CASH-ASSISTANCE POLICY DESIGN MATTERS FOR CHILD OUTCOMES[1]

LISA GENNETIAN[2]
Duke University

MARCOS A. RANGEL[2]
Duke University

DANA THOMSON[2]
RAND

KELLY EVANS
Duke University

PRACHI SHUKLA
Duke University

LUIS E. BASURTO
Cornell University

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[1] Corresponding author: Lisa Gennetian, lisa.gennetian@duke.edu. Prachi Shukla is presently a PhD student, Duke Sanford School of Public Policy. Luis Basurto is presently a PhD student, Cornell University Brooke School of Public Policy. We are grateful to the WT Grant Foundation for financial support of this research. All conclusions and opinions remain the authors'.

[2] Equal first authorship

Abstract

Economic research typically assumes that households receive government benefits as intended with rare consideration of how policy design disrupts or facilitates actual receipt and resulting household resources. We identify meaningful variation in cash assistance policy design at the state level resulting from reauthorization of Temporary Assistance to Needy Families program, the only federally legislated long standing cash-based safety net in the U.S. Cash assistance policy design features that minimize state government operational costs reduce receipt, increase household poverty, and unfavorably impact children's health (BMI, preterm birth, and birth weight) and schooling (grade repetition and being on track for learning at Kindergarten school entry) particularly among households with very low income and low levels of caregiver education. The effect of cash assistance program design features that increase administrative burdens are most pronounced when cost minimization is already high. We identify household income as a plausibly causal channel through which cost minimization policy features impact childrens' outcomes; and not employment, family structure, or fertility. Estimates are robust across several nationally representative data sets and alternative specifications of indices. Findings point to the consequential role of state policy design discretion on family economic resources and child developmental outcomes.

JEL codes: H31, H52, H72, H75, I3, J13, J18

Keywords: cash assistance, public policy, children, poverty

Significance

Design and delivery of social welfare programs by state and local governments that *a priori* target and constrain eligibility reduce receipt of cash assistance more so than administrative burdens. Resulting reductions in net household income unfavorably impact children's birth outcomes, physical health, and schooling. Findings reveal how policy design discretion can matter in delivering benefits and income support to families and children, and that in turn influence children's birth, health, and educational outcomes.

Introduction

The ways in which household economic resources affect child development are well-documented. Additional household financial resources among households with low income enable families to invest in better nutrition, healthcare, educational materials, and stable housing, while also reducing parental stress and improving family functioning (Aizer, Hoynes, and Lleras-Muney 2022; National Academies of Sciences, Engineering, and Medicine 2019, 2024). Evaluations of the impacts of many government social programs and policies further demonstrate how alleviating family budget constraints and increasing net financial resources can improve child well-being (Hoynes and Schanzenbach, 2018; Hoynes et al., 2016; Page, 2024). economic research on the impact of cash support on resources and development of children typically assumes that households receive benefits as intended with rare consideration of how policy design disrupts or facilitates actual receipt. In this study we leverage and codify state policy features of basic cash assistance, in the context of the only federally legislated program in the U.S., and subsequently trace impacts on receipt of benefits, household poverty, and children's development.

Current social assistance programs in the U.S. emerged from a century-long evolution of public policies primarily focused on reducing the harmful effects of poverty. This history includes policies that provide cash support as well as in-kind transfer programs. However, cash assistance without proof of earnings has become increasingly rare in the U.S. whereas several in-kind social assistance programs have expanded including in particular food and health care subsidies (Schmidt, Shore-Sheppard & Watson, 2025). In-kind programs can indirectly alleviate family budget constraints by making more income available to purchase other types of goods and services. Cash assistance, however, is fungible and allows families to allocate resources according to their priorities and circumstances—whether for housing, transportation, childcare, or emergency expenses (Currie and Gahvari 2008; Shah and Gennetian 2023). This flexibility may be particularly valuable for families facing complex, multifaceted and structural challenges that cannot be addressed through categorical programs alone. Cash assistance may also have distinct effects on family dynamics and parental well-being by reducing conflict from financial stress or enhancing autonomy in household decision-making (Evans and Garthwaite 2014).

Begun in the early 20th century with the aim of providing financial support to widows who lost their spouses to war, the Maternal Pension Program was one of the earliest forms of basic cash assistance in the U.S. This program evolved to the Aid to Families with Dependent Children (AFDC) program during the 1960s War on Poverty and then a block grant structure called the Temporary Assistance for Needy Families (TANF) following reforms in 1996 under the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA). Collectively the research on the effects of these and related cash assistance programs on children's outcomes reveals a mixed picture. The Maternal Pension Program improved earnings among the second generation of the original recipients, particularly among white boys (Aizer et al. 2016). Randomized control studies of welfare reforms in the 1990s showed short to medium term favorable effects on poverty reduction, family functioning, including maternal psychological health, and children's achievement and socio-emotional behavior (Morris, Gennetian, and Duncan 2005; L. A. Gennetian and Miller 2002; Slack, Magnuson, and Berger 2007) but no long-term impacts on outcomes such as earnings on the second generation (Leung et al. 2026). Over time such basic cash assistance, as examined in this research, demonstrated less influence in reducing child

poverty relative to a range of other in-kind and income support policies that expanded in the prior three decades (National Academies of Sciences, Engineering, and Medicine 2019; Schmidt et al., 2025; Thomson et al., 2022). However, recent temporary expansions of the 2021 child tax credit point to the impact of direct cash support on reducing child poverty—at estimates in upwards of 50 percent—that have not been similarly born out with in-kind programs (National Academies of Sciences, Engineering, and Medicine 2026; Curran, Hoynes, and Parolin 2023).

TANF remains the only federally legislated social assistance policy option for basic cash assistance to households with children. States allocate less than 20 percent of TANF block grant dollars toward cash assistance, with the far majority, 80 percent of $39 billion in 2023, allocated to direct services and other approved activities (CBPP, 2025). Some states have used this flexibility to experiment with unconditional, universally accessible designs: Flint, Michigan recently channeled TANF funds into a one-time no-means-testing cash transfer for pregnant women and new mothers that has been linked to reductions in preterm birth and low birthweight (Agarwal et al., 2026). This is a striking illustration of what state-level design discretion can produce. Yet, open questions remain about how the full range of policy choices, across TANF's broader block grant landscape and devolution of design and implementation to states, shapes children's development. This is especially salient in the current policy context with redistribution of policy implementation responsibility of federally funded programs to states and state decision making discretion.

We model state policy design from a broader vantage point, empirically codifying the collective bundle of policy features households face into two theory-grounded indices and then trace their effects from receipt of cash assistance to household poverty to children's outcomes. We show that the indices predict cash assistance receipt independently from levels of household poverty (Basurto et al., 2026; Gennetian et al., 2025a, 2025b). Next, we capitalize on the empirical relationship between state policy design and cash assistance receipt to plausibly identify the causal impact of household poverty on child outcomes that is attributable to variation in policy design elements independent from other demographic and economic factors.

This study makes several contributions. First, we generate evidence on the welfare effects of policy design choices thus generating new empirical insights into the implications and consequences of federal policy devolution to state and local governments. Second, we offer new contemporary estimates of the impact of federally legislated basic cash assistance on children's developmental outcomes in the U.S., updating and complementing prior literature. Third, we contribute to the growing literature on the impact of policy design and implementation features on disrupting and interfering with receipt of social assistance among eligible people conceptually via our work coding a broad set of features into theory driven indices (Wu and Moffitt, 2022) and by empirically expanding beyond single policy dimensions (e.g. procedural errors (Cook et al., 2026); or missed recertification interviews, (Homonoff et al., 2021)) and quantifying the collective package of policy features that households actually face. Our approach of investigating policy design at the state level in an aggregated, empirically informed manner increases the generalizability of our findings and complements existing work that focuses causally on single policy aspects that are important but also affect narrower groups within eligible populations.

Three key findings emerge. First, we uncover substantively meaningful variation in state-policy design of cash assistance that collectively represent the bundle of features eligible households

face. States vary in discretion over aspects of cost minimization and administrative burden in ways that do not perfectly correlate with rates of poverty or generosity of the basic cash assistance grant.

Second, state policy features as captured in our empirically coded indices independently predict receipt of benefits, household poverty, and children's developmental outcomes, net of state-level poverty rates and other demographic characteristics. State policy design — captured by our administrative burden (ADB) and operational cost minimization (OCM) indices — is directly associated with worse child health (BMI, preterm birth, birth weight) and schooling (grade repetition, kindergarten readiness) outcomes among households with low income and caregivers with low levels of education. Administrative burden has less consistent and no independent effects. Estimates are robust to alternative constructions of the indices and cannot be attributed to any one single item in the indices or state-level poverty rates.

Third, estimates point to household income as a plausibly causal channel by which cash assistance as shaped by cost minimization impacts children's developmental outcomes; the evidence for an income-mediated pathway is less consistent for administrative burden, which may operate through other channels. We find little evidence that employment, marriage, or fertility are alternative channels by which cash assistance policy design features impact children's outcomes.

Together findings show how the design and delivery of social welfare programs, choices made by policy administrators and practitioners, influence intended social welfare impacts. Policy design elements that constrain eligibility reduce receipt of cash assistance among households with low income and children more so than administrative burdens. These findings speak directly to a longstanding debate about how the design of targeted cash assistance programs shapes family resources and, downstream, child development. Policy simulations that aim to demonstrate the poverty-reduction potential of anti-poverty programs, including more inclusive state TANF policy parameters assume full benefit take-up (NASEM 2019, 2026; Pac et al., 2020). Our results suggest that the realized impact of program expansions depends critically on how design choices enable receipt. This is especially consequential in light of the geography of child poverty and as federal authority over basic income support continues to devolve to states, amplifying the stakes of state-level design decisions for the children these programs are intended to serve.

State variation in cash assistance receipt

States exercise considerable discretion over how TANF is designed and delivered, and receipt rates among eligible households vary substantially as a result. Before attributing this variation to policy design, however, it is necessary to rule out a more mundane explanation: that states with lower receipt simply have less poverty, or a different distribution of poverty, than states with higher receipt. In order to motivate our analysis, we start by documenting cross-state variation in the receipt of basic cash assistance.

Using data from the Annual Social and Economic Supplement of the Current Population Survey, pooled across 2016–2019, we construct state-level measures of household poverty and cash assistance receipt among U.S. households with children. Figures 1 displays basic cash assistance

receipt rates across states. Extensions that examine similar relationships with other government programs, including SNAP and Medicaid receipt, can be found in companion work (L. A. Gennetian et al. 2025).

We next decompose receipt rates into components reflecting poverty prevalence and the depth of poverty. Let R denote the number of households receiving TANF in a given state, and N the total number of households. Let N_P represent the number of households (with children under 18) with income below 250% of the federal poverty line, and N_{VP} those below 130%. We can express the overall receipt rate using a multiplicative decomposition:

$$\frac{R}{N} = \frac{N_P}{N} \times \frac{N_{VP}}{N_P} \times \frac{R}{N_{VP}},$$

where the first term captures the prevalence of poverty, while the second reflects its intensity. The final term measures the number of recipients per each the very poor household within the state.

Taking logarithms yields an additive representation of the same quantity:

$$\log\left(\frac{R}{N}\right) = \log\left(\frac{N_P}{N}\right) + \log\left(\frac{N_{VP}}{N_P}\right) + \log\left(\frac{R}{N_{VP}}\right)$$

This formulation allows us to decompose variation in receipt rates into components attributable to cross-state differences in poverty prevalence, poverty intensity, and a residual term capturing other factors:

$$\mathrm{Var}\left(\log\left(\frac{R}{N}\right)\right) = \mathrm{Cov}\left(\log\left(\frac{N_P}{N}\right), \log\left(\frac{R}{N}\right)\right) + \mathrm{Cov}\left(\log\left(\frac{N_{VP}}{N_P}\right), \log\left(\frac{R}{N}\right)\right) + \mathrm{Other}$$

Results are presented in Table 1. The decomposition highlights that differences in poverty alone are insufficient to explain the geographic distribution of TANF receipt. In particular, a large share of cross-state variation in cash assistance uptake remains unexplained by differences in either the prevalence or intensity of poverty (approx. 89%). This finding directly addresses the concern that state-level variation in basic cash assistance receipt may simply be a proxy for where poverty is more or less prevalent or severe. Instead, the bulk of this variation must be attributable to factors other than poverty. This points toward state-level discretion about program design as a plausible factor underlying residual variation.

