligible for SSI. It is important to note that most child SSI recipients (nearly 70 percent) reside in one parent families (Social Security Administration, 2021), with the parent being the mother in nearly all cases (Rupp et al., 2005).

[15] First, we pull in parent information from a composite administrative dataset called the Census Household Composition Key (CHCK) available in 2016 to 2022. This dataset uses information from a variety of federal sources, including Social Security Number applications, the IRS Form 1040, and the Decennial Census, to identify the parents for children born in 1997 and later (U.S. Census Bureau, 2020; Genadek et al., 2021). Second, for children without parent information on the birth certificate record or CHCK, we identify parents who live with their children in families who appear in the 2000 Census, 2010 Census, or 2001 to 2021 waves of the American Community Survey (ACS). See the Appendix of Miller and Wherry (2022) for additional information on this process.

3.2 Family income

Next, we use administrative records on earnings and income to identify households most likely to benefit from meeting the SSI low birthweight criteria. These data come from several sources that have different years of availability. First, for 1994-1995 and 1998-2021, we observe income on IRS 1040 tax filings for households that file. These data contain information on a household's adjusted gross income. Second, for the years 2005-2022, we use earnings data from IRS W2 filings. These data are reported to the IRS by employers and, importantly, provide information on an individual's earnings even if they did not file taxes. For individuals with multiple W2s (e.g., those who work more than one job), we sum earnings across all observed W2s. Finally, for 1991 through 2004, we also rely on quarterly earnings reported to Census by state unemployment insurance (UI) agencies under the Longitudinal Employer-Household Dynamics (LEHD) program. These records include reports for earnings at jobs covered by the UI system, which is estimated to cover over 90 percent of the United States workforce (Isen et al., 2017).[16] We are able to observe LEHD earnings for AZ, CA, DC, DE, KS, MD, ME, ND, NV, OK, TN, and WI. We use LEHD data to measure earnings for years in which we observe no tax data (1991-1993 and 1996-1997) and for households that do not file taxes in the years we have 1040 forms but no W2 filings (1994-1995 and 1998-2004).

In order to identify infants born in families most likely to benefit from SSI, we construct a measure of household income immediately prior to the birth using these sources. As described above, we use earnings from the mother to identify infants likely to be income eligible for SSI because maternal information is more consistently reported on the birth record over the period we study. We use household income (i.e. adjusted gross income, or AGI) as reported on the 1040 form associated with the mother in the year prior to the birth. If the mother did not appear on tax forms in that year, we instead use the mother's earnings as a measure of household income. Note that this may result in some mismeasurement of earnings among non-filers, for example if their primary earnings are through "gig economy" occupations that do not generate W2 forms, or if they work in a sector not covered by unemployment insurance. If neither household income nor earnings are available, we search for the most recent income information up to three years prior to the birth year.[17]

[16] Some types of earnings (such as those of the self-employed, contract workers, agricultural workers, and some government employees) are not included. Abowd et al. (2009) provides further discussion of the LEHD records.

[17] For the 1993 birth cohort we can only look two years prior.

3.3 Sample construction

We next limit the sample to infants in families most likely to benefit from the SSI program. We define this sample as infants whose family's pre-birth income likely falls into the range that would qualify for the maximum possible SSI benefit amount. The amount we calculate varies by family size. For additional information on how we determine financial eligibility for the maximum benefit amount, including our calculation of the eligibility unit, earned and unearned income and resources available for deeming, see further details in Appendix Section B. We further limit our sample to infants with birthweights near the cutoff–between 900 and 1499 grams–with gestational lengths of less than 32 weeks. We also exclude multiple births, such as twins or triplets.

Baseline annual household income prior to the birth is $6,414 (2019 dollars) among those calculated to be eligible for the maximum SSI benefit.[18] In our "targeted sample," we also include infants for whom we are unable to find evidence of maternal earnings or income during the 3 years prior to birth, as well as infants whose mother's identifying information is missing, implicitly assuming that they were born into an income-eligible household. Results are similar if we use mother's educational attainment reported on the birth certificate record to define the targeted sample as infants whose mother had less than a high school degree at the time of the birth, instead of basing the inclusion criteria on family income (see Appendix Tables A2-A5).

In addition to observing outcomes for the low birthweight child (the "focal" child), we use the parental information recorded on the birth certificate to identify siblings in order to examine potential spillover effects. We define siblings as children who have the same mother as the focal child. The mothers for siblings are identified in the same way as for the focal child; i.e. via identifying the mother on the sibling's birth certificate (if born in California) or through Census-held administrative and survey sources.[19] We restrict our analysis to older siblings to avoid a setting where there might be selection into the siblings sample (e.g., if mothers are more or less likely to have future children based on the eligibility of the focal child). We also limit the sample to siblings who were under age 18 when the focal child was born, and only include sibling ages that correspond to years when the focal child was alive. For example, if the focal child was born when the sibling was 5 years old, we would examine outcomes for that sibling at age 5 and older, but not at earlier ages.

Table 1 shows sample characteristics of all children in the birthweight and gestational age range

[18] Unless otherwise specified, all baseline estimates in this paper are estimated as the average for infants in the sample with birthweights between 1200-1250 grams (i.e. those infants who just miss the SSI eligibility cutoff).

[19] We use the same process described earlier in footnote 15.

that we study (900-1499 grams and under 32 weeks gestation) in the first column. Characteristics for the targeted sample that we use in our main analysis are reported in the second column, and the older siblings of the main sample in the third column. Compared to the full sample of births, those in the targeted, income-eligible sample have somewhat younger and less well-educated mothers. In addition, non-Hispanic Black and Hispanic mothers are somewhat over-represented and non-Hispanic white and Asian mothers are somewhat under-represented in the targeted sample. Average birth weight and sex are very similar across the two samples. Infants in the targeted sample have much lower family incomes than all low birthweight children, as expected given the sample criteria for this group. Older siblings of the main sample are born to younger mothers, since their births preceded the infants in the targeted sample. Notably, older siblings of the targeted sample have an average birthweight of 3059 grams, close to the unconditional average in California of 3322 grams.

3.4 First stage outcomes

Having identified families most likely to benefit if their infant is below the birthweight cutoff, we next use administrative records to examine outcomes. For convenience, we also provide a table (Appendix Table A6) summarizing the years and cohorts used in the analysis of all outcome data.

First, we analyze how the birthweight eligibility cutoff affected SSI and Medicaid receipt to characterize the first stage. We examine program participation in infancy and early childhood (ages 1-2), as well as at older ages (ages 3-10 and 11-17). Data providing a "snapshot" of monthly SSI benefit receipt for each of the years 2010-2014, 2016, and 2019-2021 is provided to Census from the Social Security Administration (SSA), allowing us to directly examine SSI participation and the monthly benefit amounts. Benefit amounts are inflation-adjusted to 2019 dollars. Since SSI eligibility also makes an infant automatically eligible for Medicaid in California without a separate application, we also examine data on annual Medicaid enrollment provided by the Centers for Medicare and Medicaid Services (CMS) available from 2000-2016. While the data are unavailable to examine SSI receipt during infancy for earlier cohorts, SSA eligibility rules specify that this birthweight cutoff has been recorded as a diagnostic group by SSA since 1993 (Muller et al., 2006). We therefore use cohorts born in 1993 and later, when low birthweight became a presumptive eligibility category, in our analyses of any longer-term outcomes. We find similar results if we restrict the analysis sample to cohorts born in 1997 and later, which is when SSA documentation indicates that the low birthweight designation stabilized at its more recent share of awards to disabled children (Muller et al., 2006).

3.5 Health in the first year

We next examine whether SSI eligibility affects use of medical care and health outcomes early in life. To do so, we use linked data on hospitalizations, emergency department (ED) visits, and mortality during an infant's first year of life provided by the California Department of Health Care Access and Information (HCAI).[20] Hospitalization records are available for the 1993 to 2012 cohorts, ED visit records for 2005 to 2012, and infant mortality for the 1993 to 2011 cohorts. These linkages to the birth certificate records were performed by HCAI using information available in state administrative data sources. Infant mortality information is derived from California death certificate records. We supplement this information with mortality records from the Social Security Administration in the Census Numident, which includes deaths that occur outside of the state. More details on the Census Numident are provided below. Together, these data sources allow us to examine whether the increased support received through the SSI program resulted in any measurable changes in infants' use of health services or mortality risk in the first year of life, which could indicate an improved health trajectory.

3.6 Educational performance

We next examine educational outcomes measured during childhood using administrative records from California public schools between 2005 and 2018. We received this information from Educational Results Partnership (ERP) who linked the data to the California birth certificate records using information on student name, date of birth, and sex. ERP then returned the educational data to us with an anonymized record identifier that allowed us to merge the de-identified education data with our birth certificate records housed in the Census integrated research environment.

Using this data source, we examine the impact of SSI eligibility on a variety of educational outcomes. We focus our analysis on outcomes we observe in high school. We examine whether the student repeats a grade, whether they are enrolled in a gifted and talented program, the student's overall GPA, the number of AP courses in which the student is enrolled, and whether the student is enrolled in any math or science courses.[21] Since we observe a large number of educational outcomes, we also construct an index summarizing the student's overall educational performance during each year in high school. We do this by subtracting the mean and dividing by the standard deviation of each educational outcome for individuals with birthweights between 1200 and 1499. We then average these standardized outcomes over all non-missing components. Higher values of the index represent

[20] The HCAI was formerly known as the Office of Statewide Health Planning and Development.

[21] Note that the state of California only requires 2 years of science and math classes in high school, see Gao et al. (2017).

better educational outcomes. We also separately examine whether a student has an Individualized Education Program (IEP), indicating there is a written education plan to provide special education and related services. An IEP is required for public school children enrolled in special education programs or who receive related services by the Individuals with Disabilities Education Improvement Act of 2004. We also report differences in subject-specific GPAs (math and science) in high school; these subject-specific GPAs are also not included in the overall index.

We also construct indices from outcomes observed in elementary school (whether the student repeats a grade or is enrolled in a gifted and talented program) and middle school (repeats a grade, enrolled in a gifted and talented program, and overall GPA). These analyses are reported in the Appendix. As with the main analysis, we separately examine the presence of an IEP during these school years, but this indicator is not included in the summary indices.

ERP receives educational data directly from public school districts in California, but their collection does not include all districts. Furthermore, not all schools report all outcomes in all years. On average, we observe about 57.7 percent of our sample of school-aged low-income, low birthweight infants in the ERP data at least once.[22] Because our data on educational outcomes are incomplete, there could be concern about selection into our sample at the cutoff. In Appendix Table A1 we verify that there is no change in the probability of being observed in the education data at any grade, or in high school in particular, at the cutoff.

Following childhood, we observe post-secondary school enrollment and degree attainment with information provided by the National Student Clearinghouse (NSC). In contrast to the ERP data, the NSC data are not limited to California and cover between 93 to 97 percent of enrollment nationally in post-secondary, Title IV institutions, depending on the year of data.[23] Similar to the process described above for the ERP data, NSC performed the linkage of their data to the California birth records using information on student name and date of birth. The de-identified data file we received back from them included an anonymized record identifier that allowed us to merge their file with our birth certificate records at Census. Using these data, we examine whether an individual has any college or other post-secondary school enrollment (for cohorts 1993 to 2003) and whether they have obtained a bachelor's degree or higher (for cohorts 1993 to 1998).

[22] A similar percent of our sample, 56.9 percent, appear in the high school records when we observe them at high school ages.

[23] See https://nscresearchcenter.org/workingwithourdata/.

3.7 Economic self-sufficiency

We also observe several outcomes related to labor market earnings and use of public support programs in early adulthood. First, we observe annual earnings information from the IRS W2s at ages 19-29. We look both at total annual earnings and whether the individual had any earnings in a given year. Earnings are inflation-adjusted to 2019 dollars. While we are able to examine early adult earnings, this age range includes some ages where individuals might be enrolled in college. We, therefore, also perform our analysis of earnings only for individuals observed between the ages of 22 and 29 (inclusive). Second, we observe receipt of SSI, enrollment in Medicaid, and receipt of the federal Earned Income Tax Credit (EITC) in adulthood, allowing us to capture participation in each of these social programs. We construct an index summarizing these earnings and program participation outcomes in the same manner as with the high school educational index. Here earnings are signed positive and program use negative, resulting in higher values of the index representing less welfare reliance and improved labor market outcomes. Note that in some years only some elements of the index are available (e.g., SSI participation is not available in 2015). In those years, the index uses only the non-missing elements. See Appendix Table A6 for details on outcome availability.

Finally, we observe non-infant mortality from the Census Numident file. This file contains administrative death data for individuals with a Social Security Number collected by the SSA. Mortality records measured in the Numident closely track adult mortality statistics as reported by the Centers for Disease Control and Prevention and it is considered a comprehensive source of individual-level mortality information (Miller et al., 2021; Finlay and Genadek, 2021). In our analyses, we examine cumulative mortality for individuals who survived their infancy year through the third quarter of 2022, which is the most recent information available.

4 Empirical Approach

Our main analysis takes advantage of the cutoff rule used for SSI eligibility based on birthweight in a regression discontinuity (RD) design framework. This approach compares infants born close to the birthweight cutoff who have similar health at birth who meet the qualifying disability criteria vs. those who do not based on the cutoff rule. This is a "fuzzy" regression discontinuity design since some infants above the cutoff may qualify for SSI under other disability definitions. It may also be the case that some infants below the cutoff do not qualify because their families do not meet the income or asset requirements of the program, as we do not observe family assets and income may be mismeasured.

In the analyses that follow, we present reduced form estimates that examine changes in outcomes at the cutoff, or the "intent-to-treat" estimates. We do not estimate instrumental variables models that estimate the effect of a change in SSI participation at birth, since we do not observe this time period for all cohorts in our sample. We do, however, provide first stage analyses that estimate the change in participation for the cohorts for whom we have these data.

We estimate the RD model using a local linear regression with a triangle kernel as implemented using the `rdrobust` package in Stata (Calonico et al., 2017). Due to Census disclosure rules and concerns about generating implicit small samples, we fix the bandwidth to all births between 900 and 1499 grams; this is similar to the optimally chosen bandwidth for all of our outcomes. We also verify that our results are robust to estimation with a "parametric" linear model based on the following regression:

$$Y_{it} = \beta_1 + \beta_2(BW_i - 1199) + \beta_3(BW_i - 1199) \times (BW_i \geq 1200) + \beta_4(BW_i \geq 1200) + \epsilon_{it}. \tag{1}$$

In this alternative parametric specification, $\hat{\beta}_4$ is the RD estimate that captures the discontinuity at 1200 grams.

We observe all annual outcomes at the individual by year level. We therefore construct our analytic dataset as an individual by year (or individual by grade, in the case of the ERP data) panel. If an individual dies, they are removed from the panel in subsequent years. It is also possible that siblings may appear in the panel (e.g., if the same mother has more than one child with very low birthweight). We, therefore, estimate cluster-robust standard errors that we cluster by mother, allowing for correlation of the error term both within individuals over time and across individuals in the same family.

The RD approach relies on the assumption that infants born close to the cutoff do not vary systematically across the cutoff except in their treatment by the SSI program rules. We bolster the credibility of that assumption by examining whether infants on either side of the cutoff vary on other dimensions that we would not expect to be related to SSI eligibility. Specifically, we examine whether maternal age, race, ethnicity, education level, pre-birth income, infant sex assigned at birth, or number of prenatal visits vary at the cutoff in our sample of low-income, low birthweight infants. As we show in Appendix Table A1, only one of these baseline characteristics (Hispanic ethnicity of the mother) varies significantly at the 1200 gram cutoff and the point estimate is small, indicating a difference of about 3 percentage points (or about 5% relative to the baseline mean). Furthermore, a joint F-test of their significance shows no significant difference in these characteristics when considered together (p=0.4029).

A second assumption is that there is no manipulation of the running variable related to the knowledge of (or potential benefit of) treatment. Ideally, the running variable is smoothly distributed at the cutoff. However, as documented in previous studies (Almond et al., 2010; Barreca et al., 2011, 2016; Guldi et al., 2022), birthweight tends to exhibit "heaping." This occurs when certain providers round the reported birthweight to the nearest 100 grams or nearest ounce. Such heaping may be a concern for our analysis if correlated with hospital characteristics or patient populations; e.g., if hospitals in poorer areas have lower resolution scales and are more likely to report birthweight in heaps that fall on one side of the cutoff or the other (Barreca et al., 2016), and these hospitals also generate worse health outcomes.

We do observe this type of heaping in the California birth records (see Appendix Figure A1). However, the heaping patterns are similar across mothers with different educational attainment at the time of the birth (panels (c) and (d)), and the heap at 1200 grams is not noticeably different than other heaps occurring at round numbers (panels (a) and (b)).[24] Furthermore, the 1200-gram heap is not consistent with manipulation of the running variable, since it occurs just above (rather than just below) the eligibility cutoff. When we check for density manipulation following Cattaneo et al. (2018), we do not find evidence of a jump in density at the 1200 gram threshold. The p-value associated with this density test is 0.3979.

