# **EVIDENCE REVIEW**



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# **Child Care Subsidies**

## **Evidence Review Findings: Effective / Roadmap Strategy**

Both child care subsidy receipt and greater state per child subsidy spending increase maternal employment, demonstrating improvements to parents' ability to work. Additionally, child care subsidy receipt and state spending are linked to improved access to needed services and greater household resources, although evidence for the impact on these goals is mixed. State child care subsidy policies vary considerably in income eligibility thresholds, the level at which states set subsidy reimbursement rates, and the level of cost burden placed on families. Current evidence does not provide clear guidance to states in making policy choices to ensure child care subsidies increase access to high-quality child care for families with low incomes.

Child care subsidy programs provide financial assistance to help make child care more affordable for families with low incomes. By providing access to child care, subsidy programs aim to assist parents in securing and maintaining employment and completing education and training. Child care subsidy programs also aim to improve access to high-quality child care for children. Subsidy programs are financed through federal and state funds but are administered by states. To establish and maintain enrollment in a subsidy program, parents must meet both federal and state-specific eligibility requirements. States have considerable flexibility in setting rules on program policies and administration (e.g., eligibility requirements, application procedures, family copayment levels, and provider policies), resulting in substantial state variation in subsidy policy. Further research is needed to provide states with guidance on policy choices that allow families to access high-quality child care with minimal cost burdens.

Decades of research in the field of child development have made clear the conditions necessary for young children and their families to thrive.<sup>2</sup> These conditions are represented by our eight policy goals, shown in Table 1. The goals impacted by child care subsidies are indicated below with a filled circle, and the goals theoretically aligned (but without evidence of effectiveness from strong causal studies) are indicated with an unfilled circle.

Table 1: Impacts of Child Care Subsidies on Policy Goals

Positive Impact	Policy Goal	Overall Findings
	Access to Needed Services	Mixed impacts, with beneficial impacts on enrollment in formal care settings
	Parents' Ability to Work	Positive impacts, especially maternal employment
	Sufficient Household Resources	Mixed impacts, with beneficial impacts on earnings
	Healthy and Equitable Births	(Policy goal outside the scope of this review)
0	Parental Health and Emotional Wellbeing	Trending null impacts on maternal depression
0	Nurturing and Responsive Child-Parent Relationships	Trending null impacts on parenting skills
0	Nurturing and Responsive Child Care in Safe Settings	Trending mixed impacts on stability and perceived quality of care
0	Optimal Child Health and Development	Mostly null impacts, especially on health and behavior metrics

#### What Are Child Care Subsidies?

Child care subsidy programs are means-tested, state-run programs that help low-income families pay for child care in a variety of settings, including licensed centers and homes, as well as some unlicensed settings. Parents can access subsidies by submitting applications to state agencies, such as a workforce commission, along with required documents demonstrating eligibility. Federal eligibility requirements for child care subsidies mandate that adults in the household work or participate in education and training activities, that household income is less than 85 percent of the state median income, and that children are younger than age 13.<sup>1,1</sup>

States have considerable flexibility in setting specific guidelines on eligibility requirements. For example, states may set requirements regarding the number of hours parents must participate in approved activities, set limits on the amount of income a family can earn for initial and ongoing eligibility at lower levels than federal requirements, and may also identify priority groups to receive subsidies. States can also mandate child support cooperation as a condition of eligibility, but this mandate is not a federal requirement.<sup>3,4</sup> Mandated child support cooperation means that the

<sup>&</sup>lt;sup>1</sup> States may allow children up to age 19 if they have disabilities or are in the Child Protection System.

custodial parent must provide information to the state regarding the noncustodial parent to establish and enforce child support obligations in order to be eligible for child care subsidies.

States also have their own requirements for how frequently parents must inform the state of changes to income and employment and when parents recertify their eligibility for a subsidy. Federal guidelines require that states allow children to remain eligible for at least one year, regardless of temporary changes to a parent's employment situation during that time. <sup>5,ii</sup> States may also set different initial, continuing, and redetermination income eligibility requirements.<sup>3</sup>

Once families are determined to be eligible and receive a child care subsidy, families must find and select care for their children and enroll with providers who accept subsidies and have available slots to provide care. Different state provider policies may affect the options for care available to families. For example, states may offer eligible families a voucher to cover the cost of child care, allowing parents to select a provider of their choice among those who accept the subsidy voucher with an available space for the child; the state then reimburses the provider for providing care based on the age of child, number of hours in care, and the rate the provider qualifies for.

States may also contract directly with providers and subsidize a portion of child care slots with a provider, and families would be able to select one of these spots if it was available. Contracting may give providers more financial stability by ensuring payments for providing care to a certain number of children with subsidies (assuming these spots are filled) and allow states to more directly influence the type and quality of care funded through subsidies (e.g., by contracting with providers meeting standards high-quality care);<sup>6</sup> however, families may have fewer choices of providers under contracting arrangements. As of federal Fiscal Year 2020, only eight states<sup>iii</sup> reported using contracting to deliver subsidies for any portion of their caseload and four of these states used contracting for less than 5 percent of their caseload.<sup>7,iv</sup>

An important aspect of the child care subsidy program is the dollar amount providers receive from the state (either through a voucher payment or contracting) to reimburse for the cost of caring for children with subsidies who enroll in their care. Base reimbursement rates in a state pay for care by providers who meet at least the minimum state standards to qualify to participate in the subsidy system and must be sufficient to cover federal health, safety, and staffing guidelines.¹ States may also reimburse at higher rates for providers meeting higher quality standards (e.g., higher rating levels in state quality rating and improvement systems, accreditation, or other quality standards) and may also require providers to participate in the quality rating and improvement system (QRIS) to serve families with subsidies (some states further require participation at a specific QRIS level).<sup>53</sup> Reimbursement rates received by providers are made up by both a state portion and a family copayment. As described in this review, the current research base is not clear what the optimal level is for provider reimbursement rates, particularly rates that ensure access to quality care.

<sup>&</sup>lt;sup>ii</sup> A 12-month eligibility period applies unless a loss of employment is permanent or parent income exceeds 85 percent of the state median income.

iii State counts include the District of Columbia.

<sup>&</sup>lt;sup>iv</sup> States may also provide cash payments to families to cover a set amount of the cost of child care. This approach is uncommon: only three states take this approach.

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The federal government uses percentiles to measure and compare states' provider reimbursement rates on how adequately their subsidies ensure equal access to the child care market among subsidy recipients. States conduct their own analyses of the prices associated with their child care slots through a market rate survey or alternative methodology, these slots are ranked by price charged, and the base state reimbursement rate is then compared to that ranking. For example, if a state's base subsidy reimbursement rate is found to be at the 30<sup>th</sup> percentile of the child care market, then 70 percent of child care slots charge higher rates than the state's reimbursement rate. Market rate surveys (or alternative methodologies, such as cost modeling) should be used by states to determine payment rates¹ and must be conducted every three years and no earlier than two years prior to states' submission of their Child Care Development Fund (CCDF) plans. 9,10,70 However, not all states adhere to this guidance. As of September 2022, 19 states are using out-of-date market rate surveys (see Table 3b for details). V

The federal government considers state reimbursement rates at the 75<sup>th</sup> percentile or above (covering three-fourths of slots in the state based on a market rate no older than two years old) as providing low-income families with equal access to the child care market, but percentiles vary widely between states. The 75<sup>th</sup> percentile guideline was established as a benchmark and proxy for equal access in the 1998 final rule governing the CCDF after welfare reform; this benchmark was already recognized by states due to its inclusion in Title IV-A child care programs of the Social Security Act. <sup>10,11,12,13</sup> It is important to understand that even if a state meets the 75<sup>th</sup> percentile benchmark, this does not necessarily ensure equitable access to high-quality care, because the price that child care providers can charge does not always reflect the true cost of providing care.