Method

Measuring Cash Assistance Policy Design

Our goal is to capture the collective bundle of policy features as experienced by eligible households (versus a specific policy aspect that affects a slice of households that face that policy or program element). To do so we apply a theory-grounded approach to codify state-level variation in policy design capturing administrative burden and operational cost minimization, typically applied to investigate on incomplete uptake of social assistance programs (Currie 2004;

Wu and Moffitt 2022). Operational cost minimization, rooted in classical economic concepts, considers administrative requirements as efficient screening mechanisms that help target benefits to those with the highest marginal utility of consumption (Nichols and Zeckhauser 1982). Under this cost minimization framework, documentation requirements and application procedures serve an allocative purpose by creating "ordeal mechanisms" that effectively ration benefits and eliminate waste. Similarly, this framework is applied to basic operational decisions related to welfare office capacity and related human resources allocation to serve clients. Administrative burden, differs, by positing that program requirements impose learning, compliance, psychological and redemption costs on eligible participants that may not efficiently screen recipients but rather create barriers that disproportionately affect certain populations including those populations that might benefit the most or show highest return on investment (Bhargava and Manoli, 2015; Moynihan et al., 2016).

State-level indices

The policy administrative burden indices and the policy cost minimization indices are based on data from multiple public sources. Information on state-specific TANF basic cash assistance policies came from Urban Institute's Welfare Rules Database, which catalogues selected state policy differences for TANF cash aid, including initial eligibility requirements, work and activity requirements, and ongoing eligibility and time limits. We also collected information about the availability of program information in Spanish, application and recertification requirements (including, e.g., request for SSN of household members), etc. via direct data collection from State TANF. To be consistent across all data sources, all of the policy data reflect policies and application procedures from 2019. To access website content from 2019, we used the Wayback Machine.

Administrative burden (ADB): The administrative burden indices reflect the logistical and bureaucratic barriers faced by individuals when accessing services. The indices quantify the presence of procedural hoops and hurdles — documentation requirements, recertification frequencies, and other red-tape aspects — that may deter individuals from accessing or continuing with a service. Examples of polices that create lower burden on applicants include allowing applicants to submit applications online, not requiring applicants to submit proof of immunization, allowing accommodations for non-English speakers and/or disabled applicants, and joint application processing with other programs. To score high on this index implies that a state's policies places high burden on applicants compared to the national average.

Cost Minimization (OCM): These indices capture scarce resource allocation in service delivery and accessibility, such as financial costs and limited time available for bureaucrats to do various tasks. We conceptualize the last-mile delivery welfare offices as firms looking to minimize their variable and operational costs. Factors such as increased costs of reviewing paperwork to assess eligibility and decreased costs by allowing applicants to submit online applications are central to this index. Examples of cost minimization include practices like joint application processing with other programs, no requirement to process additional documentation like a Social Security, and lack of interview requirements, whereas factors that increase costs include eligibility rules requiring additional verification by bureaucrats. In addition to reflecting operational efficiency decisions, OCM also captures eligibility choices that restrict or expand who the program serves, thereby increasing or minimizing costs by narrow program access as a matter of policy. To score

high on this index implies that a state's policies are designed to minimize costs in its administration and implementation of the program.

Multiple indicators were included in the administrative burden indices and cost minimization indices. Each item is coded as a binary with 1 being high administrative burden or low operational costs, respectively. Some items are included in only one index. For example, requiring information on other household members and the availability of application materials in Spanish are only in the administrative burden indices as they reduce costs on the applicants but do not contribute to ongoing operational costs. Conversely, eligibility policies such as those extending eligibility to special categories of legal permanent residents (e.g., asylees/refugees, battered individuals) are only included in the cost minimization index since it is costly for the welfare offices to check paperwork but does not change the costs of applying for applicants. Other items are relevant to both the cost minimization index and the administrative burden index; however, they may be coded differently. For example, offering accommodations, such as an interpreter, enables front-line staff to work more effectively with clients and reduces burden on applicants navigating the bureaucratic process; but it also makes the process more expensive to welfare offices due to costs of hiring such services. In other cases, however, features of policy can both minimize operational costs and reduce burden on families. For example, availability of an online infrastructure of application requirements and filling forms digitally can reduce burden on applicants, while also reducing costs to the welfare offices.

Importantly, the administrative burden index is uncorrelated with state benefit amounts (r = 0.04), suggesting ADB captures procedural barriers independent of program generosity. The cost minimization index is moderately negatively correlated with benefit amounts (r = −0.41), consistent with states pursuing cost minimization through multiple policy levers at once. While this implies some relationship between benefit generosity and other design elements related to cost minimization features, the correlation is far from perfect: as we describe later and shown in Figure 3, states vary considerably in OCM within any given benefit band, and the two dimensions capture meaningfully different aspects of how states structure their programs.

To construct the OCM and ADB state-level indices, we model the presence of specific TANF policy design features using a one-parameter item response theory (IRT) model, also known as the Rasch (1PL) model. This approach treats observed policy features as manifestations of an underlying latent policy orientation. We start by letting I_{si} denote whether state s adopts a policy-design feature i. As indicated above I_{si}, takes value 1 if the feature is active and contributes either to higher administrative burden or higher operational cost minimization, taking value 0 otherwise.

From this we conceive each of the indices as embedded in the following psychometric representation:

$$P\left(I_{is} = 1 \mid \lambda_s^{pol}\right) = \frac{\exp\left(\lambda_s^{pol} - b_i\right)}{1 + \exp\left(\lambda_s^{pol} - b_i\right)},$$

where λ represents the the latent trait in the given policy dimension (*pol* represents either ADB or OCM) for state s. In the administrative burden model, the latent trait (λ) represents the state's overall orientation toward imposing higher administrative burden. In the cost minimization model, the latent trait represents the state's orientation toward minimizing operational costs.

Meanwhile b represents the difficulty parameter for policy feature i. A low difficulty parameter indicates that even states with relatively low levels of the latent trait are likely to adopt that design feature; these represent comparatively common or baseline practices. A high difficulty parameter indicates that only states with high levels of the latent trait are likely to adopt the feature; these policies represent more extreme manifestations of administrative burden or cost minimization in the design of state TANF-related policies. Substantively, the difficulty parameter captures how demanding a policy feature is in terms of the latent policy orientation. In the administrative burden index, high-difficulty items correspond to particularly restrictive documentation or recertification rules observed primarily in high-burden states. In the cost minimization index, high-difficulty items correspond to policies that substantially reduce government costs for administrating funds and are adopted primarily by strongly cost-minimizing states.

After estimating the model, we obtain two empirical Bayes estimates of λ for each state one in each conceptual dimension). These latent scores are standardized into z-scores such that a value of 0 represents the average level of administrative burden (or cost minimization) across the 50 states. Positive values indicate above-average administrative burden or cost minimization, while negative values indicate below-average levels. For example, a score of +1 corresponds to one standard deviation above the national mean.

Figure 2 presents the distribution of each index generated by the latent trait modeling. We uncover substantial variability in both dimensions. Such estimation also allows us to place each state across the two-dimensions of policy design we investigate as shown in Figure 3. We see that while the bulk of the variation corresponds to a negative relationship between the two indices, states can still be found in four quadrants of this 2x2 policy design plane. It is this variability that allows us to investigate if these descriptors of policy design can explain child outcomes, which we turn to next.

Table S9 shows a consistent relationship between the cost minimization index predicting basic cash assistance receipt across estimates using data from the Curent Population Survey, TRIM3 adjustments and from the Survey of Income and Program Participation.

Child outcomes

We use two datasets to examine measures of children's well being: The National Survey of Children's Health (NSCH, 2016-19, 2022) and restricted birth certificate data from the National Center for Health Statistics (NCHS, 2019). No other data set to our knowledge satisfies the criteria of large enough representation of children with low income across the majority of U.S. states across multiple years, credible information on children's developmental outcomes and household level of income or poverty (or proxies), and the option to link data with state of residence. Two other data sets satisfy several of these criteria but are excluded due to other limitations. Analyses were pursued with the 2018-2020 Survey of Income and Program Participation and not reported because sample size is too small. The National Health Interview Survey satisfies many of these criteria however is limited in its coverage of children's development to health and thus does not offer a unique contribution relative to the NCHS. Other longitudinal panels such as the National Longitudinal Survey of Youth (NLSY) and the Panel

Study of Income Dynamics (PSID), each of which has rich information about income and children's development, do not represent contemporary samples of children in the U.S.

National Survey of Children's Health (NSCH). The NSCH is a repeated cross-sectional household survey that collects information on the health and well-being of children aged 0-17 from parents or caregivers of children. Data are collected by phone, mail, or web survey on one randomly chosen child who is currently residing in the household. We pool data collected annually from 2016 to 2019 into two separate samples, first on n=45,516 children aged 0 to 17 from households with less than or equal to 250% Federal Poverty Level (FPL), and second on n=18,880 children aged 0 to 17 from households with the primary caregiver with a High School education or less. We also use data from the 2022 survey on children aged 3 to 5 from two different samples, first on n=3,777 children from households with less than or equal to 250% Federal Poverty Level (FPL), and second on n=1,457 children from households with the primary caregiver with a High School education or less. FPL is measured by the ratio of yearly family income to the Census Bureau's poverty thresholds using reported family size. Family income was reported from the following sources: 1) wages, salary, commissions, bonuses, or tips; 2) self-employment income from own nonfarm businesses or farm businesses; 3) interest, dividends, net rental income, royalty income, or income from estates and trusts; 4) Social Security or railroad retirement; retirement, survivor, or disability pensions; 5) Supplemental Security Income (SSI) or any public assistance or welfare payments from the state or local welfare office; and 6) any other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support, or alimony. If income or family size were missing, FPL was imputed. In order to protect confidentiality of respondents, NSCH codes any FPL at 50% or below as 50% and any FPL at 400% or above as 400%. For receipt of services, we coded receipt of cash assistance as "yes" if respondents reported that anyone in their family had received cash assistance from a government welfare program in the past 12 months.

We focus on three child outcomes measures from the NSCH data. First, whether or not a caregiver reports child BMI is greater than or equal to the 95th percentile. NSCH calculates child BMI from respondents reports of child's weight. BMI greater than or equal to the 95th percentile is available for children aged 10 to 17 years as this age range has been found to be independently verified by objective measurement of height and weight (Akinbami and Ogden 2009). BMI greater than the 95th percentile indicates obesity, a risk factor associated with long term and chronic health conditions through adulthood. Children with a missing BMI were excluded from analysis.

Second, whether or not the child repeated any grade since starting kindergarten. Repeating a grade since kindergarten was only analyzed among children aged 13 to 17. Reported rates of grade repetition were very low in elementary school, consistent with prior research and grade repetition during earlier years of childhood can indicate strategic choices on behalf of parents to address readiness and maturity of a child to progress through the next grade at school versus an indication of child not meeting standards to progress to the next grade that is more likely to occur at older age in middle and secondary school. Children with missing grade repetition response were not included in the analysis.

Third, data from 2022, we use a school readiness indicator of if the child was not reported as on track for entering kindergarten healthy and ready to learn (HRTL; see also (Maternal and Child Health Bureau (MCHB) 2023; Ghandour et al. 2024)). NSCH defines HRTL as "skills and

abilities children need to succeed and thrive in school, including physical well-being, motor development, social and emotional development, general knowledge, language acquisition, and how a child learns." (mchb.HRSA.gov).