Nonetheless, we further explore the potential role of heaping in our analysis by conducting a robustness test where we omit "heaped" observations. This narrows our sample, and necessarily estimates effects only for infants who are not observed at data heaps, but provides unbiased estimates for non-heaped observations if non-random heaping is present (Barreca et al., 2016). We find very little change in our estimates when these heaped birthweights are omitted (see Appendix Tables A7-A11). The robustness of our results to the removal of heaped observations, the lack of change in demographic characteristics at the cutoff, the lack of evidence of bunching at the cutoff, and the fact that the heaps occurring near the eligibility cutoff appear to be similar to those at other points of the birthweight distribution suggest that these data features do not invalidate our RD approach.

[24]Census disclosure rules prohibit us from reporting unrounded samples sizes in our linked data, so we rely on a separate restricted data set to produce these figures.

5 Results

5.1 First stage

We first evaluate how birthweight affects SSI receipt during childhood. Figure 1 plots the fraction of children who receive any SSI (top row) and the average amount of SSI benefits received (bottom row) at different ages by 15-gram birthweight bins. Note that the average amount of SSI benefits received is inclusive of the $0 benefits received by children who are not enrolled in the program. The size of the points is proportional to the number of observations in each of these bins and the vertical line denotes the 1200-gram eligibility cutoff. In some cases, bins are omitted if they do not exceed Census disclosure thresholds.

Panels (a)-(c) show large jumps in the probability that a child receives any SSI benefit, and panels (e)-(g) in the dollar amount received, at the 1200-gram threshold early in a child's life, with noticeable jumps during infancy, at ages 1-2, and at ages 3-10. By ages 11-17 (panels (d) and (h)), we no longer observe noticeable differences in the fraction of children who receive SSI, nor the amount they receive, at the birthweight threshold. These reductions in the size of the discontinuity across ages likely reflect infants losing SSI eligibility as they get older and their impairments are re-assessed, or as their families gain resources. Previous work using SSA data has also found a steep drop off in benefits received as low birthweight infants age. Of children awarded SSI for low birthweight in 2001, 65.8 percent received benefits at their first birthday, and 22.9 percent still received benefits by their fifth birthday (Guldi et al., 2022).

Table 2 shows the regression discontinuity estimates associated with this figure. The average of the outcome variable for infants who are just above the eligibility cutoff (weighing 1200 to 1250 grams) is also reported to provide a baseline comparison. We find that infants in our sample with birthweights just below the 1200-gram cutoff are about 18.5 percentage points more likely to receive SSI benefits in infancy compared to infants with birthweights just above the threshold, nearly a 200 percent increase in participation. This increase in SSI participation continues throughout middle childhood with a 19.5 percentage point increase at ages 1 and 2, and about a 4.5 percentage points increase at ages 3 to 10. These estimates are statistically significant at the 0.01 level. On average, infants with birthweights just below the threshold receive $146.20 in additional SSI benefits per month during their first year of life, or $1,754 per year. This represents a transfer equal to about 27 percent of families' average pre-birth income ($6,414). At ages 1 and 2, the gain in the average monthly SSI benefit is similar at $141 per month. At ages 3 through 10, the increase in average monthly benefits for infants below the cutoff is lower (about $33 per month), but still significantly different than zero. SSI benefits are not statistically different across the threshold at later ages in childhood. Taken together, these estimates imply that low-income children can expect over $8,300 of cash benefits before age eleven if their birthweight puts them just below the 1200-gram threshold versus just above it, an amount exceeding their families' average pre-birth annual income.

The estimates above give SSI benefit amounts for all children below the 1200-gram cutoff, regardless of whether they actually participate in the program. For the approximately 18.5 percent who enroll in SSI as a result of this eligibility rule, our estimates imply a gain in annual SSI benefits of $9,483 in the first year of life and $17,378 over the next two years (ages 1-2). Our estimates also suggest that about one-fourth of these children will remain on SSI between the ages of 3 and 10 and receive an additional benefit of $8,842 per year. Altogether, these estimates imply that the total expected childhood benefit for a low birthweight infant who enrolled at birth would be $44,050.[25]

We also examine how Medicaid enrollment in childhood varies across the cutoff, since SSI also provides eligibility and automatic enrollment in the Medicaid program in the state of California (Rupp and Riley, 2016). In Figure 2, we plot the fraction of children enrolled in Medicaid by 15-gram bin. We observe higher rates of Medicaid enrollment in childhood for children born just under the 1200-gram cutoff relative to those born just above it. Table 2 shows that children whose birthweight puts them immediately below the cutoff are 5.1 percentage points more likely to enroll in infancy (about 10.0 percent relative to the baseline mean), 2.5 percentage points more likely to enroll at ages 1 and 2 (3.4 percent), 3.5 percentage points more likely to enroll between the ages 3 and 10 (5.3 percent), and about 4.8 percentage points more likely to enroll at ages 11 to 17 (8.5 percent). It is interesting that we see a larger discontinuity in Medicaid enrollment during the adolescent years, despite no significant difference in SSI benefit receipt at the cutoff. This suggests that some child SSI enrollees continue to participate in Medicaid when they discontinue SSI participation. Notably, eligibility criteria for childhood Medicaid coverage tend to include higher family income levels than SSI and do not require the presence of a disability.

These results demonstrate that infants with birthweights just below the 1200-gram cutoff receive substantially higher benefits through the SSI program that, given recent evidence on cash assistance

[25] This calculation considers the $26,861 accumulated benefit through age 2 for those enrollees who exit the program at later years and the additional $70,736 accumulated benefit for those who stay enrolled through age 10, as well as the 24.3 percent likelihood of being in the latter category.

(e.g. Barr et al., 2022), might reasonably be expected to generate short- and long-term changes in these children's outcomes.

5.2 Health and health care utilization in infancy

We next examine whether increased SSI eligibility translated into short-term differences in health and health care utilization. Figure 3 plots mortality, hospital use, and ED visits during the first year of life by birthweight. In contrast to the patterns shown in Figures 1 and 2, we do not see clear evidence of a jump or break at the 1200-gram cutoff for most outcomes. There is some evidence, however, that infants just below the cutoff had more days in the hospital at birth (panel b).[26] Corresponding RD estimates are presented in Table 3. We do estimate a marginally significant difference at the birthweight cutoff in the length of initial hospitalization, indicating that infants with birthweights below the cutoff stay in the hospital at birth for about 2 more days than infants with birthweights just above the cutoff, an increase of about 4.4 percent relative to the baseline mean. One potential explanation for this finding is if hospitals provide more care due to the Medicaid benefit that accompanies SSI receipt. As described earlier, infants can enroll in the program during their initial hospital stay, do not need to meet financial test requirements, and receive a small monetary SSI benefit, as well as Medicaid. There is at least some anecdotal evidence that hospitals assist in connecting families to these benefits (Hemmeter and Davies, 2019; Lakshmanan et al., 2022).

We find no change in inpatient days that occur after the initial hospital stay for the birth (column 2), nor do we find any difference in the number of emergency department visits during the first year. We also find no significant effect on infant mortality. Although our confidence intervals do include meaningfully-sized effects, our point estimates are generally small when compared to baseline means and are not in a consistent direction.

5.3 Educational outcomes

Next we consider outcomes related to educational performance in high school, shown in Figure 4. We do not provide a figure for enrollment in gifted and talented programs because Census disclosure rules required us to censor many observations. For other outcomes that we include in our summary index, there is no obvious discontinuity at the 1200-gram cutoff, nor do we observe a discontinuity in the index itself. Not included in the summary index is an indicator that the child has an IEP (panel g). This outcome does appear to be discontinuously higher at the 1200-gram cutoff, with those who

[26]Note that this measure of hospitalization at birth includes only days at the hospital at which the birth occurs.

received SSI eligibility under the cutoff showing a higher likelihood of having an IEP.

The RD estimates reported in Table 4 confirm these visual patterns. We do not find a significant difference in the summary index or its component outcomes across the cutoff. For most outcomes, the point estimate indicates that, if anything, those who gained SSI eligibility as the result of the cutoff have somewhat worse outcomes. For example, those who fall just below the cutoff appear to take slightly fewer AP courses in high school, although the coefficient is only suggestive (p-value=0.125).

With a two-sided test, we can rule out improvements in our high school index greater than about 0.036 standard deviations (0.027 with a one-sided test). The precision of our estimates varies across components. A two-sided test is able to rule out quite modest improvements in taking a math class in a given year (2.4 percent over baseline, or 1.7 percent with a one-sided test) or overall GPA (3.6 percent over baseline, or 3.0 percent with a one-sided test), but unable to rule out large reductions in the probability of repeating a grade (only estimates larger than 36 percent over baseline, 31 percent with a one-sided test) or participation in gifted and talented programs (estimates larger than 80 percent over baseline, or 69 percent with a one-sided test).

Receipt of an IEP (not included in the summary index) is significantly higher for individuals just meeting the SSI eligibility cutoff, with an increase of about 2.75 percentage points, or 39 percent over baseline. Higher rates of enrollment in special education or related services could have a variety of implications for the well-being of the student. If child enrollment in SSI results in students being "tracked" into less rigorous courses or limiting exposure to certain peers, students may be worse off (e.g. in Dudovitz et al., 2023). However, if SSI helps students get an IEP that provides accommodations and a more targeted selection of courses, the students may be better off. That said, as we demonstrate below, it does not appear that the 1200-gram cutoff had a meaningful impact on college attendance or degree attainment, or labor market outcomes in early adulthood.

Given that fewer relevant outcomes are collected for earlier grades, we report results for elementary and middle school in the Appendix in Tables A12 and A13. In both cases, we find no evidence that early childhood SSI receipt results in improved educational outcomes in these earlier grades. Of interest, we do not find similar evidence of increased participation in IEPs at the eligibility cutoff in either elementary or middle school.

We next examine how early life eligibility for SSI affects college and other post-secondary school attendance and degree attainment. These outcomes are plotted in Figure 5. Mirroring our results for high school, we find no differences in post-secondary outcomes at the cutoff. Table 5 reports the estimated coefficients. Our point estimates are small, indicating about a 1.5 percentage point difference in post-secondary school attendance (about 2.9 percent compared to the baseline) and a 0.27 percentage point difference in degree attainment (about 2.5 percent), although the confidence intervals include meaningfully sized estimates, allowing us to reject increases for the SSI eligible of more than 5.5 percentage points and 3.5 percentage points, respectively.

5.4 Labor market and program participation

Next, we examine labor market outcomes and use of public programs for young adults ages 19 to 29. Figure 6 shows patterns for a summary index (panel a), whether the individual had any earnings and the amount of earnings (as measured on form W2) (panels b and c), whether the individual was enrolled in SSI and the average amount of SSI received (panels d and e), whether the individual was enrolled in Medicaid (panel f), and the amount of federal EITC received by the individual's household as measured by the tax form 1040 (panel g). We also examine whether the individual died after infancy; however, due to the low rate of mortality for this sample we were unable to disclose the corresponding mortality figure. For the most part, these outcomes do not appear to change discontinuously at the cutoff.

Table 6 reports the corresponding RD estimates. Consistent with the visual evidence presented in Figure 6, we find no significant effect of early life SSI benefits on adult labor market outcomes or program participation. With a two-sided test we can rule out improvements in our index of labor market and program participation outcomes larger than about 0.04 standard deviations. A two-sided test can rule out improvements in any wages and total earnings of 3.6 and 4.8 percent respectively, when compared to baseline means; a one-sided test can rule out 2.9 and 3.5 percent improvements. However, when examining outcomes related to use of public programs, our confidence intervals are generally not precise enough to rule out moderate to large changes among individuals who gain SSI eligibility at the cutoff, with a two-sided test able to rule out reduced use of these programs ranging from 6.2 percent (Medicaid) to 32 percent (SSI benefit amount). In all cases, the direction of the point estimates tend to suggest worse outcomes in adulthood for the individuals who gained SSI eligibility. The confidence intervals, therefore, include even larger estimates for decreases in earnings and greater reliance on public support programs.

We also examine whether the results change when we restrict to those age 22 to 29, rather than 19 to 29. This age restriction removes individuals who may still be in school and not yet in the labor market, and may therefore better capture the impact of the early life payments on labor market outcomes. These results are reported in Appendix Table A14. We do not find any change in labor market or program participation at the cutoff, and are able to rule out improvements in the index larger than about 0.044 standard deviations, increases in any earnings of about 3%, and increases in earning amounts of about 4%. As with younger ages, our estimates of the impact of the cutoff on program use is noisier, and we are able to rule out reductions in program use of up to 29 percent (Medicaid) and 45 percent (SSI benefit amount). Similar to the analysis above, the point estimates suggest worse labor market outcomes for the SSI eligible. However, they also suggest less reliance on public support programs.

Finally, we examine whether children who became eligible for SSI at the birthweight cutoff had different mortality rates. We consider this as a separate outcome, not included in the economic self-sufficiency index. We do not find evidence that mortality changed at the SSI eligibility cutoff, although the estimate is imprecise.

5.5 Robustness to alternative samples and specifications

We conduct several analyses to assess how robust our results are to alternative specifications and sample definitions. First, we conduct all analyses using a parametric linear model as described in (1). The results for the parametric version of the first stage are reported in Appendix Table A15, with other outcomes reported in Appendix Tables A16-A19. Using this more restrictive model does not meaningfully change our point estimates. However, it does improve the precision of our estimates, reducing the standard errors by around 10 percent for essentially all outcomes.

Second, we re-estimate our model but drop all observations occurring at "heaps." Heaps appear to occur both at round numbers and at grams that correspond to pounds and ounces. To include all potentially "heaped" observations, we define heaps as any gram that is either a multiple of 100 or that corresponds to an ounce.[27] We report a version of our first stage estimates using the data with heaps removed in Appendix Table A7, with later life outcomes reported in Appendix Tables A8-A11. We find very similar estimates for our first stage analysis when we exclude heaps, and continue to find null effects for downstream outcomes. This analysis reassures us that the presence of heaps does not appear to be driving our conclusions. We also note that the estimate for special education in high school shrinks in size when remove heaped observations, indicating no effect of the eligibility threshold.

Third, we re-construct our sample using mother's education, instead of income, to identify low-

[27]For example, 42 ounces is equal to 1190.68 grams and 1991 grams would be considered heaped

income infants. We restrict the sample to infants whose mothers report having less than a high school degree in educational attainment on the birth certificate. Using maternal education, instead of income, may be preferable since we know certain types of income are not captured in our data. For example, we do not observe income reported on form 1099, for non-filers, and for our earliest cohorts, we are relying on data reported to states' UI systems, which is not as comprehensive as tax data. Using maternal education information from the birth certificate provides us with an alternative way to identify a targeted sample most likely to benefit from the SSI eligibility rules.

We report the first stage for this sample in Appendix Table A2, and later life outcomes in Appendix Tables A3-A5. While we find a similarly-sized first stage as compared to our main analysis, we continue to find null results for other outcomes measured in infancy, childhood, and young adulthood.

Overall, these analyses show that our results and conclusions do not appear to be sensitive to modeling choices or decisions around the construction of our sample.

5.6 Subgroup analyses

We next examine the impact of birthweight under the 1200-gram eligibility cutoff for several subgroups based on demographic characteristics. Specifically, we examine how the effects vary by maternal race and ethnicity (non-Hispanic Black, non-Hispanic white, non-Hispanic Asian, and Hispanic), and sex assigned at birth. Recent research suggests that interventions and access to resources early in life may be more beneficial for disadvantaged males than females (e.g. Bertrand and Pan, 2013; Conti et al., 2016; Autor et al., 2019; Barr et al., 2022).

We also examine whether effects were different for a somewhat later cohort (those born in 1997 and later). These later cohorts may be differentially affected by SSI eligibility. For example, these later cohorts may have experienced a greater increase in SSI enrollment at the cutoff because they were born several years after the SSI birthweight eligibility rule was put into place, when there may have been greater awareness of and use of the rule as a result. Additionally, technological and medical progress in the care and treatment of low birthweight infants, such as the introduction of the drug surfactant, increased rapidly in the 1990s(Bharadwaj et al., 2013). If these technological advancements alter the health and economic trajectories of the infants who receive them, they may also alter the return to any additional investments made early in life.

Outcomes related to the first stage are reported in Appendix Table A2.[28] We find significant in-

[28] Cells with a "D" indicate the cell was suppressed as part of the Census disclosure review.

creases in the probability an infant receives any SSI early in life for those falling just below the cutoff for all groups. The magnitude of the effect varies across groups, however, with non-Hispanic Black children seeing the greatest increase in SSI participation below the eligibility cutoff, particularly for ages 0 (a 33 percentage point change) and 1-2 (32 percentage points). This group also experiences the largest increase in average SSI benefits in early childhood, with an increase of $280.6 per month in infancy and $271.1 per month at ages 1-2. Non-Hispanic white and Hispanic children experience somewhat smaller than average changes in SSI benefit receipt and participation at the cutoff. Meanwhile, Asian children experience much larger increases in Medicaid participation (21 percentage points at age 0 and 13 percentage points at ages 1-2) than children from other racial groups. Finally, female children appear to have slightly larger changes in SSI enrollment and benefit receipt amounts at the cutoff than male children. Essentially all groups, however, appear to be affected by the SSI eligibility policy.