A recent analysis by the Center for American Progress found that subsidy reimbursement rates are often insufficient to cover the estimated cost to providers of infant care that meet minimum licensing standards in center- and home-based settings. To Given that the vast majority of states have reimbursement rates that do not adequately cover the cost of care at minimum licensing standards, state subsidy reimbursement rates often fall far short of providing access to high-quality care for infants and toddlers.

Other analyses suggest that different types of providers may benefit or lose out from state reimbursement rates depending on how provider rates are determined. For example, if providers set rates relative to family income or the amount providers assess as equal to parents' ability to pay within their local market, a market rate survey may not accurately capture what it costs to provide services to families, but instead may capture the price providers feel families are willing or able to pay. If provider prices are set in this way, state reimbursement rates using market rate surveys may be set too low relative to costs for some providers (e.g., those who serve infants, providers in low-income or rural areas).<sup>74</sup>

<sup>&</sup>lt;sup>v</sup> States are considered in compliance in 2022 if their most recent market rate survey or alternative method used to inform reimbursement rates was conducted in 2020 or more recently.

 $<sup>^{</sup>vi}$  For example, Workman estimates that the US average annual cost of licensed center-based infant child care is \$15,900 for base-quality care and \$28,800 for high-quality care. The figures for FCC settings are \$13,700 and \$29,800, respectively. Across many states, the price of care falls below these cost figures. See Workman, S. (2021).

Families participating in the subsidy program may also be required to make copayments<sup>vii</sup> to providers for the care of their children; this copayment is a part of the state reimbursement rate. States have flexibility in how copayments are calculated, who is exempt from copayments, and how high copayments may be;<sup>3</sup> these policies matter because high copayments may present a financial burden for families and reduce access to care,<sup>81</sup> although federal guidelines stipulate that copayments may not be a "barrier to families receiving assistance."<sup>1</sup> Following CCDF rules, some states allow providers to charge families an additional fee beyond their copayment if state reimbursement rates are lower than what the provider typically charges private–pay families.<sup>42</sup>

## Who Is Affected by Child Care Subsidies?

According to the Office of Child Care, nearly 1.5 million children and more than 900,000 families benefited from child care subsidies each month in federal Fiscal Year 2020. Children under age 3 comprised 27 percent of the children whose care was funded by subsidies. Among families served by subsidies in Fiscal Year 2019, 40 percent had family incomes below the federal poverty level. The Government Accountability Office estimates that approximately 25 percent of children eligible for subsidies under state rules receive them; this low participation rate may be attributed in part to insufficient funding, leaving many families on waitlists, and in part to the administrative burden families face when applying. Families may encounter difficulties acquiring and keeping their subsidies because of complex state eligibility requirements and recertification processes.

Recent research reveals a significant gap between the percentage of Hispanic families in the US who are eligible for child care subsidies and the families who receive them; Hispanic children account for 35 percent of eligible children but just 20 percent of the population served with CCDF subsidies. Although Black children are overrepresented among subsidy recipients (25% of the eligible population and 41% of the recipient population), analyses suggest that these children are more likely to live in families with very low-incomes than other groups of eligible children and this may drive their overrepresentation among recipients. Although these analyses do not consider other public programs that families may have access to (e.g., Early Head Start/Head Start, public pre-kindergarten), differential access to subsidies between eligible children by race and ethnicity is important to consider for equity.

The high cost of child care may create financial burdens for families and child care subsidies may be useful to many families who meet eligibility rules. For example, according to Child Care Aware of America, a national organization that tracks child care access and affordability, the average annual cost of center-based care is \$12,377 for infants, compared to \$9,715 for 4-year-olds in 2020, with variation between states. <sup>20,ix</sup> The cost of center-based infant care ranges from 27.8 to 69.2 percent

vii Parent copayments are the payments states require parents to make to providers. The total provider reimbursement rate includes the parent copayment and the payment to the provider made by the state. Parent copayments are sometimes referred to as fees. However, fees may include other types of payments, including if states allow providers to charge families the difference between the provider reimbursement rate and the rates charged by the provider to private-pay families.

viii See also Ullrich, R., Schmit, S., & Cosse, R. (2019). *Inequitable access to child care subsidies*. CLASP. https://www.clasp.org/publications/report/brief/inequitable-access-child-care-subsidies

ix Estimate uses average of program-weighted averages (method #3, see p. 39 of the Full Report). Caution should be used comparing and interpreting price figures nationally; local context should be considered.

of median income for single parents and 7.3 to 16.7 percent of median income for married-couple families, depending on the state in which they reside. Although home-based child care is typically less expensive, cost figures remain high relative to income: the cost of infant care in home-based settings is 19.5 to 60.0 percent of median income for single-parent families and 5.3 to 11.8 percent for married couple families. <sup>20,x</sup>

The federal government has set the threshold for child care affordability at 7 percent of family income, including for subsidy copayments. Many families typically pay much higher percentages of their income for child care, especially for the youngest children. Even for families who participate in the child care subsidy program, child care expenses may exceed this affordability benchmark if families have high subsidy copayments or are charged additional fees by providers.

Of the children under age 3 benefiting from subsides: 72 percent of infants and 73 percent of toddlers were cared for in centers and 25 percent of infants and 24 percent of toddlers were cared for in home-based settings (family and group homes, other than the child's own home). The share of infants and toddlers in home-based care settings is slightly higher than among preschoolers benefiting from subsidies; Consistent with other evidence suggesting home-based arrangements are preferred among infants and toddlers.

Subsidy policies can affect families differently depending on the type of care setting a family prefers or has access to in the community. Between 2011 and 2017, the number of licensed home-based providers in the child care market decreased significantly (including for license-exempt home-based providers) and the number of home-based providers receiving subsidy payments through the Child Care and Development Block Grant (CCDBG) also decreased steeply during this time; although the number of children served through CCDBG decreased in this time as well, the decrease in the number of home-based providers and those that received subsidy payments was greater than the decline in children served. State regulations, the increased emphasis on quality rating and improvement systems, and changes to subsidy policies may affect the number of home-based providers in the market generally and who participates in the subsidy system. A 2021 review by the Urban Institute found that the participation of home-based providers in the subsidy system was driven by "the ease or difficulty of the provider approval process," "payment amounts and processes," and the extent to which states have implemented family-friendly policies, such as annual redetermination" (p. 2).