Other variables used as covariates in the models include child sex (=1 if male), if child is Hispanic (=1), if the child was reported as having special health care needs (=1), if the primary caregiver was born outside of the US (=1). Respondents report child ethnicity and race in NSCH. Children missing covariates were not included in models.

For additional analysis examining other mechanisms we coded not married (=1 if the primary caregiver reported that they were; not married, but living with a partner; never married; divorced; separated; or widowed). We coded not working (=1) if the primary caregiver report working less than 50 weeks of the past 52 weeks. This was only coded for the 2016 to 2019 survey as the question was changed in 2022.

National Registry of Birth Records. States collect and report birth certificate data to the National Vital Statistic System using a standard form.[3] The standard form not only includes information related to the current birth, but education, birthplace, and race/ethnicity of the mother and father as well as information about previous births to mothers.[4] Analyses of the birth certificate data were pooled over 2016 to 2019. The sample includes all singleton births to mothers that were residents of the US at the time of birth with a high school degree (or equivalent) or less (n=5,654,600 births). We construct two outcomes from the birth certificate data (Aizer and Currie 2014). Dependent variables from birth record data include preterm birth (before 37 weeks gestation) and low birthweight (less than 2500g). Births with a missing birthweight or missing gestation were not included in models. In the birth record models we controlled for child sex (=1 if male), if the child was Hispanic (=1), and if the mother was born outside of the US (=1). In birth records, child race and ethnicity is not reported, so mother's ethnicity is used for child. Births with unknown covariates were not included in models. For additional analysis examining mechanisms we coded not married (=1) if mother's reported not married at birth.

Descriptive statistics

Tables 2 and 3 present descriptive statistics for our analytic samples. All sample counts correspond to a child for which outcomes are measured. Each household or caregiver only contributes with information regarding a *focus* child, which is to be considered our unit of analyses. Since different outcomes are captured for children of different ages, sample sizes can be different.

Table 2 presents descriptive statistics from the NSCH, documenting how child outcomes vary across groups defined by household poverty and caregiver education. A consistent gradient emerges across both dimensions of disadvantage. Children in lower-resource households fare worse across all outcomes considered, which capture multiple domains of development, including physical health, cognitive progress, and early learning readiness.

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[3] https://www.cdc.gov/nchs/nvss/births.htm

[4] https://www.cdc.gov/nchs/data/dvs/birth11-03final-ACC.pdf

For example, among younger children (ages 3–5), the share not on track for healthy and ready to learn (HRTL) is 35.8 percent in the full sample, compared to 46.9 percent among children in households below 250 percent of the federal poverty line (FPL), and 52.0 percent among those whose primary caregiver has a high school degree or less. Similar patterns appear for older children. Grade repetition is 7.9 percent among adolescents (ages 13–17) in the full sample, compared to 11.6 percent among those below 250 percent FPL and 12.0 percent among those with less-educated caregivers. In terms of physical health, obesity prevalence (BMI at or above the 95th percentile) is 15.2 percent among children ages 10–17 in the full sample, rising to 19.8 percent among those in lower-income households and 21.6 percent among those with caregivers with a high school degree or less.[5]

Although these differences are modest in magnitude individually, they are remarkably consistent across outcomes and across alternative definitions of disadvantage. This consistency is further reflected in differences in household resources: children in lower-education households have substantially lower income-to-needs ratios and higher rates of cash assistance receipt than those in the full sample. Demographic composition also varies systematically across groups. Disadvantaged households have a higher share of Latino children and, particularly among older children, a higher share of children born outside the United States. Caregiver characteristics follow similar gradients: caregivers in lower-income and lower-education households are younger on average, more likely to be unmarried, more likely to be foreign-born, and less attached to the labor force. These patterns indicate that economic disadvantage and lower caregiver education co-occur with demographic and household characteristics that may independently affect child outcomes. We account for these factors in subsequent analyses examining how policy design differentially affects these groups.

Table 3 extends this picture to the earliest stage of child development, presenting descriptive statistics from the national registry of birth records for singleton births between 2016 and 2019. Comparing the full sample to births among mothers with a high school education or less reveals disparities consistent with those observed in the NSCH data. Preterm birth is more common among less-educated mothers (9.4 percent versus 8.2 percent overall), as is low birth weight (8.0 percent versus 6.6 percent), pointing to worse initial health conditions among this group. These outcome differences align closely with maternal demographic characteristics. Mothers with lower educational attainment are substantially younger at birth, with markedly higher shares of teen births (11.6 percent versus 5.0 percent) and a greater concentration of births among those ages 20–24; higher-educated mothers, by contrast, tend to give birth later, particularly between ages 30 and 39. Births to less-educated mothers are also more likely to be to Latino mothers (36.6 percent versus 23.8 percent) and to mothers born outside the United States. The limited number of socioeconomic indicators in the birth registry data reinforce these disparities. Mothers with a high school education or less are more likely to be unmarried at birth (57.0 percent versus 36.7 percent) and to rely on Medicaid to finance the delivery (68.5 percent versus 42.5 percent). They are also less likely to receive adequate prenatal care (65.5 percent versus 73.6 percent), suggesting differences in access to or utilization of health services during pregnancy.

[5] The 2022 cohort of children aged 3–5 was born between 2017 and 2019, during the policy 'regimes' captured by our 2019 indices, making this cohort well-suited for examining HRTL outcomes.

Taken together, the descriptive evidence from both datasets indicates that children born to less-educated mothers face worse health conditions at birth and are more likely to grow up in socioeconomically disadvantaged environments. Importantly, while the NSCH allows us to characterize disadvantage along both income (e.g., household poverty status) and caregiver education, the vital records data restrict stratification to maternal education alone. Despite this limitation, the gradients observed in birth outcomes closely mirror those seen in later childhood across both income- and education-based groupings. This consistency suggests that maternal education captures a dimension of socioeconomic disadvantage that is strongly correlated with broader resource constraints observed in household-level data.

More broadly, the two datasets provide complementary views of disadvantage across the life course. The NSCH captures contemporaneous household conditions, including income, program participation, and demographic characteristics, while the birth records reflect conditions at the time of birth, when early-life health endowments are determined. Across both sources, disadvantage is systematically associated with poorer outcomes and with demographic characteristics that may independently shape child development. These patterns underscore the importance of examining how policy environments affect families across the socioeconomic distribution, particularly among those most likely to be targeted by cash assistance programs.

Cash assistance, parental investment and child human capital: conceptual framework

Theories of human capital formation, broadly considering cognitive, socio-emotional and physical health, underlying a family investment framework in economics posit how increases in net household resources impact children's development. We consider the human capital accumulation formulation in the spirit of Attanasio et al. (2022) and Cunha and Heckman (2007) ((2007)).

$$C_{t+1} = f^j(I_t; C_t, \kappa),$$

emphasizing the role of parental investments I_t (conditional on past stocks and parental/household characteristics).

Our conceptualizing focuses on dimensions that affect the household budget constraint. i.e. sources of income. For simplicity, we assume no savings or income from other non-earnings or non-governmental sources. In particular, we assume an income generation process (which follows a Becker-style "transformation technology") which reflects household earnings (first term) and government transfers (second term):

$$Y_t = y^e(T_t^e, X_t^e; \lambda^e) + y^g\left(T_t^g, X_t^g; \lambda^g\right)$$

Within this formulation, the λ_g term captures state-level design features of government transfer programs that are proposed to influence accessibility and receipt of government social program income. In practical terms, it is conceptualized as the gateway that translates formal program eligibility into actual receipt.

Cash assistance, household poverty and child outcomes: Empirical specifications

We estimate the effect of household economic resources associated with social welfare on child outcomes using three complementary empirical strategies. First, we estimate a reduced-form specification (baseline model) relating policy design indices to child outcomes and to proposed mechanisms, including household income-to-needs, employment, marriage, and fertility. Second, we extend this framework to allow for heterogeneous effects of policy design across groups, incorporating state fixed effects and interactions with a measure of household disadvantage. Third, we implement a two-stage estimation strategy to formalize the relationship between household resources and child outcomes, leveraging policy design as a source of variation in cash assistance receipt.

Reduced-form models: Our empirical approach exploits cross-state differences in the design and implementation of social programs, particularly the Temporary Assistance for Needy Families (TANF) program. These differences are captured by composite indices, ADB_s and OCM_s, which measure administrative burden and operational cost minimization, respectively. We hypothesize that higher values of these indices reduce household resources by lowering the likelihood of receiving cash assistance, with stronger effects among households facing greater economic disadvantage.

Let h index households and s index states. Let Y_{hs} denote the household income-to-needs ratio, and let C_{hs} represent child outcomes, capturing dimensions of human capital such as health and educational attainment. We estimate the following reduced-form specification:

$$C_{hs} = \alpha + \beta_1 ADB_s + \beta_2 OCM_s + \beta_3 (ADB_s \times OCM_s) + \gamma_1 X_{hs} + \gamma_2 Z_s + \varepsilon_{hs}.$$

Here, X_{hs} is a vector of household- and child-level controls, including caregiver characteristics, household composition, and child demographics, and Z_s captures state-level characteristics, including measures of poverty prevalence and intensity. Standard errors are clustered at the state level. The coefficients β_1 and β_2 capture the total effect of policy design on child outcomes, operating through all channels, including but not limited to household economic resources.

Heterogeneous effects with state fixed effects: We extend the reduced-form specification to examine differential impacts of policy design across households with varying levels of disadvantage. Let D_{hs} denote an indicator for more disadvantaged households, defined based on observable characteristics such as low income or low caregiver education. We estimate:

$$\begin{aligned} C_{hs} = \quad & \alpha_s + \beta_1 ADB_s + \beta_2 OCM_s + \beta_3 (ADB_s \times OCM_s) \\ & + \delta_1 (ADB_s \times D_{hs}) + \delta_2 (OCM_s \times D_{hs}) \\ & + \phi (ADB_s \times OCM_s \times D_{hs}) \\ & + \gamma_1 X_{hs} + \gamma_2 Z_s + \gamma_3 D_{hs} + \rho (Z_s \times D_{hs}) + \varepsilon_{hs}, \end{aligned}$$

where α_s denotes state fixed effects. Identification in this specification arises from within-state variation across households with different levels of disadvantage. The interaction terms capture how the effects of administrative burden and cost minimization differ for more disadvantaged households relative to others. In our estimations we define disadvantage either with placement on the distribution of income or with caretaker/mother's educational attainment.

To further examine mechanisms, we also estimate the relationship between policy design and household resources:

$$Y_{hs} = \pi + \delta_1 ADB_s + \delta_2 OCM_s + \delta_3 (ADB_s \times OCM_s) + \theta_1 X_{hs} + \theta_2 Z_s + u_{hs},$$

which we also employ to investigate alternative mechanisms such as employment, marriage, and fertility.

Two-stage estimation: We implement a two-stage least squares (2SLS) framework in samples where Y_{hs} is observed. In the first stage, household income-to-needs is modeled as above. In the second stage, we estimate:

$$C_{hs} = \alpha + \theta \hat{Y}_{hs} + \gamma_1 X_{hs} + \gamma_2 Z_s + \varepsilon_{hs},$$

where $\hat{Y}_{hs}$ is the predicted value of household resources from the first stage. The coefficient θ captures the effect of variation in household resources on child outcomes, where the variation of income we investigate is the one that is policy-design-induced.

Identification relies on the exclusion restriction that ADB_s and OCM_s affect child outcomes only through their impact on household economic resources. Potential violations may arise if policy design directly affects children through non-income channels, such as parental stress associated with administrative complexity. We address these concerns by aggregating multiple policy features into indices, including a rich set of controls, focusing on outcomes linked to sustained economic conditions, and conducting over-identification tests.

In these exercises we also assess instrument relevance employing usual first-stage F-statistics. Because our identification strategy relies on a strong relationship between policy design and household resources, weak instruments would reduce precision and potentially bias estimates. We believe the indices used here are constructed from multiple independent policy features, which helps mitigate measurement error and strengthen the first-stage relationship.