Appendix Tables A3-A5 show heterogeneity in the effects of SSI eligibility on infant, childhood, and early adult outcomes. Across all groups and outcomes, we do not detect any statistically significant effects of early life SSI eligibility on later life outcomes. There also does not appear to be a systematic relationship between the size of the first stage reported in Appendix Table A2 and the size or direction of the point estimates reported in Appendix Tables A3-A5.

5.7 Sibling spillover effects

The SSI transfers may have affected household members other than the beneficiary themself. We, therefore, consider what effect SSI eligibility may have had on the older siblings of the focal child. Siblings may have indirectly benefited from the additional resources available to the household, or via knowledge spillovers that may have increased their own enrollment in programs for which they were already eligible. The long-term effects of these cash transfers on siblings also have the potential to be quite different than those experienced by the focal child. Siblings may be less likely to be stigmatized by the SSI receipt and are unlikely to form expectations about future SSI benefits (which could in turn affect human capital investments) based on their siblings' experiences. Siblings also have a higher average birthweight than the focal child, and the marginal benefit of additional cash resources may be different as a result.

To examine these hypotheses, we present RD results for siblings where the running variable is the birthweight of the focal child. That is, we compare individuals whose younger sibling's birthweight fell on either side of the cutoff. We first examine changes in siblings' use of programs during childhood. We consider only the ages at which we observe older siblings after the birth of the focal child. Because of this restriction, we have relatively few observations of older siblings at very young ages, since this would imply a close birth spacing between the older sibling and the focal child. For this reason, we start our analysis of the older sibling at age 3.

The results are presented in Tables 7-9. While we find large changes in SSI receipt for the low birthweight child, we do not find that older siblings' use of the program or enrollment in Medicaid during childhood changes at the younger sibling's birthweight cutoff (Table 7). The coefficient estimates are both insignificant and small in size, with confidence intervals allowing us to rule out increases in participation of between 1 percentage point (SSI) to 5 percentage points (Medicaid). This result indicates that any potential spillover effects on program participation–due to increased awareness or knowledge about the application process–are limited.

Next, we examine whether siblings had different outcomes later in life due to their younger sibling's SSI eligibility. Table 8 shows estimates for the older sibling's educational outcomes. We do not find any evidence that siblings had different outcomes in high school (as measured with our summary index of high school performance) based on whether or not their younger sibling qualified for SSI on the basis of birthweight, nor do we find any differences in college or post-secondary school attendance or the likelihood of obtaining a bachelor's degree or higher.

Table 9 shows RD estimates for siblings' self-sufficiency outcomes measured in young adulthood. We do not find any evidence that outcomes related to earnings or program participation changed for individuals with younger siblings' whose birthweights fell under the SSI eligibility cutoff. With a two-sided test, we can rule out positive spillover effects on our composite index larger than about 0.02 standard deviations (about 0.01 standard deviations for a one-sided test).

5.8 Family resources

Previous research has found large effects of early life interventions, including cash transfer payments, on later life outcomes. It may, therefore, be surprising that we do not detect any improvement in outcomes across a number of measures.

One explanation may be that families reduced their labor supply, or their reliance on other kinds of social support, when their child medically qualified for SSI. While reduced parental labor supply may still generate improvements in a child's well-being and development (e.g., because it allows the parent to provide more support and care to the child), it may also have adverse effects, especially if the parent's long-term job prospects are harmed by their reduced engagement with the job market. We test this hypothesis directly by constructing a monthly measure of total household resources based on what we observe in our data. This includes total household and labor market income (observed in either W2, LEHD, or 1040 sources), EITC receipt (derived from 1040s), and SSI benefits. This analysis only includes years when we can observe SSI receipt. While we cannot observe receipt of other relevant benefits (e.g. TANF, WIC, child care subsidies), this measure does capture three relevant sources of resources for low income families. To match the monthly frequency of our first stage analysis, we divide total annual household resources by 12 to arrive at a monthly measure. We winsorize this measure at the 99th percentile because the data contain some large outliers, although results are similar if we do not winsorize. Using this measure, we analyze how household resources change at the cutoff during different ages of childhood by estimating the same RD model with the household resource measure as the dependent variable.

The results are reported in Table 10 with the corresponding figures found in Figure 7. During the early ages of childhood, between infancy and age 2 (inclusive), we see that household resources increase significantly and by approximately the same amount as SSI benefits. This suggests that during these critical early years, families are not meaningfully reducing their labor market earnings or receiving less in EITC payments when their child is SSI eligible due to low birthweight. We see family resources at ages 3 to 10 that slightly exceed SSI benefit amounts received, but lower resources at age 11-17, when there is no longer an effect on SSI receipt; however, these estimates are noisy and not statistically significant at conventional levels. This analysis suggests that SSI eligibility did not result in a reduction of parental labor supply in such a way that could "undo" the cash transfer received from the program in the earliest years of childhood, although the effects at later ages are less clear.

5.9 Comparison to previous estimates

There is little existing research examining the long-term effects of child SSI receipt, and none focusing on receipt in infancy. The few papers examining an expansion in SSI disability qualifying criteria for school-age children find contradictory evidence regarding the effects on economic self-sufficiency in adulthood. Among the cohorts affected, Coe and Rutledge (2013) find evidence of increased labor force attachment and less welfare receipt, Singh (2020) finds no effects on adult income and increased welfare receipt, and Levere (2021) finds negative effects on young adult earnings and increased SSI receipt. Our analyses, which are the first specific to SSI eligibility in infancy, reveal no statistically significant effects of increased eligibility on earnings nor SSI receipt in adulthood.

How do our results, which examine a transfer to a population that is both low-income and low birthweight, compare to the effects documented among less disadvantaged populations? One prominent recent example is Barr et al. (2022), who study one-time transfers in the first year of life among children born into families eligible for the maximum EITC credit (families with about $49,000 for a single parent family of 3 in 2022). In addition to studying a somewhat higher income sample, Barr et al. (2022) also do not focus on a sample born with disabling health conditions. The authors find an increase in adult annual earnings by about $665.5 between ages 23 and 25 and $687.3 between the ages of 26 and 28 associated with a transfer of $1,801 in infancy.[29] In our setting, we observe that children born directly below the cutoff receive a similar amount during infancy, about $1,754, and also receive transfers at later ages during childhood (ages 1-10). We might, therefore, expect a similar or even larger effect. In contrast, we find no effect on earnings and our confidence intervals allow us to reject similar earnings increases in our main sample (ages 19-29, see Table 6). For our analysis at ages 22 to 29, we can reject these point estimates with a one-sided, but not a two-sided test (Appendix Table A14). However, it is worth noting that the baseline mean earnings in our sample are substantially lower, likely due to their greater disadvantage, and so the effects we are comparing to represent larger changes in percent terms in our sample than in the one examined in Barr et al. (2022).

We could alternatively consider the total amount received early in childhood (ages 0 to 2) to scale our estimates. We estimate infants born below the cutoff receive $5,143.2 over this critical period. The estimates in Barr et al. would imply an increase in annual earnings of (5143.2/1801)*665.5=$1,900 annually at ages 23 to 25 and $1,963 at ages 26 to 28, well outside of our confidence intervals.[30]

Barr et al. (2022) also report improvements in a composite index of educational outcomes (including math and reading test scores in grades 3-8, high school graduation rates, and school disciplinary actions) of about 0.051 standard deviations and test scores of about 0.046 standard deviations among disadvantaged students. In contrast, we find no effect of a much larger transfer on a composite measure of student outcomes and our confidence intervals are narrow enough to rule out these effect sizes. However, it is important to note that composite measures of student outcomes are constructed with

[29] For this comparison, we use their estimates for cohorts born between 1991 and 1992, the latest cohorts reported in their study, to better match our own sample, which begins in 1993. These estimates are reported in Barr et al. (2022) Table IV, Column 3.

[30] Considering total benefits received throughout childhood (ages 0 to 10), which we estimate at $8,326.56, would imply even larger increases in annual earnings of $3076 at ages 23 to 25 and $3178 at ages 26 to 28.

different variables across Barr et al. (2022) and this paper and so they may not be directly comparable, even when standardized.

While the intervention and populations studied across Barr et al. (2022) and this paper differ on a variety of dimensions (including different cohorts, lump-sum vs monthly transfer, national vs California geographic coverage, and different outcomes), an especially salient difference is that we study a population with especially high health needs. This difference in initial health capital may be relevant in explaining the differences across our results and theirs. Follow-up studies of infants in this birthweight range indicate significant disadvantage in both adult health and educational achievement, as compared to normal-birthweight infants (e.g. Hack and Borawski, 2002), which is consistent with the economic literature documenting the persist effects of birthweight (Black et al., 2007; Oreopoulos et al., 2008; Lin and Liu, 2009; Bharadwaj et al., 2018). Further work is needed to trace out the efficacy of cash transfer interventions across populations with varying baseline needs along multiple dimensions (health, financial, educational, etc).

6 Conclusion

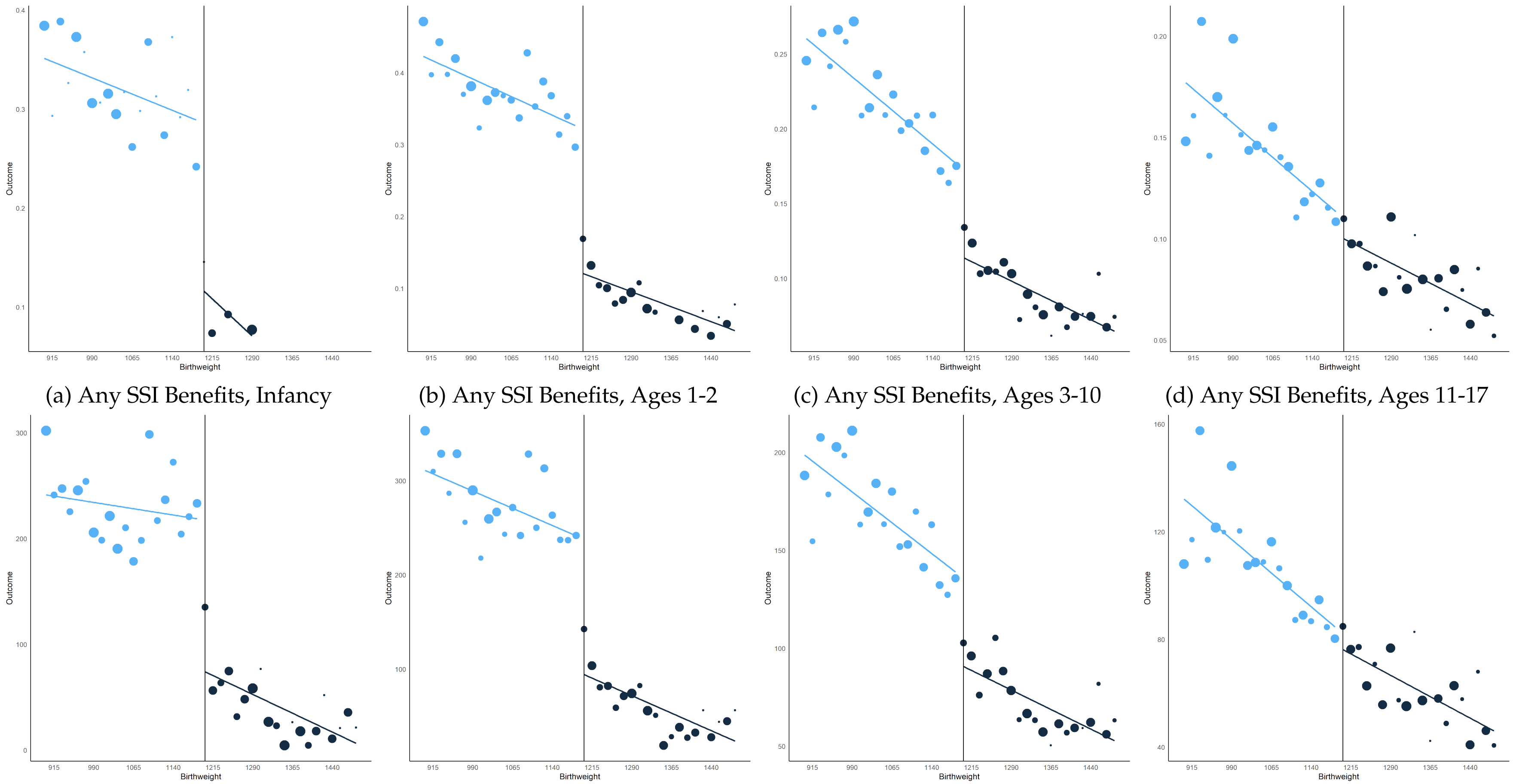
This paper examines the short-, medium- and long-term effects of providing low-income families with low birthweight infants additional support through the SSI program. We take advantage of a birthweight cutoff used to determine SSI medical eligibility that results in otherwise similar infants being treated differently for the purpose of SSI eligibility. We find that families of infants born just below this eligibility cutoff experience large increases in cash benefits totaling about 27 percent of family income in the first three years of the infant's life, and persisting in lower amounts through later childhood. Eligible infants also experience small but statistically significant increases in Medicaid enrollment in childhood. The total amount of the transfer is large, exceeding the average pre-birth annual income of the child's family, and weighted towards the earliest years in childhood, when we think the returns to such an intervention may be highest.

Using a new dataset linking large-scale federal and state administrative data records to birth certificates for infants born in California, we examine the impact of eligibility for this program across a large number of outcomes measured in infancy, childhood, and early adulthood. These outcomes include hospitalization and emergency department utilization for infants, high school performance measures for children, post-secondary school attendance and college degree attainment, earnings, mortality, and use of public programs in young adulthood. Across these measures, we find no evidence that increased SSI support in childhood had discernible effects later in life. These null results persist across many subgroups, including groups that experienced larger changes in SSI payments at the threshold and groups that previous work suggests should be most responsive to an increase in resources early in life. We also examine the impact of these payments on the older siblings of the focal infant, who may have benefited from the increase in household resources during childhood. Among these siblings we also find no evidence of improved outcomes.

Previous work in economics, epidemiology, and psychology suggests that early life support has large effects on later life outcomes. The lack of medium- or long-term effects in our setting is, therefore, surprising. However, we have a few hypotheses for why this increased social support may not have benefited infants as much as may have been predicted by existing research. First, it may be that the payments and support provided by the SSI program were simply insufficient to generate large improvements in the outcomes we study, and that more generous benefits would have resulted in detectable effects. The infants we study are born into severe disadvantage on both health and economic dimensions, which may require different or even more substantial investments to overcome. Second, it could be the case that SSI eligibility did indeed generate positive effects on beneficiaries or their siblings on the outcomes we study, but that these effects are too small to be detected, despite our large sample size. While we are able to rule out fairly modest improvements in summary indices capturing high school performance and economic outcomes in young adulthood, the confidence intervals on several of the components of the indices are large. Third, it may be that relevant labor market, educational, or health benefits will emerge, but not until later in life when the cohorts we study are closer to their prime earning years.

It is important to note that while we see no improvements on the outcomes we can measure in administrative records, the program may have still had important, welfare-relevant effects on its recipients. The stated goal of the SSI program for children is to provide monthly cash benefits to aid with the "basic needs" of these children (Social Security Administration, 2001). Food security, stress, subjective well-being or material hardship all may have improved for families that benefited from this program in ways that are not easy to measure in our current data. That is, the SSI program may still be fully successful in fulfilling its stated goal even though we do not detect improvements in the specific long-term outcomes we study. Further, SSI benefits may have improved the functioning of child beneficiaries, another aim of the program (Social Security Administration, 2001), in a manner undetected in the outcomes we study. Finally, we find no evidence of child SSI benefits generating long-term dependence on the program, rather early life participation phases out following middle childhood.