With fewer home-based providers participating in the subsidy system, families may be left with fewer child care options and choices meeting their preferences. Many families rely on home-based providers for benefits such as flexible hours, cultural fit, or proximity to home, and a decrease in

<sup>&</sup>lt;sup>x</sup> See pp. 6-13 of appendices (Appendices III – VI). The cost of center-based toddler care ranges from 26.4 to 75.9 percent of median income for single parents and 7.3 to 14.9 percent of median income for married-couple families, depending on the state they reside in. The cost of toddler care in home-based settings is 19.5 to 60.0 percent of median income for single-parent families and 5.3 to 10.8 percent for married couple families.

xi Infants are defined as children from birth to less than one-year old. Toddlers are children one-year to less than 3-years old. Home-based settings include family homes and group homes (differentiated by number of children in care). The remaining share of infants and toddlers are either in care in the child's home or did not have valid care setting data.

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these providers in recent years has exacerbated the problem of child care deserts, <sup>xii</sup> especially in rural areas and for infants and toddlers. <sup>26</sup> Ensuring adequate reimbursement rates, particularly for home-based providers, may help preserve the supply of this option for families and retain quality providers who participate in the licensed market.

## What Are the Funding Options for Child Care Subsidies?

Child care subsidies are funded through the Child Care and Development Fund (CCDF), which integrates discretionary funding from the Child Care and Development Block Grant (CCDBG) and mandatory and matching funding from the federal Child Care Entitlement to States (CCES). The CCDBG is currently federally funded at \$6.165 billion for federal Fiscal Year 2022, an increase of \$254 million from Fiscal Year 2021. 27,59,71,xiii The CCES is currently federally funded at \$3.55 billion and total CCDF funding is \$9.715 billion. 27,59,71 These funding figures do not account for COVID-19 pandemic relief funds passed in federal Fiscal Years 2021 and 2022. Although most funds are distributed to states and territories, tribes are allocated "no less than 2% of discretionary CCDF funding and up to 2% of mandatory CCDF funding" (p. 7). 5 in Fiscal Year 2021, tribes received a total of over \$398 million in combined mandatory and discretionary funding.

The CCES matching funds require both a state match and maintenance-of-effort (MOE) expenditures.xiv State matching funds may come from public funding, public pre-kindergarten funding (up to 30% of the match and 20% of the MOE), and private donated funds.60 As of September 30, 2020 states expended approximately \$8.84 million from Grant Year 2020 awards, including \$125 million in excess of matching and MOE requirements.61 States may also use up to 30 percent of the funding received for the Temporary Assistance for Needy Families (TANF) program to fund child care subsidies;62 in federal Fiscal Year 2020, states transferred \$1.4 billion from TANF to CCDF.61

States vary in whether they maximize federal dollars by contributing the full match and MOE required funds, whether funds are obligated and liquidated in the necessary timeframe,<sup>xv</sup> and whether they supplement these funds with additional state contributions. In Grant Year 2020, 17 states reported excess matching funds contributed from state spending on child care subsidies.<sup>66,67</sup>

xii A child care desert is a community with insufficient child care capacity to meet demand; it is sometimes defined as a census tract with at least 50 children under age 5 with either no child care providers, or with child care slots available for less than one-third of children. Source: Malik, R., Hamm, K., Schochet, L., Novoa, C., Workman, S., Jessen-Howard, S. (2018). America's child care deserts in 2018. Center for American Progress.

https://www.americanprogress.org/issues/early-childhood/reports/2018/12/06/461643/americas-child-care-deserts-2018/

xiii In Fiscal Year 2018, the CCDBG received the single largest funding increase in the program's history. A report from Child Trends found that states planned to use funds boost provider payment rates (44 states), expand income eligibility (14 states), and reduce parental copayments for child care (11 states). Over half of states reported that they planned to use the funds to implement various quality improvement initiatives.<sup>5</sup>

xiv To access their full allotment of matching funds, states must match federal funding at the prevailing Federal Medical Assistance Percentages rates. Maintenance-of-effort levels require states to spend at the same level of spending based on state spending on the now-repealed Aid to Families with Dependent Children child care assistance programs (fiscal years 1994-1995).

 $<sup>^{</sup>xv}$  If states do not obligate and liquidate funds in the required timeframe, these funds are released back to the state and reallocated for use by other states.

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Another source of funding is the federal Preschool Development Grant Birth Through Five (PDG B-5), a competitive grant program that provides states with money for early care and education. <sup>28</sup> Initial PDG B-5 grants were awarded to 46 states in December 2018: <sup>29</sup> 20 of these states received renewal grants, and 6 states received new initial grants in December 2019; <sup>30</sup> 3 additional states received renewal grants in April 2020. <sup>31</sup> In December 2020, five of the six states and territories that received an initial grant in 2019 were awarded a renewal grant. <sup>87</sup> The renewal announcements for the PDG B-5 grants in 2019 and 2020 included incentives for states that offered more generous subsidies for infant and toddler care. <sup>32,68</sup>

As a result of the COVID-19 pandemic, the child care subsidy program and the larger child care sector received an influx of federal funding in 2020 and 2021. Nearly \$32 billion in funding has been allocated to the child care subsidy program (including mandatory, matching, and discretionary funding for states, territories, and tribes) through the Coronavirus Aid, Relief, and Economic Security (CARES) Act, <sup>77</sup> Coronavirus Response and Relief Supplemental Appropriations (CRRSA) Act,<sup>78</sup> and the American Rescue Plan Act.<sup>79</sup> Funding in these relief packages helped providers prepare for and respond to the COVID-19 pandemic, granted flexibility to states in providing child care assistance (including to essential workers), provided funds to cover staff wages and benefits, and provided financial relief for families, as well as many other important uses. The American Rescue Plan Act (ARPA), signed into law in March 2021, also allocated an additional nearly \$24 billion dollars for child care stabilization grants, intended for states to distribute quickly to providers to stabilize the child care market. 80 With the ARPA, states have accelerated the distribution of funds to child care centers and to extend CCDBG offerings to more eligible families.88 These ARPA dollars enabled states' child care systems to stabilize their budgets, maintain staffing, and increase supply. 89,90 Such relief was essential as the mounting pressures of the pandemic generated urgency among providers to remain in business, among families to be able to work, and on behalf of children who need enriching early experiences, particularly at an unprecedented time. 91,92

# Why Should Child Care Subsidies Be Expected to Impact the Prenatal-to-3 Period?

Greater access to child care may allow more parents to work or complete education and training programs and may support healthy child development when care settings are high-quality and stimulate children's early brain development.<sup>33,34,35</sup> The cost of child care, however, can make it difficult for families, especially those with low incomes, to access affordable, reliable, high-quality care.<sup>20,xvi</sup> Public subsidies for child care seek to bridge this financial gap.<sup>36,37</sup>

xvi "Quality" is defined differently by various research sources and states, but it is often conceptualized into components of "structural" and "process" quality. Structural features of quality are the aspects of the child care environment that can be legislated or mandated, such as child-to-staff ratios or caregiver education requirements, and that are intended to enhance caregiving. Process quality refers to the richness of interactions between children and caregivers, or children and their peers, and of the learning experiences and instruction. The most common broad components in states' frameworks for quality (formalized into quality rating and improvement systems or QRIS) include licensing compliance, ratio and group size, health and safety, curriculum, environment, staff qualifications, administration and management, child assessment, family partnerships, cultural and linguistic diversity, accreditation, provisions for special needs, and community involvement. Research often uses validated scales to measure quality during classroom observations, such as the Early Childhood Environment Rating Scale (ECERS) or the Infant and Toddler Environment Rating Scale (ITERS).