Finally, we conduct robustness checks using alternative index constructions, additional state-level controls, and placebo outcomes using indices derived from a non-cash transfer program design.

Results

Findings are presented in Figure 4 and Table 4. Across empirical specifications, the cost minimization index (OCM_s) exhibits a strong and consistent relationship with child outcomes. Higher levels of cost minimization are associated with worse outcomes across multiple domains. For example, among households with $\leq 250\%$ FPL, a one standard deviation increase in OCM_s is associated with increases in the probability of obesity (1.72 percentage points), grade repetition (1.68 percentage points), and not being on track for kindergarten readiness, although the latter is less precisely estimated. Similar patterns hold among households defined by caregiver education, where the magnitude of effects is often larger, particularly for school readiness outcomes.

The administrative burden index (ADBs) shows less consistent relationships. ABD is associated with increases in grade repetition and HRTL not on track in the income-stratified sample, with

effects observed near the average level of cost minimization. Administrative burden has a smaller marginal effect in states where cost minimization is already high, consistent with eligibility restrictions alone being sufficient to exclude the most disadvantaged households. For preterm birth, by contrast, the interaction is positive and significant, indicating that administrative burden and cost minimization compound for this outcome.

The interaction results by subgroup, reported in Table S1, further reinforce these findings. The adverse effects of cost minimization are concentrated among more disadvantaged households, particularly those with lower levels of caregiver education. For instance, the interaction between the "HS or less" indicator and OCM_s is positive and statistically significant for obesity and birth outcomes, indicating that the detrimental effects of restrictive policy design are disproportionately borne by households with lower socioeconomic status. Comparable interaction patterns are observed when stratifying by income, although estimates are less precise.[6]

Mechanisms.

Figure 5 and Table 5 present first-stage and second-stage estimates linking policy design to household resources and, subsequently, to child outcomes. In the first stage, the cost minimization index is strongly predictive of household income-to-needs, with coefficients that are consistently positive and statistically significant across samples. This indicates that states with higher cost minimization tend to be associated with lower household resources, consistent with reduced access to cash assistance. In contrast, administrative burden alone does not exhibit a consistent independent relationship with income, though its interaction with cost minimization contributes to variation in some specifications. The first stage is strong for BMI and grade repetition samples in both stratifications (under-identification test $p < 0.05$ in all cases). For HRTL, the first stage is weaker, particularly in the education-stratified sample, where the under-identification test fails to reject and 2SLS estimates for this outcome should be interpreted with caution.

Second-stage estimates show that higher household income-to-needs is associated with improved child outcomes, particularly for obesity and grade repetition. For example, a one-unit increase in predicted income-to-needs is associated with a reduction in obesity and grade repetition probabilities in both income- and education-based samples. As argued above, these results support the interpretation that the primary channel through which policy design affects child outcomes operates via household economic resources, rather than alternative mechanisms.

Importantly, complementary reduced-form estimates of other potential mechanisms (Table S3) show no evidence that policy design affects employment, marriage, fertility, or household composition in a systematic way. Coefficients on both ADB_s and OCM_s are generally small and imprecisely estimated across these outcomes. This further reinforces the hypothesis that income is the primary mediating channel linking policy design to child outcomes in this context.

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[6] As shown in Table S2, specifications that define disadvantage using extreme poverty thresholds yield qualitatively similar directional effects, though statistical significance is weaker, likely reflecting smaller sample sizes and reduced variation within those subsamples.

Sensitivity, robustness, and placebo tests. Table S4 reports estimates combining administrative burden and cost minimization into a single index. Results remain qualitatively similar, with the combined index positively associated with worse child outcomes, though the decomposition into separate dimensions provides greater interpretability.

Second, we examine whether similar relationships emerge when applying codifying similar state-level theory-driven policy indices for the Supplementary Nutrition Assistance Program (Tables S5 through S8). In contrast to the basic cash assistance indices, SNAP policy design shows weaker and less consistent relationships with child outcomes. This is consistent with the interpretation that fungibility and direct income support play a distinct role in shaping household resource allocation relative to in-kind transfers.

The consistency of results across alternative samples, outcome definitions, and model specifications support the robustness of the main findings. Across all empirical models and exercises, cost minimization emerges as the dominant policy dimension influencing both household resources and child outcomes, with administrative burden playing a secondary role when such design features are combined with restrictive program design.

Discussion

How design of cash assistance policies impact family economic sources and children's developmental outcomes remains a key substantive and policy question of interest. Prior empirical research typically assumes full uptake of benefits as intended (Wu and Moffitt, 2022) and capitalizes on specific features of amount, frequency, source, and/or the time-limited nature of cash infusion to identify causal impacts on various social welfare outcomes (Finkelstein and Notowidigdo 2019; Ginther and Johnson-Motoyama 2022; Homonoff 2020; Johnson-Motoyama, Ginther, et al. 2022; Cook and East 2023). Our approach challenges the assumption of full benefit uptake. We approach the question of policy design from a broader social welfare perspective and empirically codify the collective bundle of policy design features at the discretion of policy makers for the only federally legislated cash assistance program in the U.S. We show economically meaningful variation in state policy design that is not attributed to rates of poverty. Estimates reveal plausibly causal linkages of cash assistance policy design to household income and children's development. As such, findings inform trade-offs in state-level policy discretion versus federal authority over the design and implementation of social assistance programs.

Policy features designed to minimize government operational costs through restricted eligibility reduce receipt of cash assistance, increase household poverty, and result in unfavorable impacts on children's health and schooling outcomes among households with low income and low caregiver education—the populations these programs are intended to serve. Administrative burden has smaller and less consistent effects interacting with policy features that minimize government operational costs.

To calibrate the developmental magnitude of these effects: a one standard deviation increase in OCM is associated with a 1.68 percentage point increase in grade repetition among low-income households. Grade retention carries well-documented long-run costs, including reduced

educational attainment and lifetime earnings. This suggests that state policy design not only influences household poverty but also downstream human capital.

How administrative burden policy features and cost minimization policy features reinforce or counteract each other appears to differ by children's age or outcome. For grade repetition, administrative burden and cost minimization act as partial substitutes—administrative burden's independent effect is largest where cost minimization is closer to average, and smaller where cost minimization is already high, consistent with restrictive eligibility rules alone being sufficient to reduce reach. For preterm birth, by contrast, the two dimensions reinforce each other.

The effects of state policy design on children's outcomes—operating, in the case of OCM, through changes in household economic resources—are consistent with a large empirical literature linking income to child development. Evidence from EITC expansions and related cash transfer policies documents improvements in birth outcomes, obesity risk, school readiness, and grade progression (Strully, Rehkopf, and Xuan 2010; Hoynes, Miller, and Simon 2015; National Academies of Sciences, Engineering, and Medicine 2019). Birth weight and early school readiness are most responsive to income variation during pregnancy and early childhood, while outcomes such as obesity and grade repetition reflect the cumulative effects of sustained economic disadvantage. That policy design generates detectable effects across this developmental spectrum is itself a substantive finding: it suggests that the well-documented limited effectiveness of basic cash assistance through TANF as a poverty-reduction tool (National Academies of Sciences, Engineering, and Medicine 2019; Schmidt, Shore-Sheppard, and Watson 2025) may be partly attributable to design choices made by states, rather than solely to the modest level of monthly benefits.

This study has limitations. These include potential violations of identification assumptions related to within-state variation, the imperfect translation of formal policy rules into on-the-ground implementation, and limited ability to separately identify multiple behavioral and institutional channels beyond overall household income. In addition, the set of child outcomes examined is constrained by data availability. We leave these challenges to future research.

Conclusion

This study provides evidence that state decisions around design of cash assistance and related cash transfer programs can be consequential. Operational cost minimization, through targeting and constrained administrative capacity, reduces cash assistance receipt and increases household poverty among families the program is intended to reach. Administrative burden compounds this effect in states where cost minimization is low, perhaps functioning as the binding constraint on take-up where upstream restrictions are absent. The downstream consequences extend to children: poverty attributable to these design choices unfavorably affects birth weight, obesity risk, grade retention, and kindergarten readiness, across outcomes with well-established sensitivity to household income (Strully, Rehkopf, and Xuan 2010; Hoynes, Miller, and Simon 2015; National Academies of Sciences, Engineering, and Medicine 2019). These findings do not adjudicate which specific design features should change but offer a full social welfare view on how policy design choices have measurable and developmentally meaningful impacts household

economic resources and children. We emphasize that this is a consequence that becomes more salient when federal authority over basic income support and related government benefit programs may increasingly devolve to state and local discretion.

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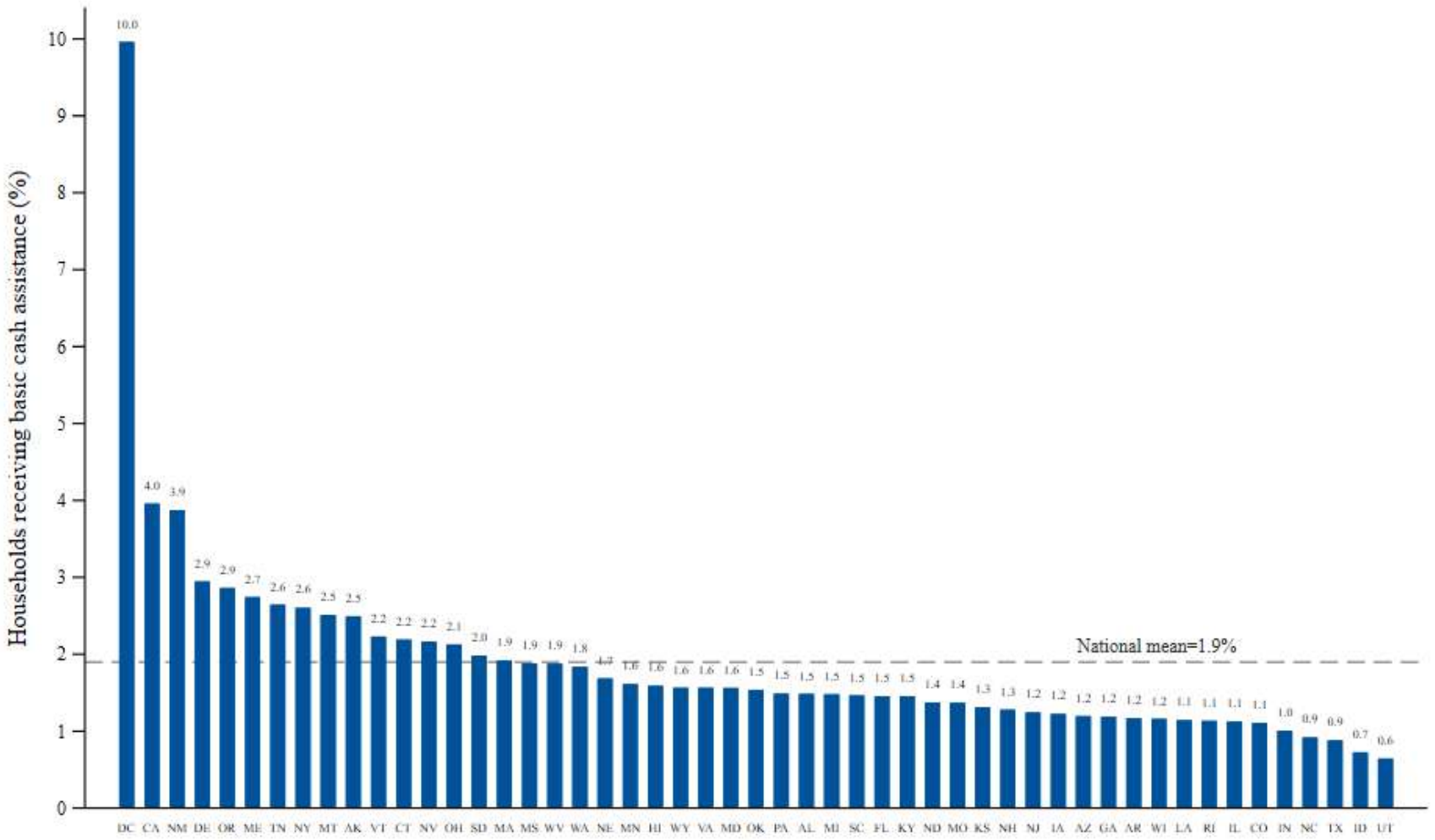