Figure 1: SSI Benefit Receipt and Amounts by Age and Birthweight Bin

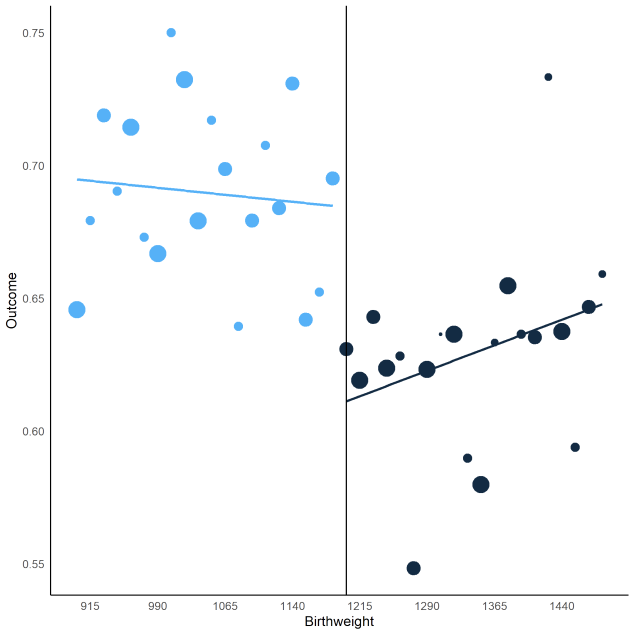


(a) Any SSI Benefits, Infancy
(b) Any SSI Benefits, Ages 1-2
(c) Any SSI Benefits, Ages 3-10
(d) Any SSI Benefits, Ages 11-17

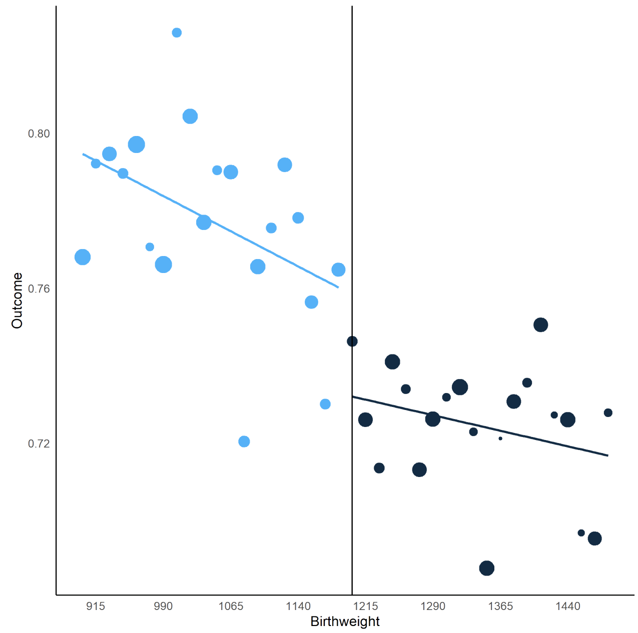
(e) SSI Benefit Amount, Infancy
(f) SSI Benefit Amount, Ages 1-2
(g) SSI Benefit Amount, Ages 3-10
(h) SSI Benefit Amount, Ages 11-17

Note: All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

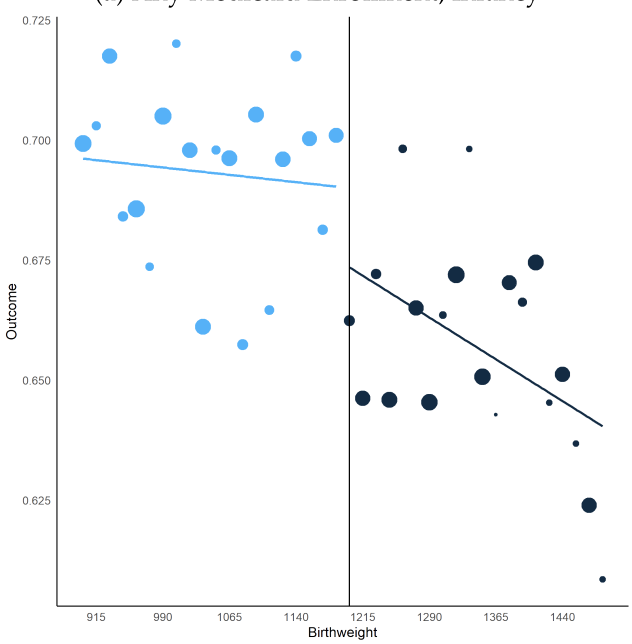
Figure 2: Medicaid Enrollment by Age and Birthweight Bin



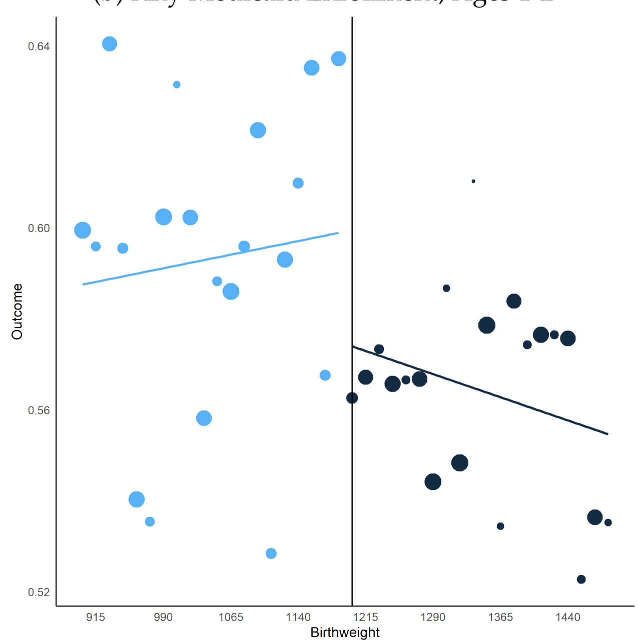
(a) Any Medicaid Enrollment, Infancy



(b) Any Medicaid Enrollment, Ages 1-2



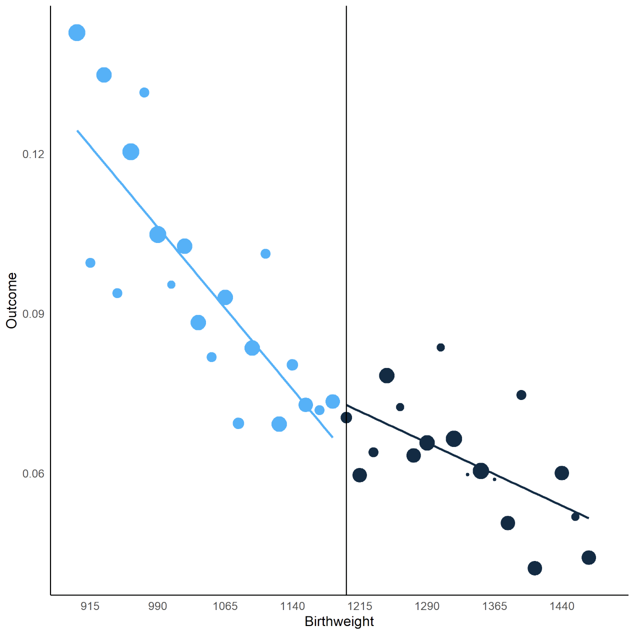
(c) Any Medicaid Enrollment, Ages 3-10



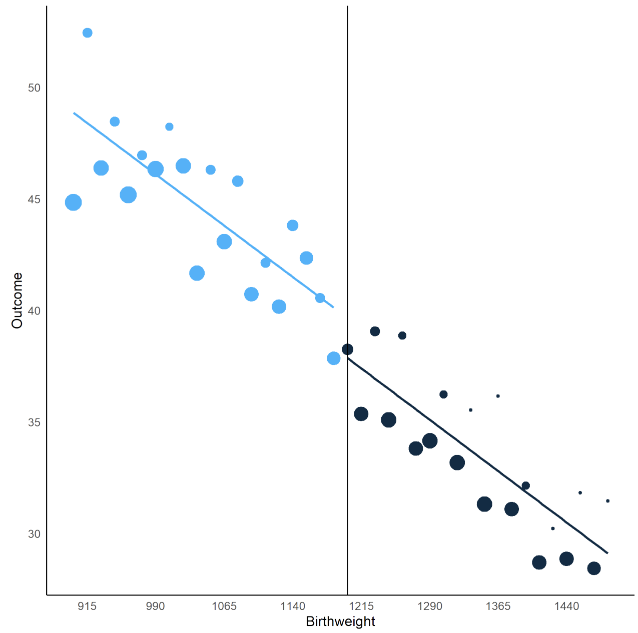
(d) Any Medicaid Enrollment, Ages 11-17

Note: All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

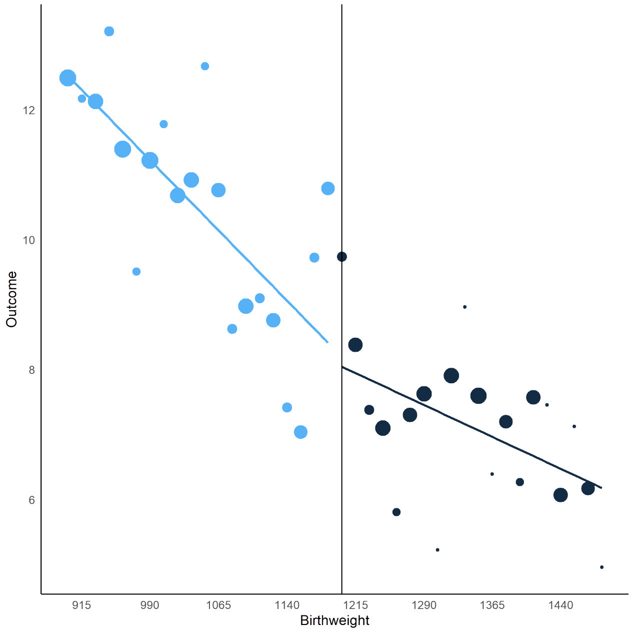
Figure 3: Infant Health and Utilization by Birthweight Bin



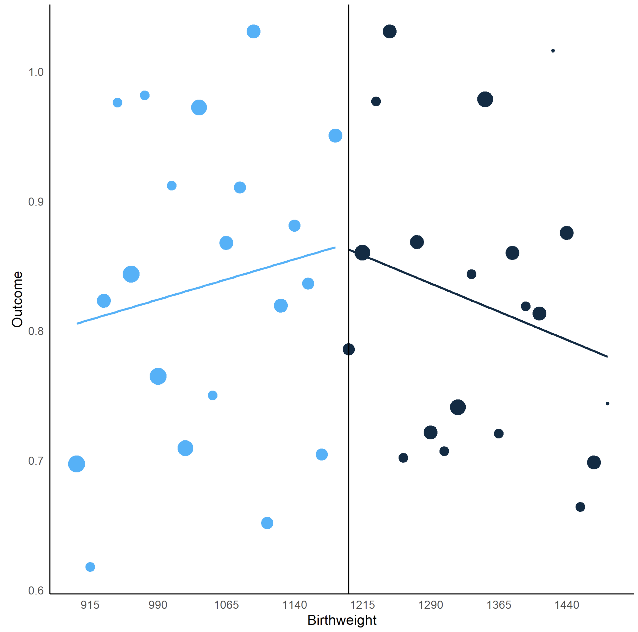
(a) Mortality



(b) Days in the Hospital at Birth



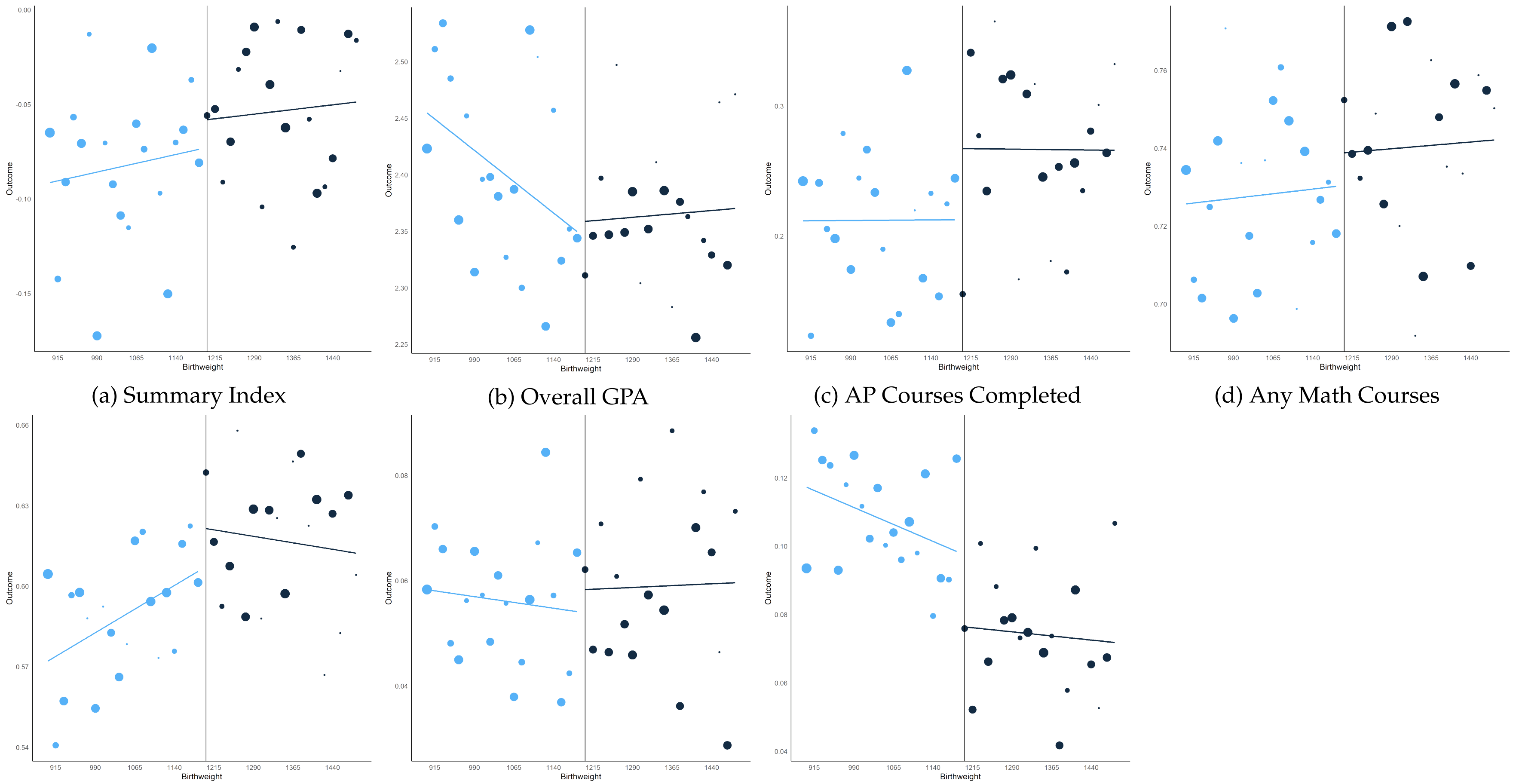
(c) Days in the Hospital After Birth



(d) Number of ED Visits

Note: All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization numbers CBDRB-FY23-CES021-002 and CBDRB-FY23-0451. Numbers have been rounded to comply with disclosure avoidance guidelines.

Figure 4: High School Performance by Birthweight Bin

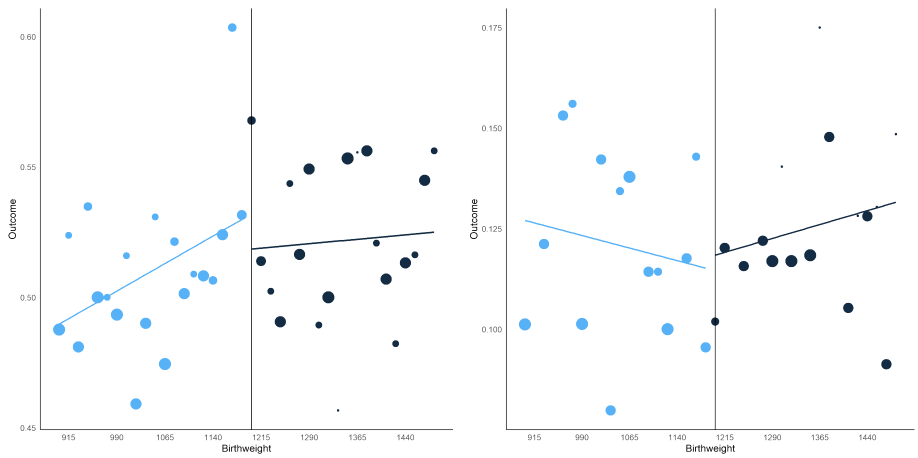


(a) Summary Index (b) Overall GPA (c) AP Courses Completed (d) Any Math Courses

(e) Any Science Courses (f) Repeat a Grade (g) Special Education (IEP)

Note: All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002 and CBDRB-FY23-0451. Numbers have been rounded to comply with disclosure avoidance guidelines.