Increased parental employment and access to stable and high-quality child care may result in improved long-term child outcomes, including social-emotional and cognitive development, through two main pathways: (a) indirectly, through higher family income from increased employment which may reduce family stress, boost access to needed resources, and limit adverse childhood experiences; and (b) directly, through access to high-quality child care that provides enriching and safe environments for children during the day that support positive brain development. <sup>38,39,40,41</sup> A high-quality care environment may include a well-trained and compensated workforce, low child-to-staff ratios and group sizes, nurturing and responsive caregiver-child interactions, and other aspects of the care setting that support learning.

However, child care subsidies may not necessarily lead to improvements in cognitive or social-emotional outcomes for children if the child care settings that families choose, or the settings that are available to them, are not high-quality. Subsidies may allow more parents to work and increase family income, but without enough high-quality child care slots that serve recipients of subsidies, families may be unable to access high-quality care and children's outcomes may not improve.

A lack of high-quality child care slots for children with subsidies may reflect implications of subsidy provider policies (e.g., low reimbursement rates that are insufficient to cover the cost of providing high-quality care) or may reflect issues with the quality of the overall child care market. For example, there may be few high-quality providers in the market that accept child care subsidies or the number of available slots with these providers may be limited and insufficient to meet demand, leaving families unable to access high-quality care. In addition, if parents do not have the other supports they need to adjust to employment, such as reliable transportation and positive working conditions, subsidy receipt may be associated with greater parental stress, resulting in poorer parent-child interactions. Finally, if families cannot access subsidies (e.g., due to waiting lists, application policies, or income eligibility limits), the impact of subsidies on families with lower incomes may be limited.

# What Impact Do Child Care Subsidies Have, and for Whom?

The evidence meeting the standards of this review consistently links subsidy receipt and higher per child state subsidy spending to indicators critical to parents' ability to work, with mixed support for improving families' access to needed services and sufficient household resources. To date, strong causal evidence does not link child care subsidies to child care quality, caregiver wellbeing, or developmental outcomes for infants and toddlers.

Although the evidence base demonstrates the effectiveness of child care subsidies as a strategy to improve some aspects of family wellbeing during the birth-to-3 period, the current evidence base does not provide clear guidance to states on how to implement subsidy policies to ensure subsidies

Sources: Slot, P. (2011). Structural characteristics and process quality in early childhood education and care: A literature review (OECD Education Working Paper No. 176). Organisation for Economic Co-operation and Development. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=EDU/WKP(2018)12&docLanguage=En; Caronongan, P., Kirby, G., Malone, L., & Boller, K. (2011). Defining and measuring quality: An in-depth study of five child care Quality Rating and Improvement Systems (OPRE Report 2011-29). Office of Planning, Research and Evaluation, Administration for Children and Families, US Department of Health and Human Services. https://www.acf.hhs.gov/sites/default/files/opre/five\_childcare.pdf

increase access to high-quality child care for families with low-incomes (e.g., setting an optimal subsidy reimbursement rate level, eligibility thresholds, or family copayment and fee levels).

The research discussed here meets our standards of evidence for being methodologically strong and allowing for causal inference, unless otherwise noted. Each strong causal study reviewed has been assigned a letter, and a complete list of causal studies can be found at the end of this review, along with more details about our standards of evidence and review method. The findings from each strong causal study reviewed align with one of our eight policy goals from Table 1. The Evidence of Effectiveness table displays the findings associated with child care subsidies (beneficial, null, xvii or detrimental) for each of the strong studies (A through G) in the causal studies reference list, as well as our conclusions about the overall impact on each studied policy goal. The assessment of the overall impact for each studied policy goal weighs the timing of publication and relative strength of each study, as well as the size and direction of all measured indicators.

Of the seven causal studies included in this review, none examined how outcomes differed by race or ethnicity (beyond simply presenting summary statistics or controlling for race/ethnicity). A rigorous evaluation of a policy's effectiveness should consider whether the policy has equitable impacts and should assess the extent to which a policy reduces or exacerbates pre-existing disparities in economic and social wellbeing.

Table 2: Evidence of Effectiveness for Child Care Subsidies by Policy Goal

Policy Goal	Indicator	Beneficial Impacts	Null Impacts	Detrimental Impacts	Overall Impact on Goal	
Access to Needed	Enrollment in Formal Child Care Settings	В	D		Mixed	
Services	Well-Baby Visits		D			
Parents'	Employment	A, D, E, F	D		Positive	
Ability to Work	Number of Hours Worked	F				
Sufficient	Household Income		D		26 1	
Household Resources	Earnings	E			Mixed	
Parental Health and Emotional Wellbeing	Maternal Depression		D		Trending* Null	

 $x^{vvii}$  An impact is considered statistically significant if p<0.05. Results with p-values above this threshold are considered null or nonsignificant.

Table 2: Evidence of Effectiveness for Child Care Subsidies by Policy Goal (Continued)

Policy Goal	Indicator	Beneficial Impacts	Null Impacts	Detrimental Impacts	Overall Impact on Goal	
Nurturing and Responsive Child-Parent Relationships	Maternal Parenting Skills		D		Trending* Null	
Nurturing	Stability of Primary Care Arrangement		С		Trending* Mixed	
and Responsive Child Care in	Number of Care Arrangements		С			
Safe Settings	Perceived Child Care Quality	С				
	Breastfeeding		D			
	Behavioral Problems		D			
Optimal Child	Language Assessments		D			
Health and Development	Literacy Assessments	G	D, G		Mostly Null	
	Mathematics Assessments	G	D, G		7,411	
	Unexcused School Absences	G	G			

<sup>\*</sup> Trending indicates that the evidence is from fewer than two strong causal studies or multiple studies that include only one location, author, or data set.

Note: If a study is placed in multiple impact categories (beneficial, null, detrimental) for an indicator, results were inconsistent within the study (e.g., across time points or various ways of measuring similar indicators).

#### Access to Needed Services

Causal evidence suggests mixed impacts of subsidy receipt and subsidy policy on indicators of families' ability to access needed services. Two studies included in this review analyzed data from the Early Childhood Longitudinal Study Birth Cohort (ECLS-B), using data from the early to mid-2000s. A study published in 2018 using ECLS-B data and using parental educational attainment as a proxy for subsidy eligibility found that \$1,000 higher state subsidy spending per low-income childxviii was associated with 86 percent higher odds of enrollment in single, center-based care than in multiple care arrangements for infants and toddlers in households with lower parental educational attainment (in comparison to parents with higher educational attainment, treated as subsidy ineligible). However, a second study analyzing ECLS-B data did not find a statistically significant impact of greater state subsidy spending on the type of child care (parent, center-based,

xviii In this definition, the authors include federal and state expenditures on CCDF subsidies from the CCDBG and TANF block grants.

noncenter-based/nonparental care) selected by subsidy-eligible parents relative to ineligible parents. DAdditional research is needed to better understand the causal effects of receiving child care subsidies on access to child care.