Figure 1: Ranked state-level basic cash assistance cash-assistance receipt rates (CPS, 2016–2019)

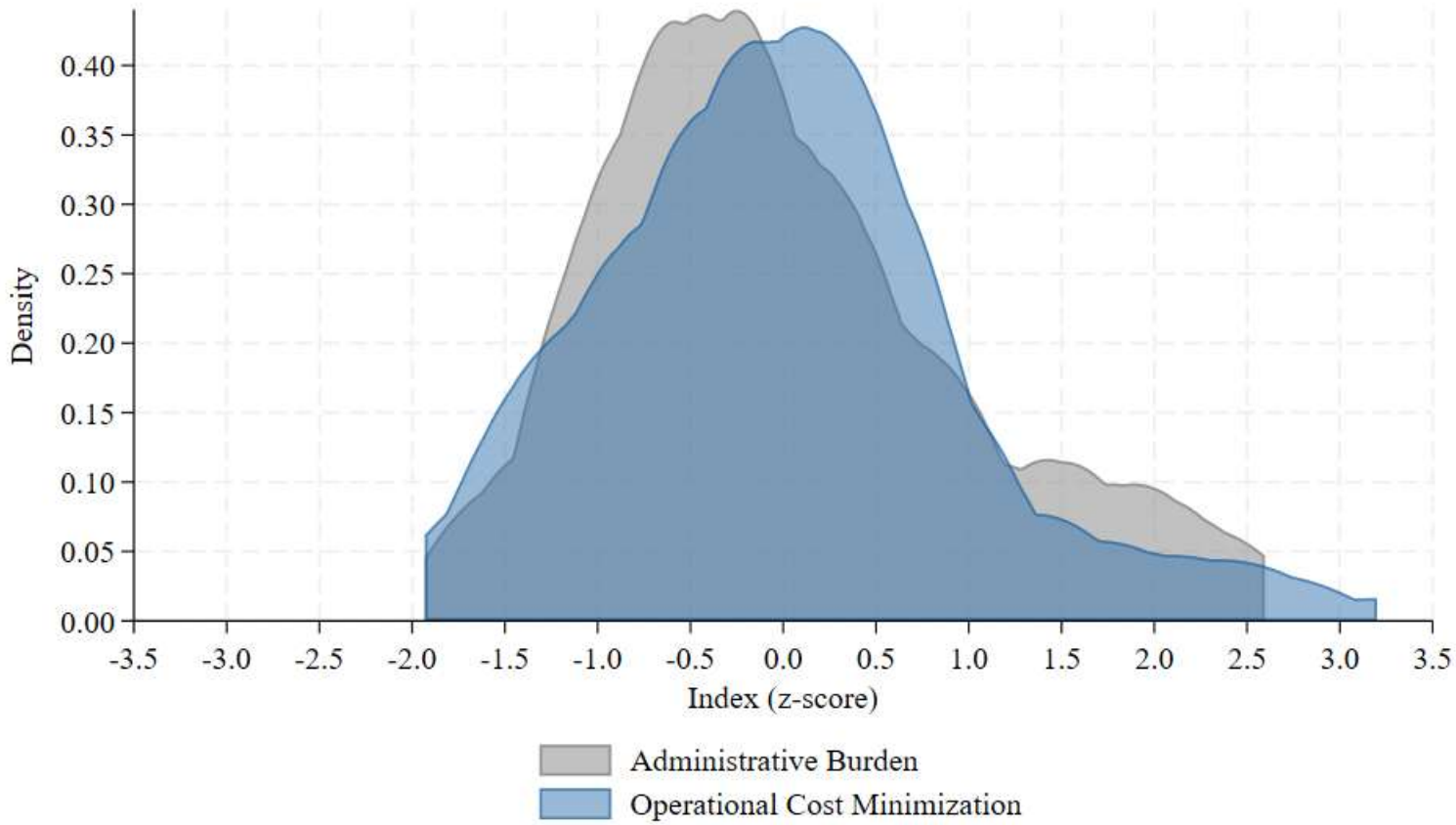


Figure 2: Distribution of basic cash assistance policy design indices across states: Administrative Burden (ADB) and Operational Cost Minimization (OCM)
Note: Index scores estimated via one-parameter IRT model; standardized to z-scores

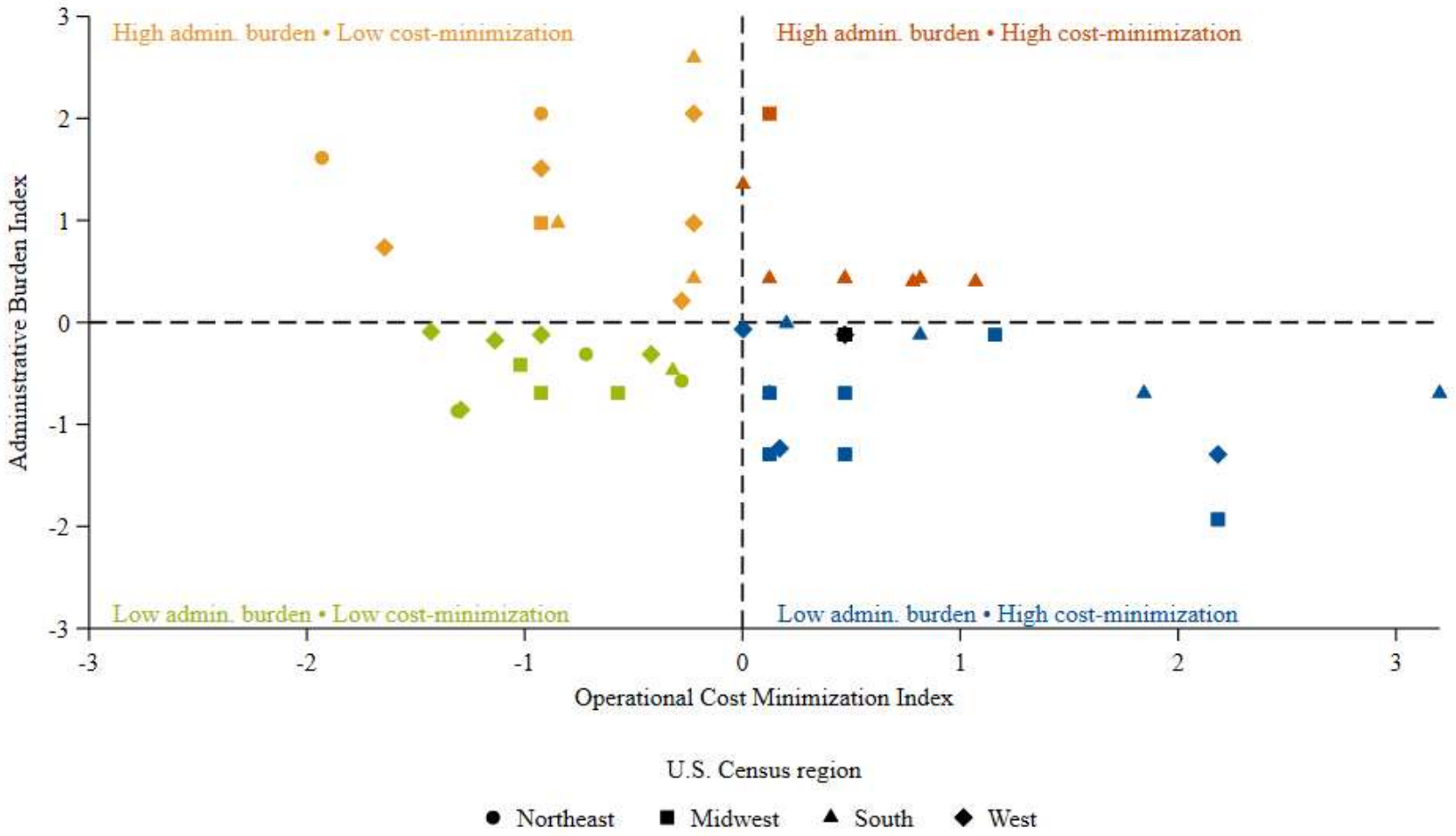
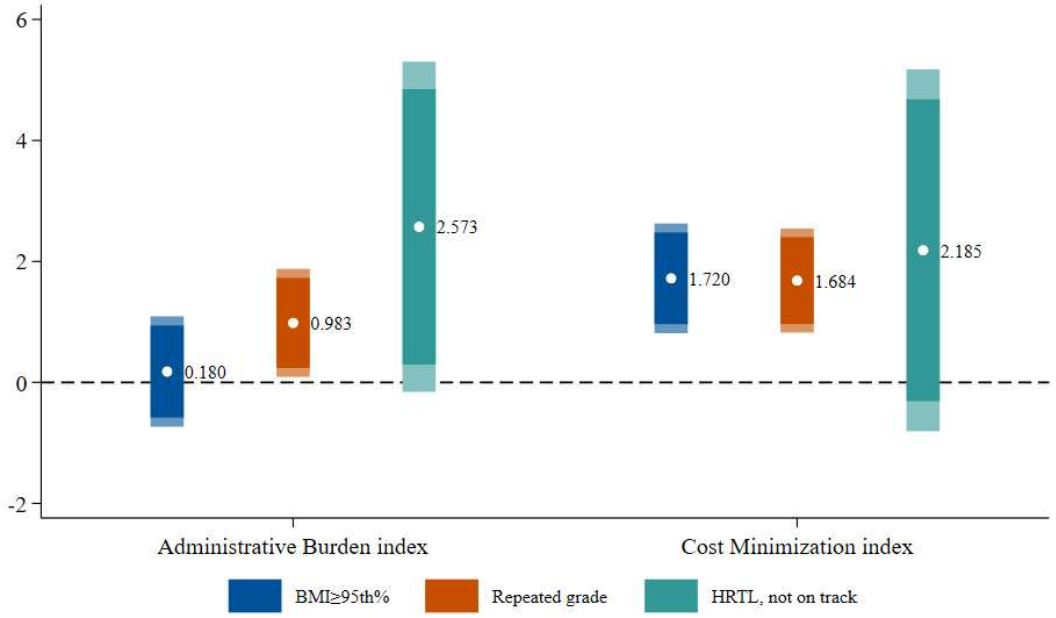


Figure 3: State-level basic cash assistance policy design space: Where States Fall on Administrative Burden (ADB) and Operational Cost Minimization (OCM) indices