Figure 5: Post-Secondary School Attendance and College Degree Attainment by Birthwieght Bin

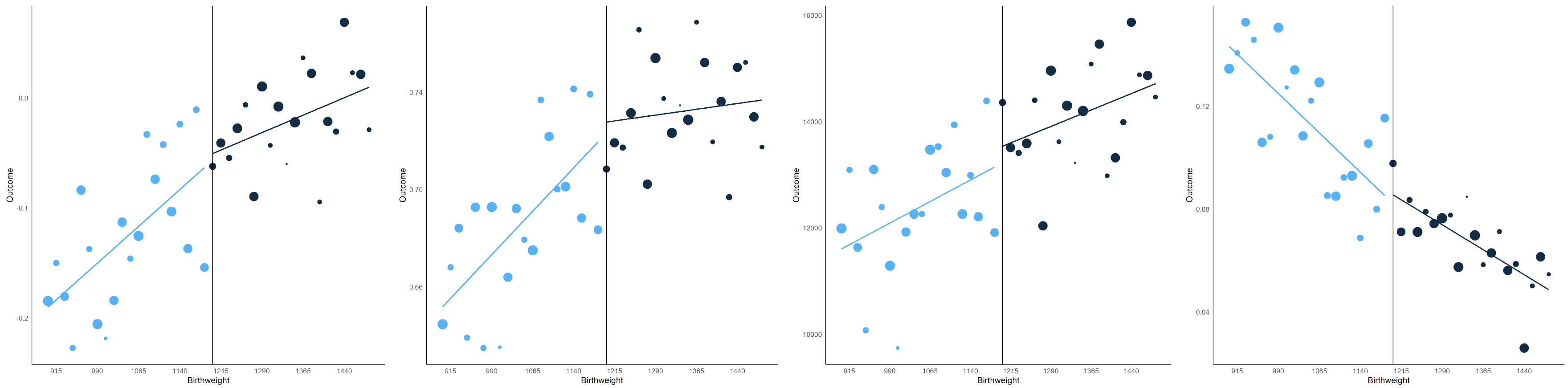


(a) Ever Enrolled in College or Post-Secondary Degree Program

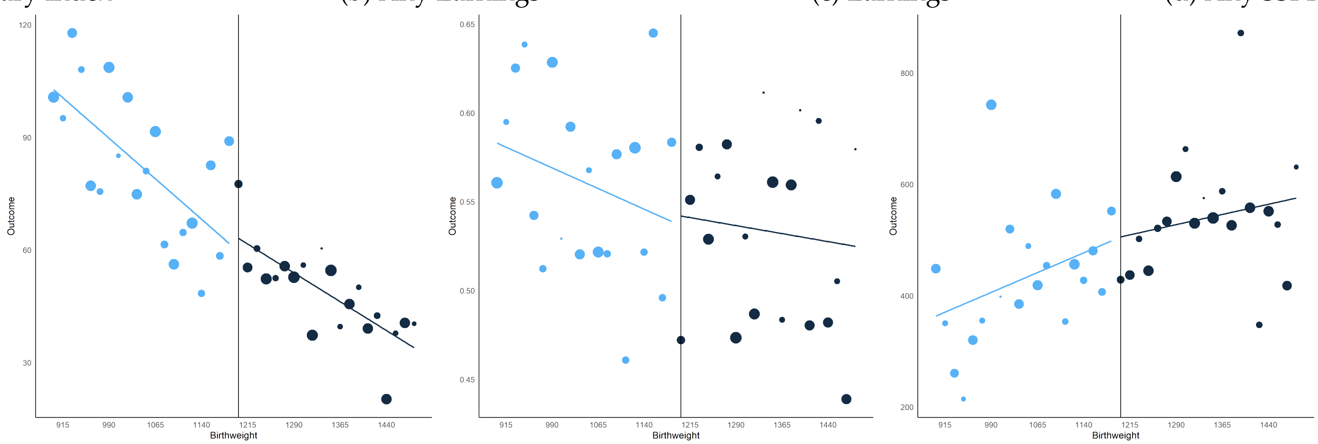
(b) Bachelor's Degree or Higher Degree Obtained

Note: All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Figure 6: Adult Earnings and Public Assistance Receipt by Birthweight Bin, Ages 19+



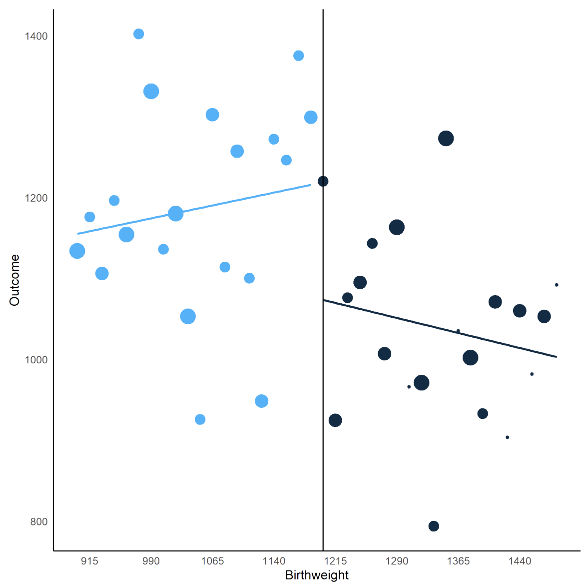
(a) Summary Index (b) Any Earnings (c) Earnings (d) Any SSI Benefit Receipt



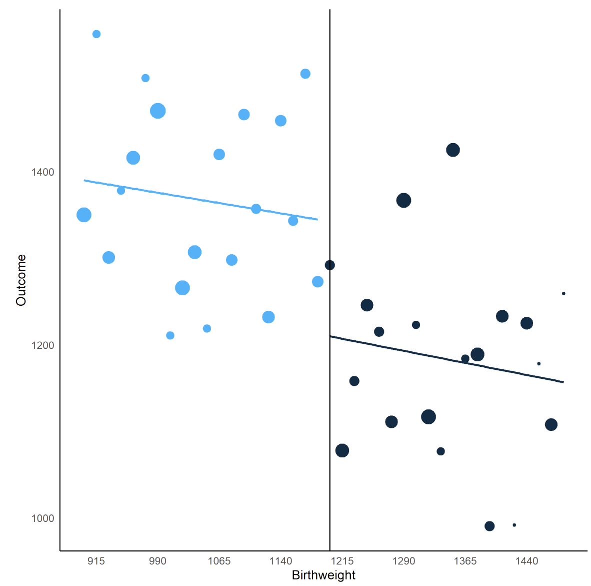
(e) SSI Benefit Amount (f) Any Medicaid Enrollment (g) EITC Receipt

Note: All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

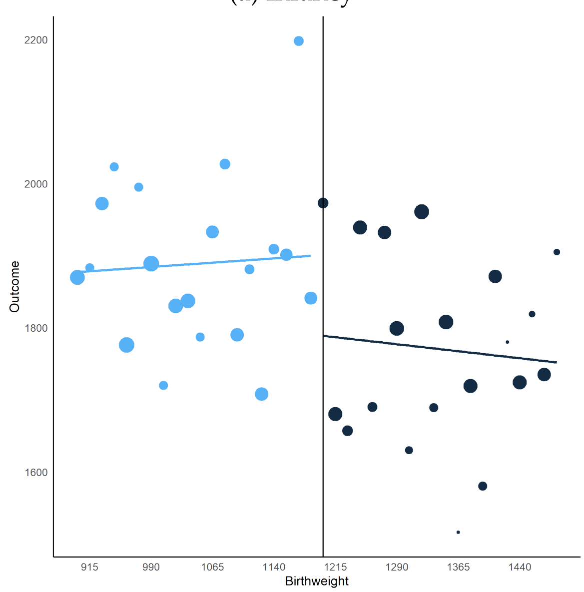
Figure 7: Monthly Household Resources in Childhood by Birthweight Bin



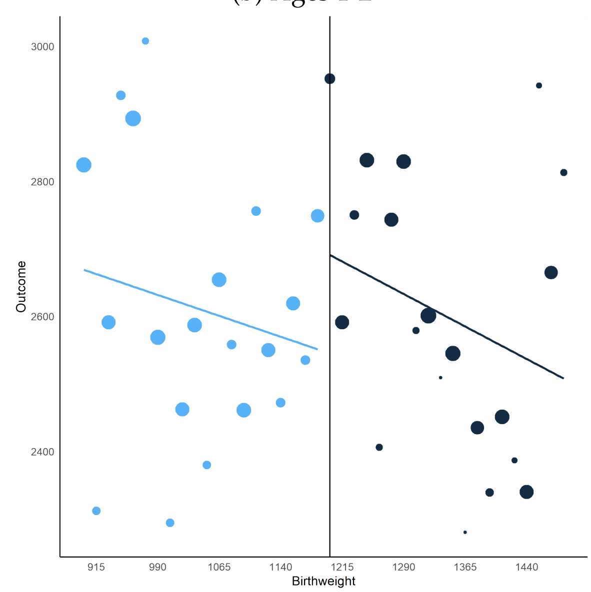
(a) Infancy



(b) Ages 1-2



(c) Ages 3-10



(d) Ages 11-17

Note: All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table 1: Mother and Birth Demographics for Focal Child and Siblings

	All Low Birthweight	Targeted Low-Income, Low Birthweight	Siblings of Low-Income, Low Birthweight
Age	28.80	26.90	23.76
High School	0.7266	0.6049	0.5152
Pre-Birth Income ($)	42770.	6615.	15310.
Under FPL	0.5786	0.9309	0.7786
Non-Hispanic White	0.2337	0.1750	0.1646
Non-Hispanic Black	0.1303	0.1483	0.1966
Non-Hispanic Asian	0.1116	0.0696	0.0566
Hispanic	0.4951	0.5784	0.5584
Birthweight (grams)	1188.	1188.	3059.
Birth Number	2.096	2.305	2.249
Female	0.4521	0.4507	0.4877
Prenatal Visits	8.447	7.937	10.69
Prenatal in 1st Tri.	0.8384	0.7841	0.7115
N	47000	29000	14000

Notes: The first column shows descriptive statistics for all births within 900 and 1499 grams and less than 32 weeks gestation. The second column restricted this sample to those with incomes that would qualify for the maximum SSI benefit. The third column presents the older siblings of the infants in the second column. Additional details are provided in the text. All dollar amounts have been inflation-adjusted to 2019 dollars. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table 2: RD Estimates for First Stage Outcomes

	Any SSI benefits, by age				Average monthly SSI benefit, by age				Any Medicaid enrollment, by age			
	0	1-2	3-10	11-17	0	1-2	3-10	11-17	0	1-2	3-10	11-17
RD Estimate	-0.1851***	-0.1947***	-0.0454***	-0.0074	-146.2***	-141.2***	-33.16***	-2.953	-0.0509***	-0.0250*	-0.0349***	-0.0481***
	(0.0199)	(0.0177)	(0.0113)	(0.0107)	(21.54)	(15.84)	(9.735)	(8.472)	(0.0164)	(0.0137)	(0.0129)	(0.0181)
N Individual x Year	7300	16000	69000	59500	7300	16000	69000	59500	17500	32000	125000	69500
N Individual	7300	10500	18000	17500	7300	10500	18000	17500	17500	17000	20500	12500
Baseline	0.0960	0.1280	0.1190	0.0990	83.54	105.2	91.27	76.26	0.4930	0.7310	0.6550	0.5670

Notes: Analyses use administrative data on SSI receipt from SSA and Medicaid enrollment from CMS for children born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All dollar amounts have been inflation-adjusted to 2019 dollars. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table 3: RD Estimates for Infant Health and Health Care Utilization

	Birth Days	IP Days	ED Visits	Mortality
RD Estimate	-1.982**	-0.3395	0.0032	0.0048
	(0.9752)	(0.6791)	(0.0705)	(0.0078)
N	21500	22000	8700	21000
Baseline	44.9	8.174	0.8880	0.0680

Notes: Analyses use administrative data from HCAI on hospital and ED use and infant mortality for infants born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002 and CBDRB-FY23-0451. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table 4: RD Estimates for High School Performance

	Summary Index	Gifted & talented	Overall GPA	AP Courses	Any math completed	Any science courses	Special Education IEP
RD Estimate	0.0181	-0.0036	0.0086	0.0639	0.0151	0.0089	-0.0275**
	(0.0274)	(0.0129)	(0.0071)	(0.0477)	(0.0417)	(0.0167)	(0.0177)
N Individual x Year	20000	20000	16000	16000	18000	18000	20000
N Individual	6800	6800	6300	6300	6600	6600	6800
Baseline	-0.0650	0.0220	2.343	0.2520	0.7390	0.6160	0.0700

Notes: Analyses use school records provided by Educational Results Partnership for children born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table 5: RD Estimates for Post-Secondary School Enrollment and Degree Attainment

	Ever Enrolled Post-Secondary	College Degree (BA or Higher)
RD Estimate	-0.0152	-0.0027
	(0.0205)	(0.0163)
N	11500	6900
Baseline	0.5210	0.1070

Notes: Analyses use post-secondary enrollment and degree attainment records from the National Student Clearinghouse for those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table 6: RD Estimates for Adult Self-Sufficiency Outcomes

		Adult Earning and Public Assistance Receipt						
	Summary Index	Any Earnings	Earnings	Any SSI Receipt	SSI Amount	Any Medicaid	EITC amount	Mortality
RD Estimate	0.0205	0.0050	494.3	-0.0027	-1.792	-0.0217	-13.38	0.0008
	(0.0299)	(0.0158)	(589.4)	(0.0128)	(10.42)	(0.0278)	(61.59)	(0.0023)
N Individual x Year	68500	68500	68500	39500	39500	17000	28500	29000
N Individual	10500	10500	10500	9800	9800	5400	7500	29000
Baseline	-0.0430	0.7180	13630.	0.0770	58.70	0.5330	453.2	0.0100

Notes: Analyses use earnings information derived from W2 records, mortality information from the Census Numident file, and program use data from SSA and CMS. Sample includes those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All dollar amounts have been inflation-adjusted to 2019 dollars. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table 7: RD Estimates, Effects on Siblings' Program Use in Childhood

	Any SSI benefits, by age		Average monthly SSI benefit, by age		Any Medicaid enrollment, by age	
	3-10	11-17	3-10	11-17	3-10	11-17
RD Estimate	-0.0032	-0.0019	-3.234	-0.9940	-0.0073	0.0010
	(0.0086)	(0.0056)	(6.995)	(4.538)	(0.0215)	(0.0179)
N Individual x Year	45000	148000	45000	148000	73000	190000
N Individual	13500	20000	13500	20000	14000	17500
Baseline	0.0420	0.0320	33.77	26.54	0.6810	0.6610

Notes: Analyses use program use records from SSA and CMS for older siblings of those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those whose younger sibling was born with a birthweight between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table 8: RD Estimates, Effects on Siblings on Educational Performance

	High School Summary Index	Ever Enrolled Post-Secondary	College Degree (BA or Higher)
RD Estimate	0.0177	-0.0285	0.0075
	(0.0278)	(0.0220)	(0.0146)
N Individual x Year	22000	12500	8800
N Individual	8200	12500	8800
Baseline	-0.0560	0.5310	0.0980

Notes: Analyses use school records provided by Educational Results Partnership and post-secondary school enrollment and degree attainment from the National Student Clearinghouse for older siblings of those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those whose younger sibling was born with a birthweight between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table 9: RD Estimates for Effects on Siblings on Adult Self-Sufficiency

		Adult Earning and Public Assistance Receipt						
	Summary Index	Any Earnings	Earnings	Any SSI Receipt	SSI Amount	Any Medicaid	EITC amount	Mortality
RD Estimate	0.0342	-0.0010	890.1	-0.0042	-3.344	-0.0245	-144.0	-0.0060*
	(0.0283)	(0.0145)	(815.3)	(0.0075)	(5.921)	(0.0246)	(94.26)	(0.0032)
N	109000	109000	109000	65000	65000	45500	50000	20000
Unique N	12500	12500	12500	12000	12000	8000	10500	20000
Baseline	0.0060	0.7500	16760.	0.0290	22.62	0.4860	1161.	0.0090

Notes: Analyses use earnings information derived from W2 records, mortality information from the Census Numident file, and program use data from SSA and CMS for older siblings of those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those whose younger sibling was born with a birthweight between 1200 and 1250 grams. All dollar amounts have been inflation-adjusted to 2019 dollars. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table 10: RD Estimates for Effects on Household Resources

	Monthly Household Resources, by age			
	0	1-2	3-10	11-17
RD Estimate	-159.2*	-160.1**	-88.27	212.5*
	(85.23)	(74.06)	(78.76)	(111.0)
N Individual x Year	7300	16000	69000	59500
N Individuals	7300	10500	18000	17500
Baseline	1041.	1162.	1794.	2760.

Notes: Analyses use income records from W2 and 1040 filings, imputed EITC receipt from 1040 filings for households that file, and SSI receipt amounts from SSA data; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with a birthweight between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

References

Abowd, J. M., B. E. Stephens, L. Vilhuber, F. Andersson, K. L. McKinney, M. Roemer, and S. Woodcock (2009). The LEHD Infrastrcture Files and the Creation of the Quarterly Workforce Indicators. In *Producer Dynamics: New Evidence from Micro Data*, pp. 149–230. Chicago, IL: University of Chicago Press.

Aizer, A., S. Eli, J. Ferrie, and A. Lleras-Muney (2016, April). The Long-Run Impact of Cash Transfers to Poor Families. *American Economic Review 106*(4), 935–971.

Aizer, A., H. Hoynes, and A. Lleras-Muney (2022, May). Children and the US Social Safety Net: Balancing Disincentives for Adults and Benefits for Children. *Journal of Economic Perspectives 36*(2), 149–174.