Access to child care subsidies may also promote families' ability to access other needed services, either directly or as a result of other positive outcomes (e.g., maternal employment). However, there is limited causal evidence on the link between child care subsidies and other indicators of a family's ability to access needed services. One study included in this review found no impact of increased state per child subsidy spending on the likelihood of having attended four well-baby visits at 9 months post-birth.<sup>D</sup>

# Parents' Ability to Work

Most studies of the impact of child care subsidies examine children older than infants and toddlers and their parents; however, studies that do focus on parents of children ages birth to 3 find positive impacts on maternal employment. For example, a recent quasi-experimental study found that a 10 percent increase in CCDF subsidy expenditures per child ages birth to 12 was associated with a 0.7 percent increase in employment for low-income mothers of children ages birth to 3. Axix This impact translates to approximately 376,000 newly employed mothers of children ages birth to 3 if CCDF expenditures were tripled. Another study examining the impact of child care subsidies as children aged found that \$1,000 higher state spending on child care subsidies (per low-income child under age 6) was associated with a 4 percentage point increase in the likelihood of maternal employment among subsidy-eligible mothers at 2 months post-birth (relative to ineligible mothers); at 9 months post-birth this effect was 3.5 percentage points. Dxx However, no significant effect was found at 4 months post-birth.

Several other studies have also examined the impact of subsidy policy on employment indicators and found a number of positive effects. A study of Massachusetts's subsidy program found that an increase of \$77 in spending on child care vouchers per low-income<sup>xxi</sup> child between Fiscal Year 1996 and 1997 predicted an increase in the probability of working by 3.6 percent among subsidy recipients who were also current or former TANF recipients (relative to being enrolled in education or training). F A study in one Michigan county of single mothers with children under age 14 found that subsidy receipt increased the proportion of months worked between interviews. E, xxiii

The study of Massachusetts's subsidy program was the only study included in this review that examined the impact of subsidies on hours worked per week. The study found that an increase of

xix Subsidy expenditures were calculated per child ages 0 to 12 in a state, not just subsidy recipients. This effect can be compared to that among eligible women with children ages 0 to 12, which was 0.5 percent. In this case, low-income means income less than 85 percent of state median income and potentially subsidy eligible.

xx Educational attainment is used as a proxy for subsidy eligibility. The authors of this study describe the children as "poor," but do not provide a definition of poverty for their operationalization of subsidies. This summary refers to these children as "low-income."

xxi Low-income refers to children the authors label as "poor," which appears to mean children living in households with earnings lower than 185 percent of the federal poverty level. See footnote 10, page 12 of the study.

xxii The authors did not report the average impact on months worked between study interviews for their two-stage regression model. In the single-stage model, the average impact was an increase of 8 percentage points.

\$77 in spending on child care vouchers per low-income child between Fiscal Year 1996 and 1997 predicted an increase of almost 0.3 weekly hours worked among subsidy recipients who were also current or former TANF recipients. Although positive and statistically significant, this effect is very small and limited in generalizability.

# **Sufficient Household Resources**

Two studies included in this review assess the impact of state subsidy spending and subsidy receipt on household income and earnings and demonstrate mixed findings. One study found no effect of increased spending on subsidies per low-income child under age 6 on household income when the child was 4 years old. Another study found a positive effect: Subsidy receipt was associated with a 250 percent<sup>xxiii</sup> increase in monthly earnings; however, this study included parents of children under age 14 and the impacts are not limited to infants and toddlers. E

# Parental Health and Emotional Wellbeing

Only one study included in this review examined an indicator of parental health. The study found no impact of higher state spending on child care subsidies per low-income child under age 6 on self-reported maternal depression scale scores at 9 months and 4 years post-birth.<sup>D</sup>

## **Nurturing and Responsive Child-Parent Relationships**

Limited evidence exists on the impact of subsidies on parents' caregiving skills, knowledge, and warmth for infants and toddlers. One study included in this review found that higher subsidy spending (per low-income child under age 6) was not associated with maternal parenting skills (e.g., intrusiveness, detachment, and positive regard) at 9 months post-birth, although there was a small, positive impact at 4 years post-birth.<sup>D</sup>

## **Nurturing and Responsive Child Care in Safe Settings**

Limited evidence also exists on the impact of subsidy usage on indicators of nurturing and responsive care in safe settings; results from one study including infants and toddlers is mixed. This longitudinal study explored the impact of child care subsidy usage among families with young children (age 6 or younger) in Minnesota.<sup>c</sup> Results for indicators of child care stability, including changes in the primary child care provider and the number of care arrangements used, were null. However, subsidy usage predicted a higher level of quality care as perceived by parents<sup>xxiv</sup> (by 0.5 standard deviations). This effect was explained by the selection of center-based care rather than other types of care, but provides evidence that subsidy usage may positively and directly impact quality. Two important limitations of this study include: (1) the study relied on parent report of child care quality, rather than a rating by an outside observer using a validated tool, and (2) the

xxiii This review presents the impact from a two-stage regression model. However, the authors' preferred model estimates this effect at 105 percent. The impact is significant in both models, but the standard error is larger in the two-stage regression model.

xxiv Perceived child care quality was measured by the parent's perception of both structural and process features of quality. Parents responded to 17 scale questions designed to "mirror elements of quality included in Minnesota's quality rating and improvement system." The 17 items were reduced to a single factor by the study authors using factor analysis. For additional details on this measure see page 18 of Krafft, Davis, & Tout (2017; Study C).

study was not limited to infants and toddlers, which may limit the generalization of these findings to the birth to age 3 population.

## **Optimal Child Health and Development**

Few studies examine the impact of subsidy receipt or state subsidy policies on infant and toddler health and developmental outcomes, and those that do find generally null effects. A 2011 study using ECLS-B data from the early and mid-2000s examined a number of child outcomes, including an indicator related to child physical health – breastfeeding duration. However, the study found no impact of higher state per child subsidy spending on breastfeeding duration. The study also examined child social-emotional health outcomes, but found no impact of higher spending on indicators of child behavioral problems (overall, conduct, inattention), although these outcomes were assessed at child age 4, not between ages birth and 3.<sup>D</sup>

Only two studies meeting the standards of evidence for this review examine child cognitive outcomes, however, both assess outcomes when the child is older than age 3. The 2011 study discussed above found that children's cognitive outcomes, as measured by literacy, language, and mathematics assessments\*\* in the year before kindergarten, were not significantly related to state subsidy expenditures. A study of children in Chicago, Illinois whose parents received public assistance at birth found that, overall, subsidy receipt between birth and age 5 led to mostly null impacts on reading scores, math scores, and unexcused school absences between grades 3 and 8, with a few exceptions of very small, positive impacts: A positive impact on reading scores at grade 4 (effect size of approximately 0.1 standard deviations), positive impacts on math scores at grades 4 and 6 (approximately 0.1 standard deviations for both), and positive impacts on unexcused school absences in grades 7 and 8 (approximately -0.1 standard deviations) for subsidy recipients relative to eligible non-recipient children.