Panel A: income-to-needs ≤250%



Panel B: Primary caregiver with high-school education or less

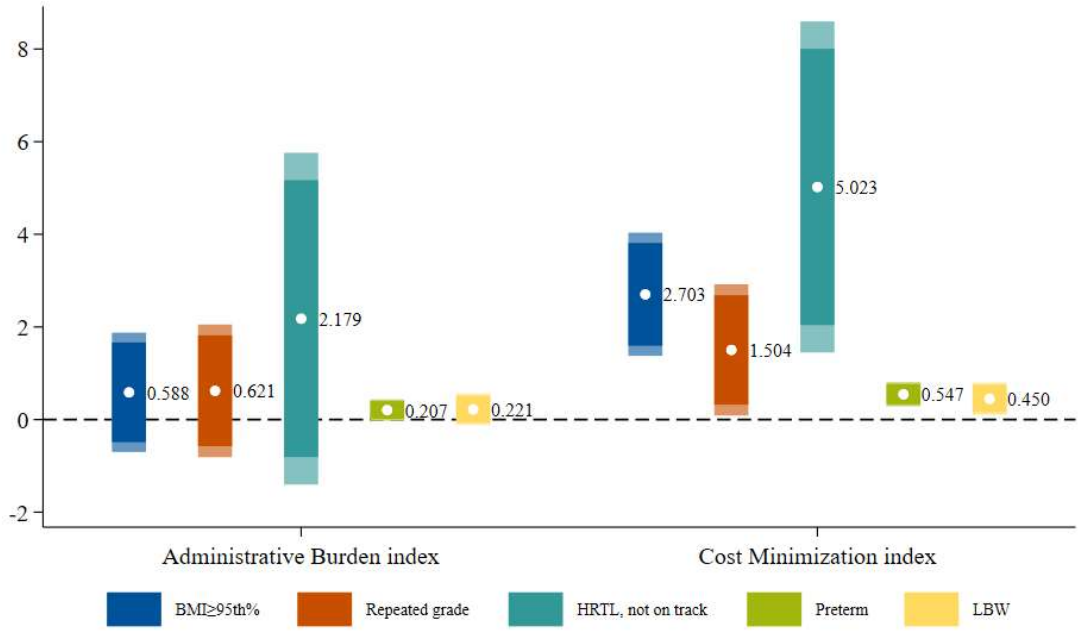
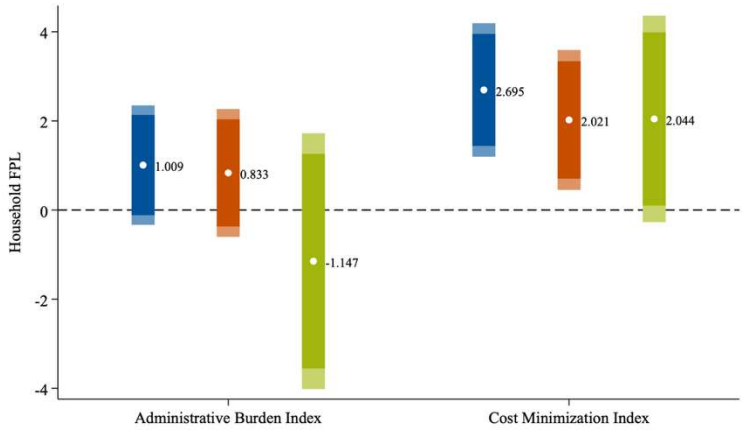


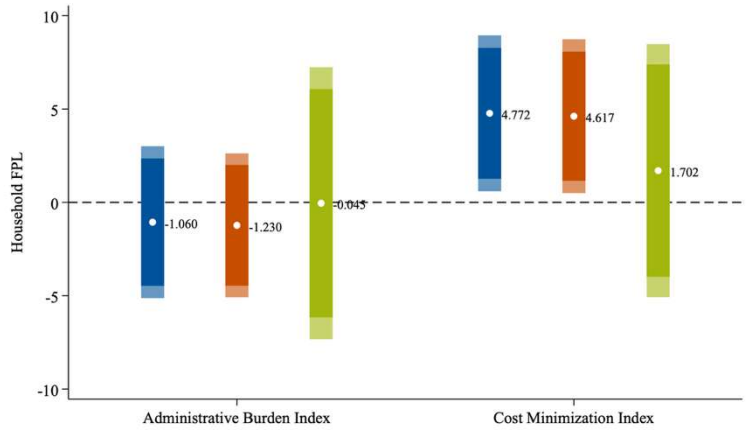
Figure 4: Reduced-form effects of basic cash assistance policy design indices on child health and schooling outcomes. NSCH households with ≤250% FPL, NSCH households with primary caregiver with HS education or less, and national registry data births to mothers with HS education or less

Note: Panel A uses NSCH 2016–2019 (income stratification); Panel B uses NSCH 2016–2019 and birth records 2016–2019 (education stratification). Birth outcomes (preterm, LBW) are from national registry data and appear in Panel B only. Dark shading on bars represents 90% CI and light shading on bars represents 95% CI

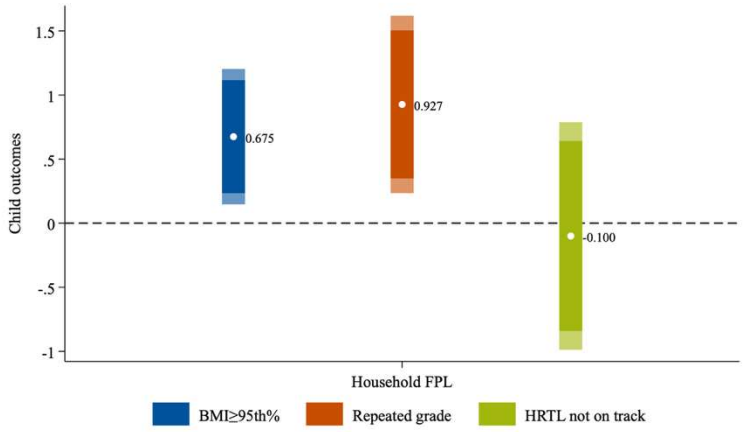
Panel A: Income-to-needs FPL≤250, first-stage



Panel C: Primary caregiver with high-school education or less, first-stage



Panel B: Income-to-needs FPL≤250, second-stage



Panel D: Primary caregiver with high-school education or less, second-stage

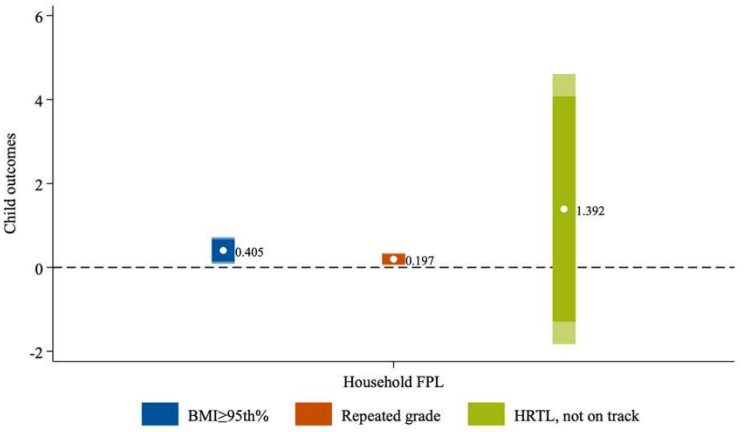


Figure 5: Two-stage least squares estimates: basic cash assistance policy design indices as instruments for housing income effects on child outcome. NSCH households with ≤250% FPL and NSCH households with primary caregiver with HS education or less
Note: NSCH 2016–2019. Panels A and B: income-to-needs ≤250% FPL sample. Panels C and D: primary caregiver with HS education or less sample. Dark shading on bars represents 90% CI and light shading on bars represents 95% CI

Table 1: Decomposing cross-state variation in basic cash assistance receipt rates: contributions of poverty prevalence, poverty intensity, and residual factors

	Poverty prevalence	Poverty intensity	Residual
	(1)	(2)	(3)
TANF Receipt Rates	0.08	0.09	0.89
	[-0.02,0.18]	[0.01,0.18]	[0.75,1.04]
Observations	51	51	51

Note: Coefficients from log variance decomposition regressions; 95% confidence intervals in brackets.

Table 2: Descriptive statistics National Survey of Children's Health (NSCH), 2016–2019 and 2022

	All				≤250% FPL				Primary caregiver with HS education or less			
Age of children in sample	2022 3-5	2016-19 0-17	2016-19 10-17	2016-19 13-17	2022 3-5	2016-19 0-17	2016-19 10-17	2016-19 13-17	2022 3-5	2016-19 0-17	2016-19 10-17	2016-19 13-17
Program Receipt												
Basic cash assistance	4.8	3.9	3.4	3.6	8.6	6.9	6.0	6.6	10.8	8.0	6.7	7.3
Income												
FPL≤250% (share)	46.3	49.5	47.7	47.9	100.0	100.0	100.0	100.0	84.5	81.5	78.1	77.4
Mean FPL [sd]	258.7 [126.2]	250.5 [126.8]	256.5 [125.4]	255.5 [125.9]	137.0 [63.3]	135.7 [62.3]	138.6 [62.2]	137.6 [61.9]	152.0 [98.5]	158.0 [103.5]	170.9 [107.7]	173.2 [108.9]
Outcomes												
BMI ≥95th percentile			15.2				19.8				21.6	
Repeated grades since kindergarten				7.9				11.6				12.0
HRTL, not on track	35.8				46.9				52.0			
Child Demographics												
Age [sd]	4.0 [0.8]	8.6 [5.2]	13.5 [2.3]	15.0 [1.4]	4.0 [0.8]	8.5 [5.1]	13.5 [2.3]	15.0 [1.4]	4.0 [0.8]	9.1 [5.1]	13.6 [2.3]	15.0 [1.4]
Male	51.5	50.7	51.0	51.3	52.4	50.7	50.7	50.4	52.9	51.1	50.6	50.6
Latino	19.3	17.5	17.1	17.3	26.0	24.3	24.3	24.7	33.9	31.1	30.9	31.2
Special Health Care Needs	15.0	19.7	25.4	25.8	17.7	21.7	27.1	27.1	16.8	20.1	23.6	23.5
Born outside US	1.7	3.5	4.3	5.2	2.2	4.4	5.4	6.8	0.8	4.8	5.7	7.3
Primary Caregiver Demographics												
HS education or less	23.7	26.6	27.8	29.1	43.2	43.7	45.6	47.0	100.0	100.0	100.0	100.0
Education missing	0	0.5	0.5	0.5	0	0.8	0.7	0.7	0	0	0	0
Born outside US	16.8	16.3	16.1	16.9	22.3	21.5	22.2	23.5	27.0	27.4	28.3	29.3
Age [sd]	38.1 [9.0]	41.0 [9.7]	45.3 [8.5]	46.5 [8.3]	37.8 [10.8]	40.2 [10.8]	44.3 [9.6]	45.5 [9.4]	37.2 [11.2]	41.0 [11.3]	44.9 [10.0]	45.9 [9.6]
Age missing	0.5	0.7	0.4	0.7	0.9	1.1	0.6	1.3	1.1	1.2	0.7	1.4
Not married	25.2	27.5	28.8	29.8	40.6	41.7	42.9	43.9	45.8	42.3	40.0	40.2
Marital status missing	1.2	0.8	0.8	0.7	1.8	1.1	1.0	1.0	1.9	1.0	0.9	0.9
Employed <50 weeks		28.9	26.3	26.2		40.7	37.9	37.8		42.4	39.1	38.6
Employment missing		0.9	0.9	0.8		1.2	1.2	1.0		1.2	1.1	1.0
Observations												
Number of children	10,787	129,148	64,838	45,175	3,777	45,516	21,366	14,848	1,457	18,880	9,855	7,137

Table 3: Descriptive statistics, National Birth Registry Records, 2016–2019, singleton births

	All births	HS education or less
Outcomes		
Gestation		
Preterm (<37 weeks)	8.2	9.4
Birth weight		
Low birth weight (<2500g)	6.6	8.0
Child Demographics		
Male	51.2	51.1
Latino	23.8	36.6
Mother Demographics		
Born outside US	23.0	28.1
Under 15	0.05	0.13
15-19	5.0	11.6
20-24	19.8	31.1
25-29	29.1	27.9
30-34	28.4	17.9
35-39	14.4	9.0
40-44	3.0	2.2
45-49	0.19	0.14
50-54	0.02	0.008
Other Characteristics		
HS education or less	38.6	100.0
Education missing	0.81	0
Not married at birth	36.7	57.0
Marital status missing	8.8	8.5
Adequate or better PNC	73.6	65.5
PNC index missing	3.1	3.5
Birth paid by Medicaid	42.5	68.5
Birth payment missing	0.59	0.63
Observations		
Number of births	14,647,501	5,654,600

Table 4: Reduced form, NSCH households with ≤250% FPL, NSCH households with primary caregiver with HS education or less, and births to mothers with HS education or less