Akee, R., W. Copeland, E. J. Costello, and E. Simeonova (2018, March). How Does Household Income Affect Child Personality Traits and Behaviors? *American Economic Review 108*(3), 775–827.

Akee, R. K. Q., W. E. Copeland, G. Keeler, A. Angold, and E. J. Costello (2010, January). Parents' Incomes and Children's Outcomes: A Quasi-Experiment Using Transfer Payments from Casino Profits. *American Economic Journal: Applied Economics 2*(1), 86–115.

Almond, D., J. Currie, and V. Duque (2018, December). Childhood Circumstances and Adult Outcomes: Act II. *Journal of Economic Literature 56*(4), 1360–1446.

Almond, D., J. J. Doyle, A. E. Kowalski, and H. Williams (2010, May). Estimating Marginal Returns to Medical Care: Evidence from At-risk Newborns. *The Quarterly Journal of Economics 125*(2), 591–634.

Autor, D., D. Figlio, K. Karbownik, J. Roth, and M. Wasserman (2019, July). Family Disadvantage and the Gender Gap in Behavioral and Educational Outcomes. *American Economic Journal: Applied Economics 11*(3), 338–381.

Barr, A., J. Eggleston, and A. A. Smith (2022, February). Investing in Infants: The Lasting Effects of Cash Transfers to New Families. *Quarterly Journal of Economics Forthcoming*.

Barreca, A. I., M. Guldi, J. M. Lindo, and G. R. Waddell (2011, November). Saving Babies? Revisiting the effect of very low birth weight classification. *The Quarterly Journal of Economics 126*(4), 2117–2123.

Barreca, A. I., J. M. Lindo, and G. R. Waddell (2016, January). Heaping-induced Bias in Regression-discontinuity designs. *Economic Inquiry 54*(1), 268–293.

Bastagli, F., J. Hagen-Zanker, L. Harman, V. Barca, G. Sturge, and T. Schmidt (2019, July). The Impact of Cash Transfers: A Review of the Evidence from Low- and Middle-income Countries. *Journal of Social Policy 48*(03), 569–594.

Bertrand, M. and J. Pan (2013, January). The Trouble with Boys: Social Influences and the Gender Gap in Disruptive Behavior. *American Economic Journal: Applied Economics 5*(1), 32–64.

Bharadwaj, P., K. V. Løken, and C. Neilson (2013, August). Early Life Health Interventions and Academic Achievement. *American Economic Review 103*(5), 1862–1891.

Bharadwaj, P., P. Lundborg, and D.-O. Rooth (2018, January). Birth Weight in the Long Run. *Journal of Human Resources 53*(1), 189–231.

Black, S. E., P. J. Devereux, and K. G. Salvanes (2007, February). From the Cradle to the Labor Market? The Effect of Birth Weight on Adult Outcomes. *The Quarterly Journal of Economics 122*(1), 409–439.

Borra, C., A. Costa-Ramón, L. González, and A. Sevilla (2022). The Causal Effect of an Income Shock on Children's Human Capital. *Working Paper*.

Bratberg, E., O. A. Nilsen, and K. Vaage (2015, April). Assessing the intergenerational correlation in disability pension recipiency. *Oxford Economic Papers 67*(2), 205–226.

California Department of Social Services (2018). Expanding CalFresh to SSI/SSP Recipients Beginning June 1, 2019.

Calonico, S., M. D. Cattaneo, M. H. Farrell, and R. Titiunik (2017, June). Rdrobust: Software for Regression-discontinuity Designs. *The Stata Journal: Promoting communications on statistics and Stata 17*(2), 372–404.

Cattaneo, M. D., M. Jansson, and X. Ma (2018, March). Manipulation Testing Based on Density Discontinuity. *The Stata Journal: Promoting communications on statistics and Stata 18*(1), 234–261.

Cesarini, D., E. Lindqvist, R. Östling, and B. Wallace (2016, May). Wealth, Health, and Child Development: Evidence from Administrative Data on Swedish Lottery Players*. *The Quarterly Journal of Economics 131*(2), 687–738.

Chorniy, A., J. Currie, and L. Sonchak (2020, March). Does Prenatal WIC Participation Improve Child Outcomes? *American Journal of Health Economics 6*(2), 169–198.

Coe, N. B. and M. S. Rutledge (2013, January). What is the Long-Term Impact of Zebley on Adult and Child Outcomes? *Center for Retirement Research at Boston College Working Paper*.

Cohen, J. L. (2007, August). Financial Incentives for Special Education Placement: The Impact of SSI Benefit Expansion on Special Education Enrollment. Working Paper, Massachusetts Institute of Technology.

Conti, G., J. J. Heckman, and R. Pinto (2016, October). The Effects of Two Influential Early Childhood Interventions on Health and Healthy Behaviour. *The Economic Journal 126*(596), F28–F65.

Cunha, F. and J. Heckman (2007, May). The Technology of Skill Formation. *American Economic Review 97*(2), 31–47.

Currie, J. and D. Almond (2011, January). Human Capital Development Before Age Five. In D. Card and O. Ashenfelter (Eds.), *Handbook of Labor Economics*, Volume 4, pp. 1315–1486. Elsevier.

Dahl, G. B. and A. C. Gielen (2021, April). Intergenerational Spillovers in Disability Insurance. *American Economic Journal: Applied Economics 13*(2), 116–150.

Dahl, G. B., A. R. Kostøl, and M. Mogstad (2014, November). Family Welfare Cultures. *The Quarterly Journal of Economics 129*(4), 1711–1752.

Dahl, G. B. and L. Lochner (2012, August). The Impact of Family Income on Child Achievement: Evidence from the Earned Income Tax Credit. *American Economic Review 102*(5), 1927–1956.

de Gendre, A., J. Lynch, A. Meunier, R. Pilkington, and S. Schurer (2021, August). Child Health and Parental Responses to an Unconditional Cash Transfer at Birth. IZA Discussion Paper Series No. 14693.

Deshpande, M. (2016a, November). Does Welfare Inhibit Success? The Long-Term Effects of Removing Low-Income Youth from the Disability Rolls. *American Economic Review 106*(11), 3300–3330.

Deshpande, M. (2016b, October). The Effect of Disability Payments on Household Earnings and Income: Evidence from the SSI Children's Program. *Review of Economics and Statistics 98*(4), 638–654.

Deshpande, M. and R. Dizon-Ross (2023, July). The (Lack of) Anticipatory Effects of the Social Safety Net on Human Capital Investment. *American Economic Review Forthcoming*.

Deshpande, M. and M. Mueller-Smith (2022). Does Welfare Prevent Crime? The Criminal Justice Outcomes of Youth Removed From SSI. *Quarterly Journal of Economics*.

Dudovitz, R. N., P. J. Chung, K. K. Dosanjh, M. Phillips, J. S. Tucker, M. A. Pentz, C. Biely, C.-H. Tseng, A. Galvez, G. Arellano, and M. D. Wong (2023, January). Outcome of the AVID College Preparatory Program on Adolescent Health: A Randomized Trial. *Pediatrics 151*(1), e2022057183.

Duggan, M., M. S. Kearney, and S. Rennane (2016). The Supplemental Security Income Program. In R. A. Moffitt (Ed.), *Economics of Means-Tested Transfer Programs in the United States*, Volume II, pp. 1–58. Chicago, IL: The University of Chicago Press.

Duggan, M. G. and M. S. Kearney (2007, September). The impact of child SSI enrollment on household outcomes: The Impact of Child SSI Enrollment on Household Outcomes. *Journal of Policy Analysis and Management 26*(4), 861–886.

Finlay, K. and K. R. Genadek (2021, July). Measuring All-Cause Mortality With the Census Numident File. *American Journal of Public Health 111*(S2), S141–S148.

Fiszbein, A. and N. Schady (2009). Conditional Cash Transfers: Reducing Present and Future Policy. World Bank Policy Research Report, The World Bank, Washington, DC.

Gao, N., L. Lopes, and G. Lee (2017, November). California's High School Graduation Requirements. Fact Sheet, Public Policiy Institute of California.

Genadek, K., J. Sanders, and A. Stevenson (2021, July). Measuring US fertility using administrative data from the Census Bureau. Technical Report 2021-02.

Guldi, M., A. Hawkins, J. Hemmeter, and L. Schmidt (2022, March). Supplemental Security Income for Children, Maternal Labor Supply, and Family Well-Being: Evidence from Birth Weight Eligibility Cutoffs. *Journal of Human Resources*, 0818–9654R2.

Hack, M. and E. Borawski (2002). Outcomes in Young Adulthood for Very-Low-Birth-Weight Infants. *The New England Journal of Medicine 346*, 149–157.

Hemmeter, J. (2015). Supplemental Security Income Program Entry at Age 18 and Entrants' Subsequent Earnings. *Social Security Bulletin 75*(3), 35–53.

Hemmeter, J. and M. S. Bailey (2015, October). Childhood Continuing Disability Reviews and Age-18 Redeterminations for Supplemental Security Income Recipients: Outcomes and Subsequent Program Participation. Research and Statistics Note No. 2015-03, US Social Security Administration.

Hemmeter, J. and P. S. Davies (2019). Infant Mortality Among Supplemental Security Income Applicants. *Social Security Bulletin 79*(2), 13.

Hemmeter, J., M. Levere, P. Singh, and D. C. Wittenburg (2021). Changing Stays? Duration of Supplemental Security Income Participation by First-Time Child Awardees and the Role of Continuing Disability Reviews. *Social Security Bulletin 81*(2), 25.

Isen, A., M. Rossin-Slater, and W. R. Walker (2017). Every Breath You Take—Every Dollar You'll Make: The Long-Term Consequences of the Clean Air Act of 1970. *journal of political economy 125*(3), 848–902.

Ko, H., R. Howland, and S. Glied (2020, January). The Effects of Income on Children's Health: Evidence from Supplemental Security Income Eligibility under New York State Medicaid. Technical Report w26639, National Bureau of Economic Research, Cambridge, MA.

Kubik, J. D. (1999, August). Incentives for the identification and treatment of children with disabilities: the supplemental security income program. *Journal of Public Economics 73*(2), 187–215.

Lakshmanan, A., A. Y. Song, M. B. Belfort, L. Yieh, D. Dukhovny, P. S. Friedlich, and C. L. Gong (2022, February). The financial burden experienced by families of preterm infants after NICU discharge. *Journal of Perinatology 42*(2), 223–230.

Legislative Analyst's Office (2018, January). The Potential Effects of Ending the SSI Cash-Out. Technical report, Sacramento, CA.

Levere, M. (2021). The Labor Market Consequences of Receiving Disability Benefits during Childhood. *Journal of Human Resources 56*(3), 850–877.

Lin, M.-J. and J.-T. Liu (2009, May). Do lower birth weight babies have lower grades? Twin fixed effect and instrumental variable method evidence from Taiwan. *Social Science & Medicine 68*(10), 1780–1787.

Mandy, G. T. (2021, July). Long-term outcome of the preterm infant. In L. Wilkie and L. E. Weisman (Eds.), *UpToDate*.

Michalopoulos, C., K. Faucetta, A. Warren, and R. Mitchell (2017). Evidence on the Long-Term Effects of Home Visiting Programs: Laying the Groundwork for Long-Term Follow-Up in the Mother and Infant Homoe Visiting Program Evaluation (MIHOPE). OPRE Report 2017-73, Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, Washington, DC.

Miller, S. and L. Wherry (2022, July). Covering Undocumented Immigrants: The Effects of a Large-Scale Prenatal Care Intervention. Technical Report 30299.

Miller, S. and L. R. Wherry (2019). The Long-Term Effects of Early Life Medicaid Coverage. *Journal of Human Resources 54*(3), 785–824.

Miller, S., L. R. Wherry, and B. Mazumder (2021, August). Estimated Mortality Increases During The COVID-19 Pandemic By Socioeconomic Status, Race, And Ethnicity. *Health Affairs 40*(8), 1252–1260. Publisher: Health Affairs.

Milligan, K. and M. Stabile (2011, August). Do Child Tax Benefits Affect the Well-being of Children? Evidence from Canadian Child Benefit Expansions. *American Economic Journal: Economic Policy 3*(3), 175–205.

Muller, L. S., B. O'Hara, and J. R. Kearney (2006, August). Trends in the Social Security and Supplemental Security Income Disability Programs. Technical Report SSA Publication No. 13-11831, Social Security Administration.

Oreopoulos, P., M. Stabile, R. Walld, and L. L. Roos (2008, January). Short-, Medium-, and Long-Term Consequences of Poor Infant Health An Analysis Using Siblings and Twins. *Journal of Human Resources 43*(1), 88–138.

Price, D. J. and J. Song (2018, June). The Long-Term Effects of Cash Assistance. Working Paper #621, Industrial Relations Section, Princeton University.

Purdy, I. B. and M. A. Melwak (2012, December). Who Is at Risk? High-Risk Infant Follow-up. *Newborn and Infant Nursing Reviews 12*(4), 221–226.

Rupp, K., P. S. Davies, C. Newcomb, H. Iams, C. Becker, S. Mulpuru, S. Ressler, K. Romig, and B. Miller (2005). A Profile of Children with Disabilities Receiving SSI: Highlights from the National Survey of SSI Children and Families. *Social Security Bulletin 66*(2), 21–48.

Rupp, K. and S. Ressler (2009). Family caregiving and employment among parents of children with disabilities on SSI. *Journal of Vocational Rehabilitation 30*(3), 153–175.

Rupp, K. and G. F. Riley (2016). State Medicaid Eligibility and Enrollment Policies and Rates of Medicaid Participation among Disabled Supplemental Security Income Recipients. *Social Security Bulletin 76*(3).

Singh, M. (2020). Direct and Spillover Effects of Child Supplemental Security Income. Working Paper, Center for Financial Security, University of Wisconsin-Madison.

Social Security Administration (1991, February). Supplemental Security Income; Determining Disability for a Child Under Age 18 (Final Rules with Request for Comments; 56 FR 5534).

Social Security Administration (1997, April). SI 01310.201 - Waiver of Parental Deeming Rules. In *Program Operations Manual System*.

Social Security Administration (2001, December). Childhood Disability: Supplemental Security Income Program, A Guide for Physicians and Other Health Care Professionals. Technical Report Publication No. 64-048.

Social Security Administration (2011, November). State Assistance Programs for SSI Recipients, January 2011. Technical Report SSA Publication No. 13-11975, Office of Research, Evaluation, and Statistics, Office of Retirement and Disability Policy, Social Security Administration, Washington, DC.

Social Security Administration (2015, June). DI 25235.006 - Medical Diary Criteria for Low Birth Weight (LBW) Infants under Title XVI - 06/12/2015.

Social Security Administration (2020). Annual Report on Medical Continuing Disability Reviews, Fiscal Year 2016. Technical report, Social Securitiy Administration, Washington, DC.

Social Security Administration (2021, October). SSI Annual Statistical Report, 2020. Technical Report SSA Publication No. 13-11827, Office of Research, Evaluation, and Statistics, Office of Retirement and Disability Policy, Social Security Administration, Washington, DC.

Social Security Administration (n.d.). Disability Evaluation under Social Security.

Tambornino, J., G. Crouse, and P. Winston (2015, March). National Trends in the Child SSI Program. ASPE Research Brief, U.S. Department of Health and Human Services, Washington, DC.

Troller-Renfree, S. V., M. A. Costanzo, G. J. Duncan, K. Magnuson, L. A. Gennetian, H. Yoshikawa, S. Halpern-Meekin, N. A. Fox, and K. G. Noble (2022, February). The impact of a poverty reduction intervention on infant brain activity. *Proceedings of the National Academy of Sciences 119*(5), e2115649119.

U.S. Census Bureau (2020). Center for Economic Studies Research Report: 2019. Technical report, Government Printing Office, Washington, DC.

Wixon, B. and A. Strand (2013, June). Identifying SSA's Sequential Disability Determination Steps Using Administrative Data. Research and Statistics Note No. 2013-01, Office of Retirement and Disability Policy, Office of Research, Evaluation, and Statistics, U.S. Social Security Administration.

The Long-Term Effects of Income for At-Risk Infants: Evidence from Supplemental Security Income

Appendix

Amelia Hawkins   Christopher Hollrah   Sarah Miller   Laura R. Wherry   Gloria Aldana
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A Other SSI Eligibility Cutoffs

Guidelines for SSI eligibility allow for higher birthweight cutoffs for infants of gestational ages 32 weeks or greater. Specifically, for SSA, low birthweight disability is determined as either for infants under 1200 grams or the following: for infants at the gestational age of 32 weeks, the cutoff is 1250 grams; for infants at 33 weeks, the cutoff is 1325 grams; for infants at 34 weeks, the cutoff is 1500 grams; for infants at 35 weeks, the cutoff is 1700 grams; for infants at 36 weeks, the cutoff is 1875 grams; and for infants at 37-40 weeks, the cutoff is 2000 grams.[31]

To investigate whether SSI receipt changes at these higher birthweight cutoffs, we replicate our first stage analysis using these additional cutoffs for each relevant gestational age. We focus on SSI amounts received at ages 1 and 2, where we found the largest change in SSI receipt among our sample of focal children born around the 1200 gram cutoff and under 32 weeks of age.