The same Chicago study found different impacts depending on the type of child care used by a family. For reading scores, the impact of subsidies for children who attended center-based care was positive at each grade level (effect sizes range from approximately 0.2 to 0.4 standard deviations) and for children who attended licensed home-based care in grades 3 through 5 (effect sizes approximately 0.1 standard deviations). Positive impacts of subsidies on math scores was found at grades 4 through 6 and grade 8 for children in center- and home-based licensed care (effect sizes approximately 0.3 and 0.2 standard deviations, respectively). A similar pattern continued with unexcused absences, with subsidy receipt predicting decreased absenteeism in grades 4 through 8 (effect sizes approximately -0.1 standard deviations) and grades 4, 5, 7, and 8 (effect sizes ranging from approximately -0.1 to -0.2 standard deviations) among children in center- and home-based providers, respectively. These results suggest positive impacts of subsidies in the context of licensed care settings relative to eligible non-recipient children; impacts for children in license-exempt settings were null.

xxv Literacy assessments included "letter recognition, letter sounds, recognition of simple words, and phonological awareness." Language assessments included verbal ability and spoken vocabulary. The mathematics assessment included "number sense, geometry, counting, operations, and patterns." (p. 15).

Generally in line with these null results overall, the relationship between subsidy receipt and child cognitive and developmental outcomes was found to be null or slightly negative in three additional studies examining impacts in children age 3 and older.<sup>43,44,45</sup> More research on child development outcomes associated with subsidy receipt or state subsidy expenditures is needed to better understand the impact of subsides for children ages birth to 3.

# Is There Evidence That Child Care Subsidies Reduce Disparities?

# Race/Ethnicity

No studies included in this review directly assess the ability of child care subsidies to close gaps in indicators of child and family wellbeing by race or ethnicity. However, equal access to child care subsidies remains a concern. A recent report provided an analysis of state policies and practices in 13 states\*\*x\*\*, each with 80 percent of Hispanic children in the state living in low-income communities. The report indicated that considerable variation exists among these states in terms of their child care subsidy policies and practices. \*93 For example, 7 states have requirements for minimum weekly work hours, which may impose higher burden on Hispanic families who are likely to take seasonal jobs. \*94 Seven states have documentation requirements for household members, which may influence families' decision to apply for the program. All 13 states, except California, give TANF-affiliated families priority in their distribution of CCDF funding. This may impose barriers to CCDF-eligible Hispanic families for two reasons. First, TANF tends to have more stringent eligibility and documentation requirements. Second, many other services and programs use one gateway portal for eligibility and rely on TANF eligibility and documentation. \*93 Six states do not provide their application online in Spanish, and three do not provide program information online in Spanish. \*93

Recent research also reveals a significant gap between the percentage of Hispanic families in the US who are eligible for child care subsidies and the families who receive them; Hispanic children account for 35 percent of eligible children, but just 20 percent of the population served with CCDF subsidies. <sup>64</sup> Documentation requirements may be one factor limiting participation for this group—for example, many states ask for subsidy applicants' social security numbers but do not make it clear that providing them is optional. <sup>48</sup> Although Black children are overrepresented among subsidy recipients (25% of the eligible population and 41% of the recipient population), analyses suggest that these children are more likely to live in families with very low-incomes than other groups of eligible children and this may drive their overrepresentation among recipients. <sup>64</sup>

More research is needed to establish whether child care subsidies contribute to closing disparities in outcomes for parents and children by race and ethnicity, and the specific policy levers that states should adopt to effectively provide child care subsidies to families and ensure equitable access to child care. Especially with federal support, the ARPA gave states the resources to meet the demands of child care systems, particularly through advancing equity initiatives to support marginalized communities who have been most affected by the pandemic's negative impacts on child care coverage. <sup>95</sup>

xxvi These 13 states include AZ, CA, CO, FL, GA, IL, NJ, NY, NM, NC, PA, TX, WA

#### Socioeconomic Status

One study included in this review uses parents' educational attainment as a proxy for subsidy eligibility and offers a perspective on the differential impact of child care subsidies by parents' education level. Parents with lower educational attainment (a high school diploma or less) were more likely to enroll in single, center-based care, rather than multiple arrangements, as a result of higher state subsidy spending, relative to parents with higher educational attainment. Beyond this, no studies included in this review directly assess whether subsidy receipt or dimensions of subsidy policy reduce gaps in outcomes for children by socioeconomic status.

However, current research suggests that children in families with low incomes are less likely to be enrolled in formal, center-based child care and in high-quality care than their counterparts with higher incomes. Some research suggests that subsidies may facilitate greater access to formal settings, but subsidies are not consistently associated with improvements in the quality of care that low-income children receive, likely in part because reimbursement rates are too low. And Infant and toddler care is more expensive, on average, than care for older children, and fewer high-quality providers are available for this age group, so lower-income families with very young children face particularly acute barriers when seeking child care, even with access to subsidies. Future causal research should assess how subsidies may help reduce disparities among infants and toddlers by socioeconomic status.

## Has the Return on Investment for Child Care Subsidies Been Studied?

None of the strong causal studies included in this review directly assesses the return on investment or cost savings as a result of subsidy receipt or subsidy policies. However, studies that find positive impacts of subsidy receipt and policies on maternal employment<sup>A,D,E,F</sup> and weekly number of hours worked<sup>F</sup> may suggest positive economic returns. A more comprehensive analysis of the return on investment is forthcoming.

#### What Do We Know, and What Do We Not Know?

To date, child care subsidies have not been studied extensively as a statewide policy; existing evidence points to the effectiveness of child care subsidies as a strategy to improve outcomes in the birth-to-3 period, but does not provide guidance to states on a number of policy choices that may promote access to quality care. Evidence fairly consistently links both subsidy receipt and higher state subsidy expenditures to positive outcomes for the ability of parents to work (e.g., higher maternal employment), with evidence that subsidies may also positively impact access to needed services and sufficient household resources (e.g., earnings) in the birth-to-3 period.

However, the limited evidence base on the link between subsidy receipt and state subsidy spending and outcomes related to parental health and emotional wellbeing, nurturing and responsive child-parent relationships, nurturing and responsive care in safe settings, and optimal child health and development for the birth-to-3 period suggests mixed or mostly null findings. Additional research in these areas is needed to better understand the impacts of subsidies on caregiver, infant, and toddler outcomes, as well as impacts on quality of child care settings. In particular, future research is needed to identify what state policy choices in subsidy policy drive improvements in outcomes.

Research is also needed on the potential for subsidies to reduce disparities for infants and toddlers by race, ethnicity, and socioeconomic status.

Research on the effectiveness of specific components of subsidy policy such as the optimal provider reimbursement rate, income eligibility thresholds, and family copayment and fee amounts to improve family and child outcomes is also needed. Research on the optimal subsidy level is particularly critical to provide guidance to states on the appropriate rate levels that improve families' access to high-quality care and subsequently, improve child outcomes. Future research should consider how states can best balance eligibility thresholds, reimbursement rates, and family cost burdens to maximize benefits for families during the birth-to-3 period.

Additionally, as the COVID-19 pandemic continues to impact the child care sector, additional research is needed to evaluate the impact of state-level subsidy policy changes. In response to COVID-19 and additional federal funding, states enacted temporary policy measures to assist child care providers and families in 2020 and 2021, including continued payments to providers who experienced closures or decreased enrollments, adjusted eligibility requirements to provide care for children of essential workers, and reduced or waived family copayments. <sup>69</sup> A few states also enacted permanent policies in response to COVID-19. For example, Oregon has restructured the family copayment system, resulting in significant decreases in family copayments, an expanded absent day policy, and higher income eligibility thresholds (from 185% to 200% of the federal poverty level). <sup>96</sup> Future research should examine the potentially ongoing benefits to these temporary and permanent changes in subsidies policy.