	≤250% FPL			Primary caregiver with HS education or less			Births to mothers with a HS education or less	
	BMI ≥95%	Repeated grade	HRTL not on track	BMI ≥95%	Repeated grade	HRTL not on track	Preterm	Low birth weight
Administrative Burden index	0.180	0.983**	2.573*	0.588	0.621	2.179	0.207*	0.221
	(0.454)	(0.445)	(1.359)	(0.642)	(0.713)	(1.784)	(0.114)	(0.170)
Cost Minimization index	1.720***	1.684***	2.185	2.703***	1.504**	5.023***	0.547***	0.450**
	(0.452)	(0.428)	(1.489)	(0.662)	(0.706)	(1.779)	(0.130)	(0.173)
Administrative Burden x Cost Minimization index	-0.033	-0.579*	-0.253	0.285	-0.038	0.324	0.183***	0.071
	(0.390)	(0.331)	(1.086)	(0.580)	(0.607)	(1.346)	(0.054)	(0.071)
State level poverty intensity	0.183	0.534***	-0.082	0.184	0.617***	0.150	0.071**	0.089**
	(0.128)	(0.135)	(0.297)	(0.184)	(0.184)	(0.593)	(0.033)	(0.037)
State level poverty prevalence	0.064	0.127	0.107	-0.066	0.141	0.490	0.033	0.010
	(0.092)	(0.097)	(0.251)	(0.155)	(0.142)	(0.384)	(0.023)	(0.028)
Mean value of outcome	19.8	11.6	46.9	21.6	12.0	52.0	9.4	8.0
Observations	21,366	14,848	3,777	9,855	7,137	1,457	5,654,600	5,654,600

Table 5: Two-stage least squares estimates: effects of household income on child outcomes, instrumented by basic cash assistance policy design indices

	≤250% FPL			Primary caregiver with HS education or less		
Panel A: First stage, predicting income	BMI sample	Repeated grade sample	HRTL sample	BMI sample	Repeated grade sample	HRTL sample
Administrative Burden index	1.009	0.833	-1.147	-1.060	-1.230	-0.045
	(0.684)	(0.731)	(1.463)	(2.075)	(1.966)	(3.715)
Cost Minimization index	2.695***	2.021**	2.044*	4.772**	4.617**	1.702
	(0.764)	(0.801)	(1.181)	(2.131)	(2.103)	(3.456)
Administrative Burden x Cost Minimization index	0.490	-0.283	1.069	-0.586	-1.185	-1.114
	(0.524)	(0.495)	(1.606)	(1.508)	(1.404)	(2.533)
State level poverty intensity	1.124***	1.278***	0.653	1.276**	1.302*	0.775
	(0.284)	(0.306)	(0.518)	(0.616)	(0.668)	(0.992)
State level poverty prevalence	0.325**	0.183	0.647**	1.569***	1.372***	1.486***
	(0.161)	(0.186)	(0.297)	(0.392)	(0.413)	(0.485)
Panel B: Second stage	BMI ≥95%	Repeated grade	HRTL not on track	BMI ≥95%	Repeated grade	HRTL not on track
Household FPL	0.675**	0.927***	-0.100	0.405**	0.197***	1.392
	(0.263)	(0.345)	(0.442)	(0.157)	(0.071)	(1.603)
State level poverty intensity	-0.580	-0.653	-0.073	-0.338	0.354	-0.965
	(0.402)	(0.568)	(0.361)	(0.364)	(0.264)	(1.972)
State level poverty prevalence	-0.168	-0.041	0.363	-0.647**	-0.083	-1.405
	(0.138)	(0.221)	(0.401)	(0.275)	(0.199)	(2.636)
Mean value of outcome	19.8	11.6	46.9	21.6	12.0	52.0
Observations	21,366	14,848	3,777	9,855	7,137	1,457
Underidentification test	8.286	9.082	7.672	8.917	9.877	1.027
Chi-sq P-val	0.040	0.028	0.053	0.030	0.020	0.795
Hansen J statistic	1.118	0.627	3.554	1.395	1.588	0.341
Chi-sq P-val	0.572	0.731	0.169	0.498	0.452	0.843

Note: NSCH 2016–2019, income-to-needs ≤250% FPL and HS education or less samples. Standard errors clustered at the state level in parentheses.

Supplement

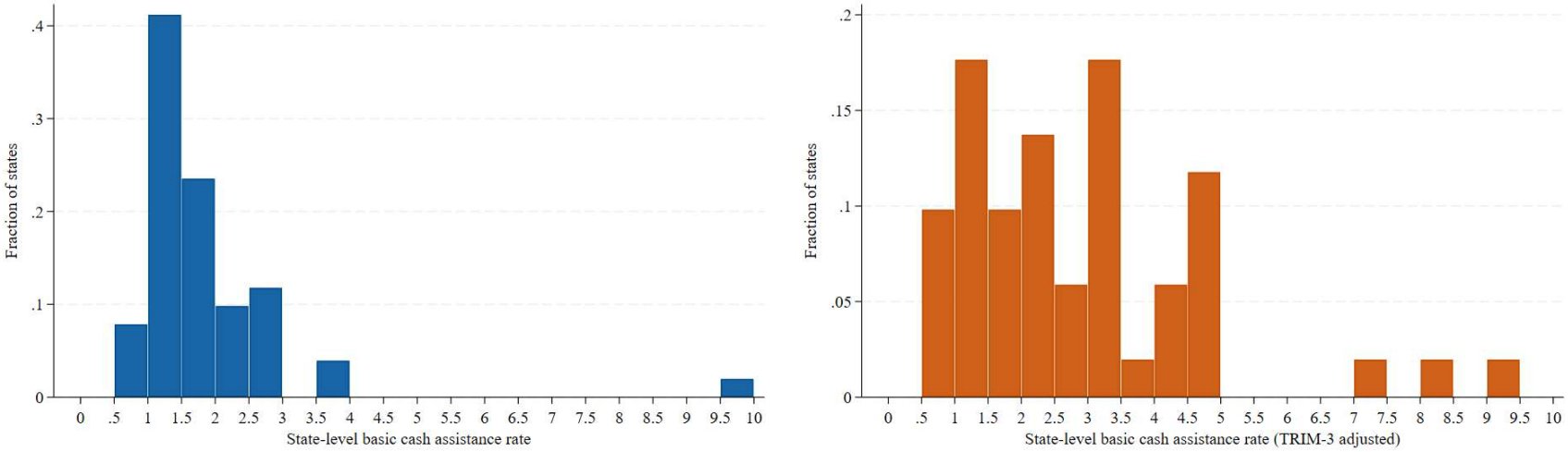


Figure S1: Distribution of basic cash assistance receipt rates across states: self-reported and TRIM-3 adjusted distributions (CPS, 2016–2019)

Table S1. State fixed-effects reduced form results differential impacts of indices (College+ caregiver is reference group)

	BMI ≥95%	Repeated grade	HRTL, not on track	Preterm	Low birth weight
(HS or Less) * Administrative Burden index	0.258	0.362	0.458	0.023	0.084
	(0.662)	(0.598)	(2.597)	(0.095)	(0.206)
(HS or Less) * Cost Minimization index	1.544*	0.894	4.048*	0.326***	0.502**
	(0.791)	(0.633)	(2.176)	(0.107)	(0.221)
(HS or Less) * Administrative Burden x Cost Minimization index	0.437	0.294	-0.382	0.099*	0.005
	(0.682)	(0.554)	(1.564)	(0.050)	(0.095)
(HS or Less) * State level poverty intensity	-0.028	0.531***	0.433	0.031	0.067
	(0.161)	(0.170)	(0.697)	(0.026)	(0.041)
(HS or Less) * State level poverty prevalence	-0.122	0.030	0.441	-0.003	-0.038
	(0.155)	(0.124)	(0.465)	(0.014)	(0.025)
(Some college) * Administrative Burden index	0.388	0.444	1.833	0.038	0.100
	(0.457)	(0.438)	(2.091)	(0.081)	(0.107)
(Some college) * Cost Minimization index	0.545	1.125**	0.972	0.215**	0.244**
	(0.467)	(0.549)	(1.920)	(0.082)	(0.106)
(Some college) * Administrative Burden x Cost Minimization index	0.178	0.253	-0.821	0.024	-0.006
	(0.398)	(0.520)	(1.417)	(0.033)	(0.048)
(Some college) * State level poverty intensity	0.135	0.199*	0.140	0.052***	0.076***
	(0.110)	(0.102)	(0.471)	(0.019)	(0.022)
(Some college) * State level poverty prevalence	-0.172*	0.148*	-0.396	-0.016	-0.032**
	(0.095)	(0.074)	(0.383)	(0.011)	(0.014)
Mean value of outcome	13.0	6.3	31.2	8.2	6.5
Observations	64,467	44,922	10,787	14,529,114	14,529,114

Table S2: State fixed-effects reduced-form results: differential impacts of indices (FPL ≤130 is reference group)

	BMI ≥95%	Repeated grade	HRTL, not on track
(FPL≤130) * Administrative Burden index	0.030	-0.023	0.972
	(0.724)	(0.588)	(2.357)
(FPL≤130) * Cost Minimization index	0.679	0.908	1.624
	(0.612)	(0.747)	(1.970)
(FPL≤130) * Administrative Burden x Cost Minimization index	0.085	-1.636**	0.666
	(0.434)	(0.642)	(1.533)
(FPL≤130) * State level poverty intensity	0.012	0.505**	0.286
	(0.186)	(0.223)	(0.637)
(FPL≤130) * State level poverty prevalence	-0.144	-0.050	-0.127
	(0.113)	(0.126)	(0.436)
Mean value of outcome	13.0	6.3	31.2
Observations	64838	45175	10787

Table S3: Reduced form: employment, marriage, number of children, and age of child

	≤250% FPL				Primary caregiver with HS education or less			
	Not employed	Not married	Number of children	Age of child	Not employed	Not married	Number of children	Age of child
Administrative Burden index	0.821	-0.976	0.005	-0.037	0.489	-0.444	0.006	0.033
	(0.666)	(0.823)	(0.018)	(0.028)	(0.794)	(0.951)	(0.022)	(0.035)
Cost Minimization index	0.733	1.042	-0.007	-0.011	1.187*	1.071	0.015	-0.003
	(0.590)	(0.770)	(0.014)	(0.028)	(0.686)	(0.889)	(0.017)	(0.036)
Administrative Burden x Cost Minimization index	0.929**	-0.161	0.003	-0.023	0.462	-0.181	0.004	0.050
	(0.449)	(0.613)	(0.012)	(0.025)	(0.466)	(0.643)	(0.015)	(0.031)
State level poverty intensity	-0.194*	1.127***	-0.017***	0.011	0.166	0.960***	-0.012**	-0.004
	(0.105)	(0.324)	(0.005)	(0.008)	(0.139)	(0.331)	(0.005)	(0.008)
State level poverty prevalence	0.399***	-0.262	0.005	0.002	0.447***	-0.305*	0.007*	-0.000
	(0.088)	(0.175)	(0.003)	(0.005)	(0.135)	(0.169)	(0.004)	(0.007)
Mean value of outcome	41.2	41.1	2.4	8.5	42.9	41.8	2.3	9.1
Observations	45,021	45,045	45,516	45,516	18,680	18,713	18,880	18,880

Table S4: Reduced form, NSCH households with ≤250% FPL, NSCH households with primary caregiver with HS education or less, and births to mothers with HS education or less, combined indices