We report the results in Appendix Table A20. While we see a large and statistically significant increase in monthly SSI amounts received at the 1200-gram cutoff among infants under 32 gestational weeks at birth, we do not detect statistically significant changes at these other cutoffs for the relevant gestational ages. Furthermore, our analysis of a restricted use version of the Current Population Survey linked to national respondents' SSA participation histories from the Supplemental Security Record suggests that 87.5% of children nationally who qualify for SSI on the basis of low birthweight do so based on the 1200 gram cutoff, rather than these higher cutoff rules. These results suggests that these gestational-age specific cutoffs are not being widely used to determine SSI medical eligibility, and supports our decision to focus on the 1200-gram cutoff in our main analysis.

[31] Cutoffs retrieved from https://www.ssa.gov/disability/professionals/bluebook/100.00-GrowthImpairment-Childhood.htm on 8/1/2023.

B SSI Eligibility Calculation

We calculate the estimated monthly SSI payments assuming the parents and siblings living with the focal child, who may qualify for SSI, are SSI-ineligible. The estimated payment is equal to the max payment less deemed parental income. Deemed income is calculated as monthly earned income less an allowance for each ineligible child, which we assume to be all previous children, and a small exclusion for earned and unearned income; we assume no unearned income above the disregard is available for deeming. Deemed income is this number divided by two and then reduced by a federal benefit rate allowance based on the year and number of parents living in the household (Hemmeter, 2015). The allowances for parents and ineligible children are set each year and are indexed to inflation. For all low birthweight children with deemed parental income at or below zero, we estimate the payment to be the max payment.

Note that we do not have access to information on family assets in our data and we are, therefore, unable to apply SSI asset limit rules when considering a family's likely eligibility for SSI. It is likely that some families in our targeted sample would not qualify on the basis of these rules.[32]

[32] Child SSI eligibility limits assets to no greater than $2,000 and includes non-excludable assets belonging to the child as well as parental assets deemed to the child.

Table A1: Test for Differences in Characteristics Across the Cutoff

	Age	Mother High School Graduate	Pre-Birth Income	Female	Mother Non-Hispanic White	Mother Non-Hispanic Black	Mother Non-Hispanic Asian	Mother Hispanic	Number Prenatal Visits
RD Estimate	-0.1253	0.0046	-162.1	0.0012	0.0145	0.0028	0.0048	-0.0298**	-0.4170
	(0.1781)	(0.0128)	(242.2)	(0.0128)	(0.0097)	(0.0089)	(0.0065)	(0.0128)	(0.4097)
N	29000	28000	29000	29000	29000	29000	29000	28500	29000
Baseline	26.73	0.5980	6414	0.4380	0.1840	0.1450	0.0670	0.5650	10.48

	Matched to ERP Records (Ever)	Matched to ERP Records (in HS)	PIK Assigned
RD Estimate	0.0002	0.0011	-0.0074
	(0.0151)	(0.0195)	(0.0060)
N	20500	12500	29000
Baseline	0.5830	0.5710	0.940

Notes: Analyses present characteristics from the birth certificate records, match rates to educational records, and information on PIK assignment for children born to families with low or missing income information with birthweight between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those whose younger sibling was born with a birthweight between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A2: Heterogeneity Analyses for First Stage Outcomes

	Any SSI benefits, by age				Average monthly SSI benefit, by age				Any Medicaid enrollment, by age			
	0	1-2	3-10	11-17	0	1-2	3-10	11-17	0	1-2	3-10	11-17
Mom Less Than	-0.1530***	-0.1948***	-0.0246	0.0147	-128.3***	-145.0***	-14.16	15.37	-0.0215	0.0181	-0.0058	0.0152
High School	(0.0346)	(0.0303)	(0.0176)	(0.0155)	(37.96)	(26.87)	(16.09)	(12.03)	(0.0250)	(0.0194)	(0.0174)	(0.0252)
N	2500	5600	30000	29000	2500	5600	30000	29000	7600	14500	60000	33000
Baseline	0.1140	0.1310	0.1290	0.1110	99.03	105.8	98.94	85.81	0.5600	0.7920	0.7320	0.6700
Non-Hispanic White	-0.1610***	-0.1671***	-0.0516*	-0.0236	-112.2***	-118.3***	-40.67*	-15.68	-0.0669	-0.0391	-0.0607*	-0.0552
	(0.0497)	(0.0453)	(0.0293)	(0.0234)	(43.21)	(38.71)	(24.55)	(18.46)	(0.0421)	(0.0392)	(0.0332)	(0.0417)
N	1100	2300	9900	10500	1100	2300	9900	10500	2700	4800	21500	14000
Baseline	0.0870	0.1140	0.0920	0.0650	74.79	96.68	72.09	45.46	0.4220	0.6310	0.5060	0.4390
Non-Hispanic Black	-0.3335***	-0.3208***	-0.0480	-0.0176	-280.6***	-271.1***	-30.96	-16.85	-0.0661	0.0132	0.0169	-0.0172
	(0.0644)	(0.0534)	(0.0358)	(0.0336)	(62.60)	(43.84)	(29.56)	(28.37)	(0.0443)	(0.0309)	(0.0287)	(0.0418)
N	950	2100	9200	9300	950	2100	9200	9300	2400	4600	19000	11500
Baseline	0.1950	0.2130	0.1970	0.1610	124.2	137.1	155.7	126.3	0.5840	0.8340	0.8000	0.7150
Hispanic	-0.1496***	-0.1871***	-0.0449***	0.0099	-114.0***	-126.3***	-30.62**	13.01	-0.0182	-0.0050	-0.0278*	-0.0438*
	(0.0249)	(0.0225)	(0.0143)	(0.0139)	(27.40)	(20.29)	(12.54)	(10.62)	(0.0213)	(0.0169)	(0.0163)	(0.0238)
N	4300	9400	41500	34000	4300	9400	41500	34000	10500	19000	71500	37500
Baseline	0.0900	0.1180	0.1180	0.1060	89.88	105.3	89.52	82.12	0.5210	0.7710	0.6930	0.6010
Non-Hispanic Asian	-0.2218***	-0.1264**	-0.0431	-0.0512*	-231.8**	-121.2*	-34.54	-41.94*	-0.2054***	-0.1298**	-0.0268	-0.0277
	(0.0675)	(0.0591)	(0.0338)	(0.0302)	(117.7)	(67.02)	(26.56)	(24.61)	(0.0609)	(0.0606)	(0.0526)	(0.0666)
N	500	1100	4600	4200	500	1100	4600	4200	1200	2200	8700	4900
Baseline	D	0.0630	0.0560	0.0380	18.62	56.16	42.74	16.88	0.2960	0.4800	0.4400	0.3730
Female	-0.2042***	-0.2225***	-0.0551***	0.0060	-174.6***	-162.3***	-42.49***	5.292	-0.0387	-0.0269	-0.0462**	-0.0477*
	(0.0295)	(0.0260)	(0.0146)	(0.0136)	(33.87)	(24.44)	(13.35)	(10.48)	(0.0244)	(0.0207)	(0.0191)	(0.0272)
N	3300	7300	31500	27500	3300	7300	31500	27500	8000	14500	57000	32000
Baseline	0.1000	0.1200	0.0820	0.0720	86.19	107.0	61.57	55.84	0.5080	0.7320	0.6470	0.5470
Male	-0.1682***	-0.1713***	-0.0398**	-0.0178	-120.4***	-122.8***	-27.14*	-9.272	-0.0615***	-0.0243	-0.0252	-0.0474*
	(0.0270)	(0.0241)	(0.0167)	(0.0159)	(27.25)	(20.67)	(13.90)	(12.74)	(0.0222)	(0.0184)	(0.0175)	(0.0242)
N	4000	8800	37500	32500	4000	8800	37500	32500	9700	17500	67500	37500
Baseline	0.0930	0.1340	0.1470	0.1200	81.46	103.9	114.8	92.91	0.4820	0.7310	0.6620	0.5840

Notes: Analyses use administrative data on SSI receipt from SSA and Medicaid enrollment from CMS. Sample includes those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation who fall in the subgroups described in the table, with the exception of the "mom less than high school" sample which does not apply the income criteria for sample inclusion. See text for more specific sample information. Coefficients are estimated using using a local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average of the outcome for observations with birthweight falling between 1200 and 1250 (i.e., 50 grams above the cutoff) for most outcomes and subgroups. However, the outcome "Any SSI Benefits" required larger bins to meet Census disclosure rules for the non-Hispanic Asian subgroup at age 1-2 (1200-1349 used for baseline mean) and age 11-17 (1200-1299 used) and for the non-Hispanic white subgroup at age 0 (1200-1299 used). A baseline mean of "D" indicates that the baseline mean was not able to be reported due to disclosure rules even when using all observations within the bandwidth above the cutoff. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A3: Heterogeneity Analyses for Infant Health and Health Care Utilization

	Birth Days	IP Days	ED Visits	Mortality
Mom Less Than	-0.9417	0.2901	0.1802*	0.0074
High School	(1.365)	(0.8906)	(0.1090)	(0.0117)
N	10000	10500	3900	9900
Baseline	44.3	8.043	1.056	0.0750
Non-Hispanic White	-3.532	-2.201	0.0599	0.0159
	(2.318)	(1.570)	(0.1470)	(0.0194)
N	3700	3900	1300	3800
Baseline	44.5	7.219	0.5210	0.0700
Non-Hispanic Black	-4.022	-2.929	-0.2077	0.0105
	(2.901)	(2.114)	(0.2095)	(0.0187)
N	3200	3400	1200	3200
Baseline	46.08	7.962	1.092	0.0690
Hispanic	-0.9415	0.4245	0.0197	-0.0021
	(1.226)	(0.8474)	(0.0943)	(0.0103)
N	12000	12500	5200	12000
Baseline	44.3	8.172	0.9710	0.0630
Non-Hispanic Asian	-5.817	-1.036	0.1205	0.0319
	(3.597)	(2.427)	(0.2101)	(0.0311)
N	1400	1500	550	1400
Baseline	46.08	8.028	0.5170	0.1100
Female	-3.72**	-0.2914	-0.0732	0.0053
	(1.301)	(0.9466)	(0.1039)	(0.0107)
N	9700	9900	3900	9400
Baseline	41.4	7.169	0.8080	0.0540
Male	-0.5437	-0.3492	0.0655	0.0038
	(1.413)	(0.9588)	(0.0956)	(0.0111)
N	11500	12000	4700	11500
Baseline	47.62	8.969	0.9470	0.0780
Birth Cohort 1997+	-2.031*	-0.0028	0.0032	0.0036
	(1.113)	(0.7680)	(0.0705)	(0.0087)
N	16500	16500	8700	15500
Baseline	45.68	8.289	0.8880	0.0610

Notes: Analyses use administrative data from HCAI on hospital and ED use and infant mortality. Sample includes those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation who fall in the subgroups described in the table, with the exception of the "mom less than high school" sample which does not apply the income criteria for sample inclusion. See text for more specific sample information. Coefficients are estimated using using a local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average of the outcome for observations with birthweight falling between 1200 and 1250 (i.e., 50 grams above the cutoff). All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002 and CBDRB-FY23-0451. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A4: Heterogeneity Analyses for Educational Performance

	High School Index	Ever Enrolled (BA or Higher)	College Degree
Mom Less Than	-0.0017	-0.0271	-0.0166
High School	(0.0377)	(0.0295)	(0.0196)
N	10000	5500	3200
Baseline	-0.1140	0.4590	0.0610
Non-Hispanic White	0.0184	-0.0151	0.0205
	(0.0754)	(0.0454)	(0.0378)
N	3100	2300	1600
Baseline	-0.0330	0.5020	0.1670
Non-Hispanic Black	-0.0365	-0.0350	-0.0531
	(0.0588)	(0.0507)	(0.0327)
N	3400	1900	1200
Baseline	-0.1710	0.5080	0.0620
Hispanic	0.0137	-0.0173	-0.0012
	(0.0345)	(0.0279)	(0.0200)
N	12000	6200	3600
Baseline	-0.0780	0.5140	0.0840
Non-Hispanic Asian	0.1293	0.0357	0.0795
	(0.1142)	(0.0691)	(0.0889)
N	1400	800	500
Baseline	0.2450	0.7040	0.3240
Female	-0.0215	-0.0154	0.0174
	(0.0417)	(0.0302)	(0.0292)
N	8900	5200	3100
Baseline	0.0000	0.5830	0.1800
Male	0.0450	-0.0205	-0.0265
	(0.0353)	0.0275	(0.0171)
N	11000	6200	3800
Baseline	-0.1140	0.4700	0.0440
Birth Cohort 1997+	0.0029	-0.0206	-0.0193
	(0.0352)	(0.0270)	(0.0283)
N	12000	6700	2200
Baseline	-0.0160	0.4920	0.0860

Notes: Analyses use use school records provided by EdResults Partnership and post-secondary enrollment and college degree attainment provided by the National Student Clearinghouse. Sample includes those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation who fall in the subgroups described in the table, with the exception of the "mom less than high school" sample which does not apply the income criteria for sample inclusion. See text for more specific sample information. Coefficients are estimated using using a local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average of the outcome for observations with birthweight falling between 1200 and 1250 (i.e., 50 grams above the cutoff) for most outcomes and subgroups. However, the outcome College Degree required larger bins to meet Census disclosure rules for the non-Hispanic Asian subgroup (1200-1299 used for baseline mean) and the non-Hispanic Black subgroup (1200-1349 used). All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A5: Heterogeneity Analyses for Adult Self-Sufficiency Outcomes

		Adult Earning and Public Assistance Receipt						
	Summary Index	Any Earnings	Earnings	Any SSI Receipt	SSI Amount	Any Medicaid	EITC amount	Mortality
Mom Less Than	0.0051	0.0108	1055.	0.0095	7.730	-0.0090	105.4	0.0026
High School	(0.0433)	(0.0236)	(865.4)	(0.0189)	(14.58)	(0.0387)	(97.67)	(0.0040)
N	32500	32500	32500	18500	18500	8100	13500	12500
Baseline	-0.0790	0.7020	14150.	0.0860	65.08	0.6200	599.8	0.0120
Non-Hispanic White	-0.0053	-0.0329	205.4	-0.0061	1.857	-0.0093	-222.0**	-0.0019
	(0.0690)	(0.0357)	(1276.)	(0.0292)	(22.90)	(0.0577)	(106.9)	(0.0059)
N	15000	15000	15000	8600	8600	4000	6300	5000
Baseline	-0.0370	0.6790	13560.	0.0730	55.10	0.4080	207.7	0.0060
Non-Hispanic Black	0.0107	0.0024	972.9	0.0070	-7.368	-0.0175	264.5	-0.0025
	(0.0680)	(0.0377)	(1241.)	(0.0321)	(30.44)	(0.0634)	(187.6)	(0.0078)
N	12000	12000	12000	6800	6800	3000	4500	4200
Baseline	-0.1450	0.7080	10720.	0.1000	78.88	0.6330	729.3	0.0110
Hispanic	0.0392	0.0226	857.5	-0.0035	2.427	-0.0449	-14.78	0.0018
	(0.0405)	(0.0215)	(777.0)	(0.0175)	(13.36)	(0.0382)	(85.95)	(0.0030)
N	36000	36000	36000	20500	20500	8600	15500	16500
Baseline	-0.0160	0.7470	14710.	0.0770	59.03	0.5720	507.0	0.0100
Non-Hispanic Asian	0.0121	-0.0033	-672.9	-0.0163	-32.87	0.0676	-38.70	0.0029
	(0.1075)	(0.0563)	(2591.)	(0.0406)	(35.29)	(0.1072)	(108.1)	(0.0049)
N	4800	4800	4800	2800	2800	1100	2000	2000
Baseline	-0.0080	0.6710	13400.	0.0380	24.45	0.4450	173.3	D
Female	0.0016	-0.0125	336.5	0.0026	-1.259	-0.0375	-3.224	-0.0008
	(0.0400)	(0.0228)	(740.9)	(0.0162)	(14.14)	(0.0415)	(97.88)	(0.0030)
N	31500	31500	31500	18000	18000	7800	14000	13000
Baseline	-0.0450	0.7190	12480.	0.0550	41.74	0.5370	519.6	0.0050
Male	0.0355	0.0177	803.9	-0.0029	0.7964	-0.0186	-43.92	0.0021
	(0.0432)	(0.0219)	(872.8)	(0.0189)	(14.94)	(0.0371)	(77.45)	(0.0035)
N	37000	37000	37000	21500	21500	9100	15000	16000
Baseline	-0.0420	0.7170	14640.	0.0950	73.55	0.5300	386.7	0.0120
Birth Cohort 1997+	-0.0395	-0.0181	-280.5	0.0213	-0.0632	19.57	-83.75	0.0014
	(0.0369)	(0.0215)	(702.3)	(0.0163)	(0.0652)	(11.03)	(62.98)	(0.0024)
N	26000	26000	26000	15000	1000	15000	10500	24000
Baseline	-0.0720	0.7160	12100	0.0830	0.6130	56.90	212.1	0.0080

Notes: Analyses use earnings information derived from W2 records, mortality information from the Census Numident file, and program use data from SSA and CMS. Sample includes those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation who fall in the subgroups described in the table, with the exception of the "mom less than high school" sample which does not apply the income criteria for sample inclusion. See text for more specific sample information. Coefficients are estimated using using a local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average of the outcome for observations with birthweight falling between 1200 and 1250 (i.e., 50 grams above the cutoff). All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A6: Years/Cohorts Included by Outcome

First Stage		
Outcome	Years Used	Cohorts
Any SSI	2010-2014, 2016, 2019-2021	1993-2019
SSI Benefits	2010-2014, 2016, 2019-2021	1993-2019
Any Medicaid	2000-2016	1993-2016
Household Income	2010-2014, 2016, 2019-2021	1993-2019
Infant Health and Health Care Utilization		
Outcome	Years Used	Cohorts
Days in Hospital at Birth	1993-2012	1993-2012
Inpatient Days	1993-2012	1993-2012
ED Visits	2005-2012	2005-2012
Infant Mortality	1993-2011	1993-2011
High School Outcomes		
Outcome	Years Used	Cohorts
All	2007-2018	1993-2004
National Student Clearinghouse		
Outcome	Years Used	Cohorts
Ever Enrolled	2010-09/2022	1993-2003
Finished Bachelors	2010-09/2022	1993-1998
Long-Run (Age 19+) Outcomes		
Outcome	Years Used	Cohorts
Adult Index	2012-2022	1993-2003
Any Wages	2012-2022	1993-2003
Wages	2012-2022	1993-2003
Any Medicaid	2012-2016	1993-1997
SSI Benefits	2012-2014, 2016, 2019-2021	1993-2002
Fed EITC	2012-2021	1993-2002
Birth	2012-2022	1993-2003
Post-Infancy Mortality		
Outcome	Years Used	Cohorts
Post-infant Mortality	1993-2022q3	All
Middle School Outcomes		
Outcome	Years Used	Cohorts
All	2005-2018	1993-2007
Elementary School Outcomes		
Outcome	Years Used	Cohorts
All	2005-2018	1993-2012

Notes: This table reports the years during which we observe each set of outcomes and the cohorts included in analysis of that outcome.