# Insights on the Link Between Subsidies and Quality: Research on Children Ages 3 to 5

Although few studies on child care subsidies address the link to type and quality of care received by infants and toddlers, research on children ages 3 to 5 years old may provide useful insight on these potential connections. For example, research on children ages 3 and older supports the positive finding included in this review on the link between subsidy receipt and use of formal care.<sup>38</sup>

Only one study included in this review examined the link between subsidies and child care quality, chowever, research on the preschool-age population also provides some evidence on this connection. A study that analyzed Fragile Families and Child Wellbeing Study data found that subsidy receipt was linked to selection of higher-quality care overall (by one-third of a standard deviation on quality measure scores), although this effect was driven by the fact that subsidy recipients were more likely to select center-based care than were nonsubsidy recipients. The authors also found that subsidy recipients selected higher quality home-based care (by 0.6 standard deviations on quality scores), but lower quality center-based care (by less than 0.4 standard deviations on quality scores) than comparable nonsubsidy recipients using the same care arrangement type. The authors hypothesized that the effects were driven by (a) the selection of more formal home-based providers, rather than informal providers such as relatives, and (b) potentially higher-quality center care used by nonrecipient families, such as Head Start or public pre-kindergarten. In addition, center-based care was generally of higher quality overall than home-

xxvii Quality of center-based care was measured using the Early Childhood Environment Rating Scale- Revised (ECERS-R) and quality of home-based care was assessed using the Family Day Care Rating Scale (FDCRS).

based care in this study, likely due, at least in part, to the categorization of kin and kith care alongside formal providers in the home-based care category.\*\*xviii

A study examining child care among children at age 4 using ECLS-B data similarly found that the type of care mattered for quality: 62 percent of the positive association found between subsidy receipt and quality was attributed to the type of care setting chosen (in particular, higher enrollment in center-based care).<sup>49</sup> This evidence on children ages 3 to 5 corroborates the findings of the study included in this review suggesting subsidies may have a positive impact on quality, particularly through the increased use of center-based care among families receiving subsidies.

One limitation to extrapolating findings from children ages 3 to 5 to children ages birth to 3 is that parents have different preferences regarding the type of child care they prefer to use depending on child age. Observational research suggests that parents of infants and toddlers prefer relative and home-based care (i.e., family child care) providers over center-based providers.<sup>72,73</sup> If improvements to child care quality are driven by parents selecting center-based care when using child care subsidies, these impacts may be more muted among infants and toddlers.

#### Insights on the Link Between Subsidies and Quality: Additional Observational Evidence

Two observational studies provide evidence suggesting that child care subsidy policies may be able to positively affect the quality of care families receive. One study of a child care affordability program examined the implications of providing additional financial assistance to reduce copayments (to no more than 10 percent of monthly household income) for families receiving subsidies and providing financial assistance to access care for families whose incomes who were too high to qualify for the subsidy program (between 185% and 200% of the federal poverty level); in each case, families needed to use the assistance to receive care at quality child care centers or homes. Results from mixedmethods analyses suggested that parents in the child care assistance program reported positive impacts from program participation, including that the assistance allowed families to continue to use quality providers in the face of financial challenges and, for some families, allowed parents to "purchase quality care for the first time" (p. 414). Although this study did not directly assess the impacts of subsidy policies, it suggests potential positive implications for family-friendly subsidy copayment and income eligibility policies.

A second observational study examined the association between higher subsidy payment rates and provider-friendly payment policies<sup>xxix</sup> with child care quality.<sup>51</sup> For child care centers participating in the subsidy system, higher base reimbursement rates were associated with a higher likelihood of

xxviii The mean quality score for center-based care was 5.01 (standard deviation 1.39), as compared to 3.13 (standard deviation 1.28) for home-based care in this sample. Subsidy recipients were also more likely to choose formal home-based care, rather than kith or kin care, which affected quality averages.

xxix Provider-friendly payment policies included requiring families to pay any difference between the provider rate and the maximum reimbursement rate (in addition to copayments), paying providers for child absences or days of closures, and a maximum redetermination period of 12 months. The index measure is a score of 0 to 4 depending on how many policies a state adopts.

meeting the quality composite measure<sup>xxx</sup> used in the study, an association driven by an increased likelihood of earning a quality rating. Although associations with quality measures were null for the use of tiered reimbursement rates, an additional \$100 difference between the lowest and highest tiered subsidy rates were associated with a higher likelihood of meeting the quality composite standard in the study, suggesting that the design of tiered reimbursement rates in subsidy systems may matter for incentivizing quality. For child care centers, neither the increased use of contracts (versus vouchers) or the provider-friendly policy index were associated with the quality measures used in the study.

In the same study, increases in base reimbursement rates, use of tiered reimbursement, increased use of contracts, and the provider-friendly policy index were not associated with quality rating or the quality composite measures for child care homes participating in the subsidy system. However, the difference between the lowest and highest payment tiers was associated with the quality composite measure, largely through quality ratings. Additional research is needed to assess how aspects of subsidy policies may affect different types of providers in different ways, with particular attention to variation in different incentive types.

## Insights on the Link Between Subsidies and Quality: Research on QRIS

Finally, other studies of state and local quality rating and improvement systems (QRIS) also provide some evidence that suggests potentially positive links between subsidy reimbursement rates and child care quality. For example, a study of the North Carolina QRIS found that lower quality ratings led to future quality improvements; the authors hypothesized that tiered subsidy reimbursement rates attached to quality ratings (i.e., higher rates for higher quality ratings), along with market pressures, may be driving this impact.<sup>52</sup> Additionally, recent analyses of state QRIS have started to examine patterns of quality ratings among QRIS offering tiered reimbursement rates (and among states requiring QRIS participation and/or quality rating requirements to participate in the subsidy system);<sup>53</sup> research is needed that can assess casual effectiveness of these financial incentives.

Because a critical objective of the child care subsidy program is to increase low-income families' access to high-quality care, the findings of these studies are important. The field first needs to understand if subsidies can impact the quality of care a child receives and then understand the optimal reimbursement rate level that leads to an improvement in the quality of care families with subsidies can access and select. To date, little research exists on the optimal reimbursement rate levels needed to allow families to access high-quality care. Based on current evidence, there is not a clear understanding of whether the 75<sup>th</sup> percentile threshold is sufficient: Market rates collected through surveys reflect the rates providers charge, but may not be reflective of the true cost of

xxx The binary quality composite measure used in this study was equal to 1 if providers met at least two of the three quality indicators: "having a quality rating from a state or local agency, a child care resource and referral agency, or an accreditation body; provider policies on professional development; use of standardized curricula." Survey items differ depending on provider type. See pages 12 and 32 of Greenberg, et al. (2018) for more details.

xxxi This study also looked at workforce qualifications, use of curriculum, and financial support for paid time off (PTO) or professional development (PD) as indicators of quality. For centers, increases in the base reimbursement rate was associated with financial support for PTO and PD and use of contracts was associated with the use of curriculum in models with covariates. For homes, the provider-friendly policy index was associated with the use of curriculum and financial support for PTO or PD in the full models with all control covariates.

high-quality care, especially if the surveys are not current or if providers do not adequately account for costs in setting tuition rates for child care. Given, many state reimbursement rates fall below recommended levels to allow equal access to the child care market<sup>50</sup> and fall far short of covering the costs to providers of high-quality care,<sup>75</sup> more research is needed to assess whether families can access quality care through the subsidy program, particularly among families with infants and toddlers.