	≤250% FPL			Primary caregiver with HS education or less			Births to mothers with a HS education or less	
	BMI ≥95%	Repeated grade	HRTL not on track	BMI ≥95%	Repeated grade	HRTL not on track	Preterm	Low birth weight
Combined indices (specification 1)								
Administrative Burden & Cost Minimization	1.147**	1.360***	2.931***	1.477**	0.610	3.535**	0.397***	0.325
	(0.470)	(0.492)	(1.068)	(0.601)	(0.656)	(1.682)	(0.136)	(0.194)
State level poverty intensity	0.159	0.497***	-0.120	0.135	0.588***	0.079	0.030	0.063
	(0.128)	(0.139)	(0.312)	(0.188)	(0.186)	(0.600)	(0.041)	(0.042)
State level poverty prevalence	0.084	0.165	0.112	-0.009	0.195	0.585	0.050*	0.024
	(0.096)	(0.112)	(0.227)	(0.162)	(0.153)	(0.392)	(0.025)	(0.030)
Mean value of outcome	19.8	11.6	46.9	21.6	12.0	52.0	9.4	8.0
Observations	21366	14848	3777	9855	7137	1457	5654600	5654600
Combined indices (specification 2)								
Administrative Burden & Cost Minimization	1.617***	1.869***	1.501	2.429***	1.574**	4.600***	0.482***	0.419***
	(0.477)	(0.442)	(1.399)	(0.606)	(0.597)	(1.550)	(0.128)	(0.154)
State level poverty intensity	0.169	0.510***	-0.130	0.164	0.606***	0.126	0.056	0.086**
	(0.129)	(0.139)	(0.299)	(0.186)	(0.186)	(0.581)	(0.036)	(0.037)
State level poverty prevalence	0.045	0.119	0.190	-0.083	0.126	0.473	0.036	0.010
	(0.090)	(0.103)	(0.263)	(0.147)	(0.141)	(0.395)	(0.023)	(0.027)
Mean value of outcome	19.8	11.6	46.9	21.6	12.0	52.0	9.4	8.0
Observations	21,366	14,848	3,777	9,855	7,137	1,457	5,654,600	5,654,600

Table S5: Reduced form, SNAP indices

	≤250% FPL			Primary caregiver with HS education or less			Births to mothers with a HS education or less	
	BMI ≥95%	Repeated grade	HRTL not on track	BMI ≥95%	Repeated grade	HRTL not on track	Preterm	Low birth weight
Administrative Burden index	-0.174	0.756**	0.945	-0.390	1.083*	2.215	0.034	0.124
	(0.457)	(0.376)	(0.977)	(0.557)	(0.632)	(1.608)	(0.118)	(0.123)
Cost Minimization index	-0.705	-0.468	1.623	-0.622	-0.682	1.946	0.270	0.063
	(0.483)	(0.495)	(1.146)	(0.787)	(0.711)	(1.685)	(0.193)	(0.168)
Administrative Burden x Cost Minimization index	-0.538	-0.945***	-2.742***	-0.643	-0.670	-4.948***	-0.323***	-0.322**
	(0.421)	(0.342)	(0.799)	(0.497)	(0.523)	(1.338)	(0.117)	(0.146)
State level poverty intensity	0.112	0.475***	-0.001	0.096	0.552**	0.233	0.058	0.079**
	(0.130)	(0.149)	(0.324)	(0.194)	(0.208)	(0.564)	(0.038)	(0.038)
State level poverty prevalence	0.167	0.237**	0.237	0.091	0.228	0.661*	0.062**	0.037
	(0.107)	(0.116)	(0.197)	(0.166)	(0.152)	(0.344)	(0.027)	(0.027)
Mean value of outcome	19.8	11.6	46.9	21.6	12.0	52.0	9.4	8.0
Observations	21,366	14,848	3,777	9,855	7,137	1,457	5,654,600	5,654,600

Table S6: Two-stage results, SNAP indices

	≤250% FPL			Primary caregiver with HS education or less		
Panel A: First stage, predicting income	BMI ≥95% sample	Repeated grade sample	HRTL not on track sample	BMI ≥95% sample	Repeated grade sample	HRTL not on track sample
Administrative Burden index	0.120	0.107	1.396	1.552	2.346	3.871
	(0.715)	(0.768)	(1.683)	(1.511)	(1.781)	(3.544)
Cost Minimization index	-0.248	-0.849	2.243	-1.014	-1.177	6.727**
	(0.955)	(0.974)	(1.675)	(2.374)	(2.369)	(2.941)
Administrative Burden x Cost Minimization index	-0.346	-0.741	0.730	-0.199	-2.094	-0.077
	(0.705)	(0.781)	(1.722)	(1.584)	(1.729)	(3.648)
State level poverty intensity	1.072***	1.191***	0.826*	1.082	1.139	1.319
	(0.322)	(0.335)	(0.498)	(0.731)	(0.781)	(0.926)
State level poverty prevalence	0.479***	0.319*	0.638**	1.789***	1.570***	1.339***
	(0.181)	(0.186)	(0.287)	(0.426)	(0.462)	(0.434)
Panel B: Second stage	BMI ≥95%	Repeated grade	HRTL not on track	BMI ≥95%	Repeated grade	HRTL not on track
Household FPL	1.814	0.907	0.266	0.060	0.414*	0.277
	(2.211)	(0.575)	(0.346)	(0.389)	(0.226)	(0.248)
State level poverty intensity	-1.813	-0.630	-0.317	0.059	0.098	-0.154
	(2.568)	(0.805)	(0.361)	(0.459)	(0.481)	(0.659)
State level poverty prevalence	-0.713	-0.036	0.108	-0.032	-0.426	0.373
	(1.079)	(0.252)	(0.329)	(0.728)	(0.445)	(0.618)
Mean value of outcome	19.8	11.6	46.9	21.6	12.0	52.0
Observations	21,366	14,848	3,777	9,855	7,137	1,457
Underidentification test	0.666	2.614	5.156	1.168	2.818	5.823
Chi-sq P-val	0.881	0.455	0.161	0.761	0.421	0.121
Hansen J statistic	0.159	1.249	9.068	3.980	0.075	6.576
Chi-sq P-val	0.924	0.535	0.011	0.137	0.963	0.037

Table S7: State fixed-effects reduced-form results: differential impacts of indices (college+ caregiver is reference group), SNAP indices

	BMI ≥95%	Repeated grade	HRTL, not on track	Preterm	Low birth weight
(HS or Less) * Administrative Burden index	-0.816	0.844	2.618	0.057	0.199
	(0.681)	(0.614)	(1.852)	(0.085)	(0.144)
(HS or Less) * Cost Minimization index	-0.584	-0.806	-1.078	0.260*	0.292
	(0.763)	(0.731)	(2.269)	(0.136)	(0.181)
(HS or Less) * Administrative Burden x Cost Minimization index	-0.168	0.003	-4.142**	-0.132	-0.222
	(0.675)	(0.543)	(1.707)	(0.089)	(0.182)
(HS or Less) * State level poverty intensity	-0.077	0.468**	0.310	0.029	0.074*
	(0.175)	(0.196)	(0.686)	(0.023)	(0.038)
(HS or Less) * State level poverty prevalence	-0.032	0.088	0.627	0.007	-0.021
	(0.153)	(0.127)	(0.457)	(0.013)	(0.025)
(Some college) * Administrative Burden index	-0.393	0.196	2.683	0.007	0.060
	(0.341)	(0.292)	(1.817)	(0.075)	(0.089)
(Some college) * Cost Minimization index	-0.082	-0.087	-2.143	0.121*	0.085
	(0.455)	(0.394)	(1.529)	(0.072)	(0.080)
(Some college) * Administrative Burden x Cost Minimization index	-0.230	-0.612**	1.273	-0.108	-0.115
	(0.332)	(0.255)	(1.988)	(0.078)	(0.100)
(Some college) * State level poverty intensity	0.133	0.197**	-0.070	0.051***	0.075***
	(0.136)	(0.094)	(0.469)	(0.019)	(0.023)
(Some college) * State level poverty prevalence	-0.134	0.210***	-0.254	-0.007	-0.018
	(0.097)	(0.070)	(0.368)	(0.011)	(0.015)
Mean value of outcome	13.0	6.3	31.2	8.2	6.5
Observations	64,467	44,922	10,787	14,529,114	14,529,114

Table S8: State fixed-effects reduced-form results: differential impacts of indices (FPL ≤130 is reference group), SNAP indices

	BMI ≥95%	Repeated grade	HRTL, not on track
(FPL≤130) * Administrative Burden index	0.332	0.751	-1.989
	(0.571)	(0.526)	(1.606)
(FPL≤130) * Cost Minimization index	-0.719	-1.585**	1.995
	(0.671)	(0.768)	(2.090)
(FPL≤130) * Administrative Burden x Cost Minimization index	-0.139	-1.272**	-5.072***
	(0.532)	(0.523)	(1.672)
(FPL≤130) * State level poverty intensity	-0.039	0.386	0.411
	(0.199)	(0.234)	(0.579)
(FPL≤130) * State level poverty prevalence	-0.104	0.023	-0.057
	(0.117)	(0.119)	(0.411)
Mean value of outcome	13.0	6.3	31.2
Observations	64,838	45,175	10,787

Table S9. Program Receipt Rates and Policy Design – Latent Class Indices (z-score)

	At average	At average	50% of FPL	75% of FPL	100% of FPL	130% of FPL	150% of FPL
Panel A: Basic Cash Assistance CPS report (mean receipt rate= 4.13%)							
Administrative Burden index	-0.445	-0.488	-1.348	-1.092*	-0.709*	-0.331	-0.200
	(0.351)	(0.344)	(0.855)	(0.611)	(0.394)	(0.276)	(0.230)
Cost Minimization index	-0.746***	-0.909**	-2.844***	-2.384***	-1.584***	-0.678***	-0.273
	(0.260)	(0.350)	(0.864)	(0.628)	(0.387)	(0.223)	(0.174)
Administrative Burden index x Cost Minimization index	-0.198	-0.255	-1.281**	-0.918**	-0.411	0.059	0.195
	(0.184)	(0.214)	(0.574)	(0.415)	(0.255)	(0.166)	(0.136)
Panel B: Basic Cash Assistance CPS TRIM-3 imputed reports (mean receipt rate= 6.79%)							
Administrative Burden index	-0.679	-0.489	-0.532	-0.453	-0.524	-0.569	-0.502
	(0.576)	(0.481)	(1.256)	(0.888)	(0.591)	(0.423)	(0.334)
Cost Minimization index	-2.529***	-2.252***	-5.390***	-3.969***	-2.544***	-1.291***	-0.843**
	(0.522)	(0.549)	(1.339)	(0.982)	(0.649)	(0.433)	(0.341)
Administrative Burden index x Cost Minimization index	-1.181***	-1.221***	-3.637***	-2.761***	-1.637***	-0.562*	-0.186
	(0.428)	(0.410)	(1.055)	(0.692)	(0.421)	(0.285)	(0.222)
Panel C: Basic Cash Assistance SIPP reports (mean receipt rate= 4.56%)							
Administrative Burden index	-0.856	-0.901	2.349	1.319	-0.555	-2.251	-2.555*
	(0.741)	(0.808)	(2.907)	(2.227)	(1.436)	(1.405)	(1.354)
Cost Minimization index	-1.706***	-1.833**	-1.522	-2.224*	-3.311**	-3.919***	-3.571***
	(0.541)	(0.763)	(1.456)	(1.287)	(1.328)	(1.360)	(1.221)
Administrative Burden index x Cost Minimization index	-0.441	-0.541	-2.104*	-1.589	-0.901	-0.343	-0.255
	(0.489)	(0.385)	(1.205)	(1.017)	(0.801)	(0.668)	(0.644)
Controls							
Indicator for Latino household	No	Yes	Yes	Yes	Yes	Yes	Yes
Child Age + child gender	No	Yes	Yes	Yes	Yes	Yes	Yes
Household head age + Household head gender (CPS only)	No	Yes	Yes	Yes	Yes	Yes	Yes
Household-level income-to-needs	No	Yes	Yes	Yes	Yes	Yes	Yes
State-level poverty	No	Yes	Yes	Yes	Yes	Yes	Yes
State-level poverty interaction	No	No	Yes	Yes	Yes	Yes	Yes

Notes: CPS computations are based on 2016-2019 pooled IPUMS sample of households with under-18 children and under 250% of FPL residing in any of 50 U.S. states + DC (N=41,459). SIPP computations are based on 2018-2019 pooled sample of households with under-18 children and under 250% of FPL residing in 48 U.S. states (AK, ME, and DC excluded) (N=4,102). Standard-errors in parentheses are clustered at the state level.