Table A7: RD Estimates for First Stage Outcomes (Heaps Removed)

	Any SSI benefits, by age				Average monthly SSI benefit, by age				Any Medicaid enrollment, by age			
	0	1-2	3-10	11-17	0	1-2	3-10	11-17	0	1-2	3-10	11-17
RD Estimate	-0.2003***	-0.1984***	-0.0504***	-0.0094	-148.4***	-133.8***	-38.13***	-2.492	-0.0514***	-0.0185	-0.0096	-0.0248
	(0.0224)	(0.0202)	(0.0137)	(0.0131)	(23.31)	(17.54)	(12.20)	(10.27)	(0.0197)	(0.0166)	(0.0156)	(0.0224)
N Individual x Year	5400	12000	49000	40500	5400	12000	49000	40500	12500	22500	85500	47000
N Individual	5400	7900	13000	12000	5400	7900	13000	12000	12500	12000	14000	8600
Baseline	0.0860	0.1260	0.1270	0.1020	71.21	103.3	97.26	80.52	0.4950	0.7390	0.6790	0.5800

Notes: Analyses use administrative data on SSI receipt from SSA and Medicaid enrollment from CMS for children born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A8: RD Estimates for Infant Health Outcomes (Heaps Removed)

	Birth Days	IP Days	ED Visits	Mortality
RD Estimate	-2.075*	0.0808	0.0935	0.0050
	(1.149)	(0.8340)	(0.0857)	(0.0094)
N	14500	15000	6100	14500
Baseline	44.9	8.134	0.9350	0.0670

Notes: Analyses use administrative data from HCAI on hospital and ED use and infant mortality for infants born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A9: RD Estimates for High School Outcomes (Heaps Removed)

	Summary Index	Special Education IEP
RD Estimate	0.0103	-0.0032
	(0.0349)	(0.0158)
N Individual x Year	13500	13500
N Individual	4600	4600
Baseline	-0.0660	0.0800

Notes: Analyses use school records provided by Educational Results Partnership for children born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A10: RD Estimates for Post-Secondary School Enrollment and Degree Attainment (Heaps Removed)

	Ever Enrolled Post-Secondary	College Degree (BA or Higher)
RD Estimate	-0.0192	-0.0044
	(0.0252)	(0.0198)
N	7700	4700
Baseline	0.5200	0.1020

Notes: Analyses use post-secondary enrollment and degree attainment records from the National Student Clearinghouse for those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A11: RD Estimates for Adult Self-Sufficiency Outcomes (Heaps Removed)

	Summary Index	Adult Earning and Public Assistance Receipt: Any Earnings	Earnings	Any SSI Receipt	SSI Amount	Any Medicaid	EITC amount	Mortality
RD Estimate	-0.0318	-0.0103	-361.5	0.0130	9.081	0.0384	27.42	0.0030
	(0.0369)	(0.0194)	(726.8)	(0.0161)	(12.20)	(0.0342)	(69.65)	(0.0027)
N Individual x Year	46500	46500	46500	27000	27000	11500	19500	20500
N Individual	7200	7200	7200	6600	6600	3700	5000	20500
Baseline	-0.0710	0.7080	12910.	0.0850	62.56	0.5570	415.4	0.0110

Notes: Analyses use earnings information derived from W2 records, mortality information from the Census Numident file, and program use data from SSA and CMS. Sample includes those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A12: RD Estimates for Elementary School Performance

	Summary Index	Repeat a grade	Gifted & talented	Special Education IEP
RD Estimate	-0.0100	0.0011	-0.0019	-0.0022
	(0.0174)	(0.0046)	(0.0031)	(0.0118)
N Individual x Year	20500	20500	20500	20500
N Individuals	7000	7000	7000	7000
Baseline	-0.0070	0.0200	0.0060	0.0770

Notes: Analyses use school records provided by Educational Results Partnership for children born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A13: RD Estimates for Middle School Performance

	Summary Index	Repeat a grade	Gifted & talented	Overall GPA	Special Education IEP
RD Estimate	0.0225	-0.0015	0.0023	0.0637	0.0186
	(0.0265)	(0.0049)	(0.0059)	(0.0609)	(0.0122)
N Individual x Year	13000	13000	13000	7400	13000
N Individual	6000	6000	6000	4400	6000
Baseline	0.0330	0.0150	0.0140	2.410	0.0710
Baseline Width	50	50	50	50	50

Notes: Analyses use school records provided by Educational Results Partnership for children born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A14: RD Estimates for Adult Self-Sufficiency Outcomes, Ages 22+

		Adult Earning and Public Assistance Receipt					
	Summary Index	Any Earnings	Earnings	Any SSI Receipt	SSI Amount	Any Medicaid	EITC amount
RD Estimate	0.0294	0.0135	897.5	0.0014	2.085	0.0754*	-46.51
	(0.0376)	(0.0189)	(865.3)	(0.0150)	(11.23)	(0.0450)	(83.08)
N	39000	39000	39000	21500	21500	3600	16500
Unique N	8200	8200	8200	7400	7400	2400	5700
Baseline	0.0460	0.7560	17890.	0.0760	53.81	0.5730	573.1

Notes: Analyses use earnings information derived from W2 records, mortality information from the Census Numident file, and program use data from SSA and CMS. Sample includes those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using using a local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A15: Parametric RD Estimates for First Stage

	Any SSI benefits, by age				Average monthly SSI benefit, by age				Any Medicaid enrollment, by age			
	0	1-2	3-10	11-17	0	1-2	3-10	11-17	0	1-2	3-10	11-17
RD Estimate	-0.1897***	-0.2028***	-0.0579***	-0.0125	-141.5***	-143.6***	-44.59***	-8.297	-0.0623***	-0.0302**	-0.0220*	-0.0336**
	(0.0179)	(0.0159)	(0.0103)	(0.0097)	(18.68)	(14.06)	(8.947)	(7.640)	(0.0150)	(0.0125)	(0.0118)	(0.0165)
N Individual x Year	7300	16000	69000	59500	7300	16000	69000	59500	17500	32000	125000	69500
N Individual	7300	10500	18000	17500	7300	10500	18000	17500	17500	17000	20500	12500
Baseline	0.0960	0.1280	0.1190	0.0990	83.54	105.2	91.27	76.26	0.4930	0.7310	0.6550	0.5670

Notes: Analyses use administrative data on SSI receipt from SSA and Medicaid enrollment from CMS for children born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using a parametric linear regression model as described in equation (1); robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A16: Parametric RD Estimates for Infant Health and Health Care Utilization

	Birth Days	IP Days	ED Visits	Mortality
RD Estimate	-2.280**	-0.1662	-0.0171	0.0113
	(0.9085)	(0.6102)	(0.0635)	(0.0072)
N	20500	22000	8700	21000
Baseline	44.88	8.174	0.8880	0.0680

Notes: Analyses use administrative data from HCAI on hospital and ED use and infant mortality for infants born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using a parametric linear regression model as described in equation (1); robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002 and CBDRB-FY23-0451. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A17: Parametric RD Estimates for High School Performance

	Summary Index	Special Education IEP
RD Estimate	0.0205	-0.0277**
	(0.0251)	(0.0117)
N Individual x Year	20000	20000
N Individual	6800	6800
Baseline	-0.0650	0.0700

Notes: Analyses use administrative data from HCAI on hospital and ED use and infant mortality for infants born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using parametric linear regression model as described in equation (1); robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A18: Parametric RD Estimates for Post-Secondary School Enrollment and Degree Attainment

	Ever Enrolled Post-Secondary	College Degree (BA or Higher)
RD Estimate	-0.0192	-0.0044
	(0.0252)	(0.0198)
N	7700	4700
Baseline	0.5200	0.1020

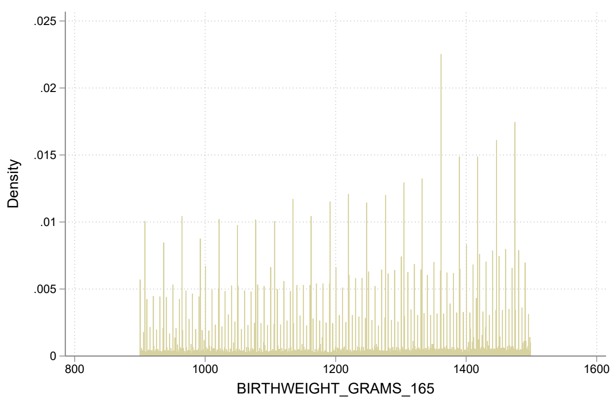
Notes: Analyses use post-secondary enrollment and degree attainment records from the National Student Clearinghouse for those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using local linear regression; robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

Table A19: Parametric RD Estimates for Adult Self-Sufficiency Outcomes

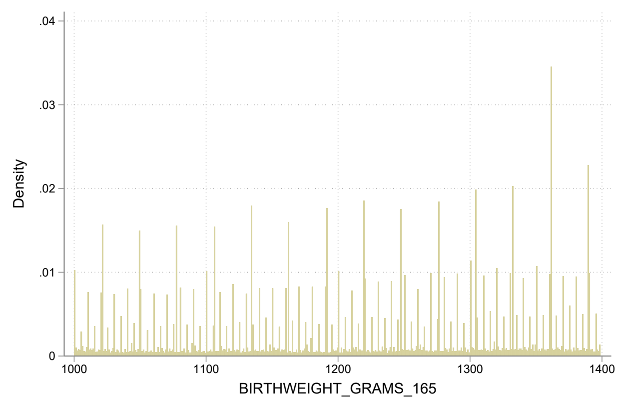
	Summary Index	Adult Earning and Public Assistance Receipt						
		Any Earnings	Earnings	Any SSI Receipt	SSI Amount	Any Medicaid	EITC amount	Mortality
RD Estimate	0.0171	0.0072	420.7	-0.0014	0.4494	-0.0054	0.5096	0.0008
	(0.0269)	(0.0144)	(534.7)	(0.0115)	(9.126)	(0.0255)	(55.81)	(0.0021)
N Individual x Year	68500	68500	68500	39500	39500	17000	28500	29000
N Individuals	10500	10500	10500	9800	9800	5400	7500	29000
Baseline	-0.0430	0.7180	13630.	0.0770	58.70	0.5330	453.2	0.0100

Notes: Analyses use earnings information derived from W2 records, mortality information from the Census Numident file, and program use data from SSA and CMS. Sample includes those born to families with low or missing income information with birthweights between 900-1499 grams and less than 32 weeks gestation; see text for more specific sample information. Coefficients are estimated using using parametric linear regression model as described in equation (1); robust standard errors are clustered at the level of the mother. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the average among those born with birthweights between 1200 and 1250 grams. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY23-CES021-002. Numbers have been rounded to comply with disclosure avoidance guidelines.

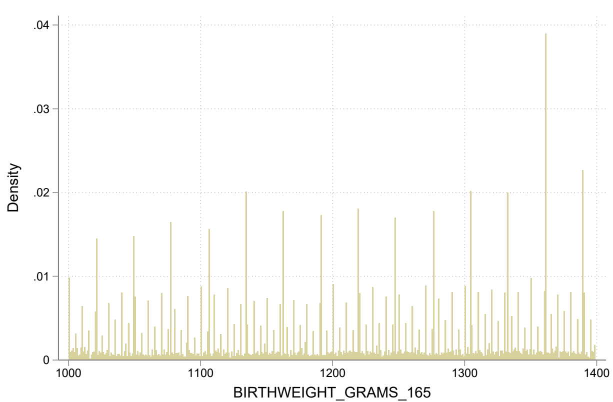
Figure A1: Distribution of Birthweight, 1993-2019 CA Birth Records



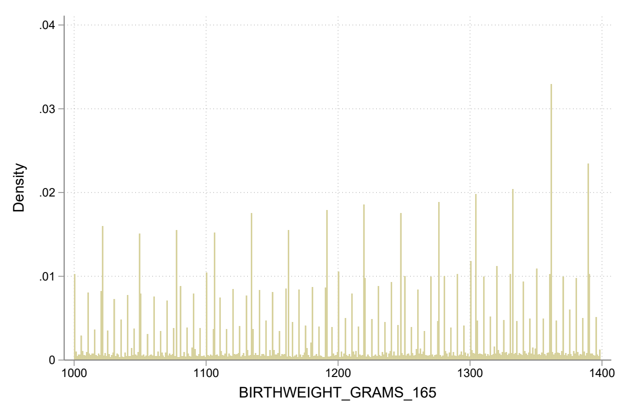
(a) All, 900-1499g



(b) All, 1000-1399g



(c) Mother less than high school



(d) Mother high school or greater

Table A20: RD Estimates of Amount of SSI Received at Ages 1-2 at Other Birthweight Cutoffs

	Any SSI benefits, by gestational age							Average monthly SSI benefit, by gestational age						
	<32	32	33	34	35	36	37+	<32	32	33	34	35	36	37+
RD Estimate	-0.1947***	-0.0476	-0.0295	-0.0025	-0.0053	0.0032	-0.0120	-141.2***	-14.98	-11.78	2.665	-0.9989	6.181	-9.682
	(0.0177)	(0.0407)	(0.0426)	(0.0267)	(0.0196)	(0.0135)	(0.0079)	(15.84)	(32.06)	(30.24)	(22.01)	(16.17)	(10.74)	(6.438)
Eligibility cutoff	1200g	1250g	1325g	1500g	1700g	1876g	2000g	1200g	1250g	1325g	1500g	1700g	1876g	2000g
N Individual x Year	16000	2200	2200	3100	4600	7300	28500	16000	2200	2200	3100	4600	7300	28500
N Individual	10500	1400	1400	2000	3000	4800	18500	10500	1400	1400	2000	3000	4800	18500
Baseline	0.1280	0.1430	0.1730	0.0970	D	D	D	105.2	67.61	75.22	51.40	43.11	33.26	20.05

Notes: Analyses use administrative data on SSI receipt from SSA for children born to families with low or missing income information around birthweight cutoffs associated with gestational ages listed in the column headers at ages 1-2; see text for more specific sample information. Coefficient and standard errors are estimated using parametric linear regression with a +/-300 grams around the cutoff included in the analysis. Significance levels: *=10%, **=5%, ***=1%. Baseline means are calculated using the 50 gram bin directly above the eligibility cutoff for gestational ages <32, 32, and 33 and a 150 gram bin for 34. A baseline mean of "D" indicates that the baseline mean was not able to be reported due to disclosure rules even when using all observations within the bandwidth above the cutoff. All results were approved for release by the U.S. Census Bureau under DMS number 7523114, authorization number CBDRB-FY22-CES018-009. Numbers have been rounded to comply with disclosure avoidance guidelines.