## Additional Research is Needed on Critical Elements of Subsidy Policy Implementation

Better understanding the link between subsidy receipt and subsidy rate levels and child care quality is critical, but additional research is needed beyond reimbursement rates on the other aspects of child care subsidy policy implementation. For example, states have flexibility in determining payment methods (e.g., contracts with providers or vouchers), income eligibility requirements (initial, ongoing, and redetermination), family copayment levels, and whether providers can charge additional fees to families, among other state policy choices. Studies on the implementation of child care subsidies can provide a better understanding of how each of these policy decisions have implications for the effectiveness of subsidies in improving outcomes during the birth-to-3 period and families' access to high-quality care.

In 2001, the Office of Child Care and the Office of Planning, Research, and Evaluation (OPRE) in the Administration for Children and Families launched several experiments on subsidy program strategies, including two experiments testing the effects of specific subsidy implementation and administration policies. One study in Washington State, tested the effect of standard versus an alternative (reduced) copayment schedules on subsidy receipt (total months, consecutive months), parental employment (including the number of hours worked), earnings, and receipt of public benefits. The study found that lower copayments increased the continuity of subsidy use, especially for those families who saw the greatest reduction in their copayments. For the overall study population, the reduced copayment schedule led to 0.7 more months of subsidy receipt and a greater percentage of families receiving subsidies for at least 13 consecutive months (39.9% in the treatment group versus 35.4% in the control group). Important limitations to this study include that study enrollment took place for one month, applied to one geographic area, and included families with children ages 11 and younger, so the results are not limited to impacts affecting the care of infants and toddlers.

Another OPRE study in Cook County, Illinois (which includes Chicago) examining the impacts of expanded income eligibility and longer redetermination periods also found positive and significant impacts on subsidy receipt, although these results are intended, given the program design.<sup>54</sup> Compared to the control group, families in the program group received subsidies for 8 months longer and were more likely to receive subsidies for 7 and 13 consecutive months (64.2% and 36.1% of the treatment group received subsidies for 7 months and 13 months consecutively, respectively, compared to 21.6% and 11.4% for the control group). These effects were consistent, but varied in size of impacts, depending on the specific intervention in this study. Although both policy changes had positive impacts on families' receipt of subsidies, the largest effects were the result of expanded income eligibility, rather than the longer redetermination period. It is important to note that this study was limited to a one metropolitan area and was not limited to families with young children; the authors also noted recruitment difficulties, so results should be generalized

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cautiously. For both the Washington State and Cook County studies, only null impacts were found for employment and household resource indicators.<sup>54,55</sup>

These studies represent an important start to what needs to be known about the impacts of specific elements of subsidy policies, but more research is still needed to better understand how policy changes can help more families access child care subsidies. For example, states vary in the generosity of both initial and continuing income eligibility requirements and these policies affect how many low-income families have access to subsidized care. Based on initial income eligibility thresholds in 2021-2022, six states set income eligibility below 150% of the federal poverty level, 82 even though families just above this threshold may still struggle to pay for child care. However, setting higher income eligibility levels without funding increases may result in longer wait lists or reduced per child spending. State variation in copayment levels is also important: If copayment levels are high relative to family financial resources, this may have implications for families' ability to participate in the subsidy program even if they qualify for assistance. Future research is needed to address these and other implementation concerns.

# Are Child Care Subsidies an Effective Policy for Improving Prenatal-to-3 Outcomes?

The current evidence base demonstrates the effectiveness of both child care subsidy receipt and greater state per child subsidy spending at increasing maternal employment, with some evidence that child care subsidies may improve families access to single, formal child care arrangements and increase earnings. States vary considerably in the choices they make regarding child care subsidy policy, including the level at which they set base subsidy rates and whether these rates allow equal access to the child care market and cover the full cost of providing care. States also vary in the method they use to set these rates and the level of cost burden placed on families participating in the child care subsidy program. Furthermore, federal benchmarks on rates have not been linked to child care quality based in existing research. Current evidence does not provide clear guidance to states on how to implement subsidy policies to ensure subsidies increase access to high-quality child care for families with low incomes (e.g., setting an optimal subsidy reimbursement rate level, eligibility thresholds, or family copayment and fee levels).

# How Do Child Care Subsidies Vary Across the States?xxxii

States face a multitude of choices in subsidy policy and must balance competing policy choices in the context of limited funds. For example, states must decide income eligibility thresholds, policies on family copayments, whether providers may charge additional fees, the methodology for setting and assessing rates, and reimbursement rates levels (base and tiered levels, if applicable). The policy choices states make directly affect the ability of families to access child care.

States have significant flexibility within the federal guidelines to determine how and for whom child care subsidies funded by the CCDF are available. State variation in eligibility requirements center largely around income eligibility thresholds and activity requirements (work, education, and training). States may set eligibility thresholds higher than the federal level (85% of state median

xxxii For details on state progress implementing child care subsidies, see the child care subsidies section of the US Prenatal-to-3 State Policy Roadmap: https://pn3policy.org/pn-3-state-policy-roadmap-2022/us/child-care-subsidies/

income), but only if they are using state funds to cover the cost of this part of their subsidy program. States have latitude to set their thresholds lower, meaning fewer families are eligible to receive subsidies (Table 3a). States may also have different requirements regarding application procedures, including whether they maintain a wait list, redetermination procedures, and if they serve any priority groups (e.g., families receiving TANF, children with special needs, very lowincome families, children in child protective services, teen parents).

States also vary in family copayment policies, such as exemptions from copayments, how copayment amounts are calculated, who collects copayments, and copayment amounts. As of September 2022, the monthly copayment amount for a family of three with an income at 150 percent of the federal poverty level (FPL) ranged from \$0 to \$403 per month across states (or from 0% to 14.0% of family income), with a national median of \$132, or 4.3 percent of family income (see Table 3a). As of 2022, 40 states allowed providers to charge additional fees to cover the difference between reimbursement rates and the provider's price of care. As a result, families may experience even higher cost burdens, depending on how well reimbursement rates cover the price of care. The percentage of the total cost of care paid by a family with income at 150 percent of the FPL, including both copayments and additional fees, varies across states, from 0 percent to 54.8 percent. Although child care subsidies reduce the out-of-pocket cost of care for families, high copayments and fees may still represent a financial burden for families and make child care difficult to afford.

Finally, states also vary in terms of provider policies, including the types of providers that can participate in the subsidy program, reimbursement rates (e.g., base levels, use of tiered rates attached to quality indicators, rates compared to federal benchmarks and cost estimation models, the use and recency of market rate survey or alternative methodologies), and payment policies. Payment policies include how providers are paid (contracts, vouchers, or cash) and who pays providers (directly by the agency or by the family, who is paid by the agency).<sup>3</sup>

One example of state variation is how well states' reimbursement rates compare to the market for child care in their state, specifically whether state base reimbursement rates meet the federal equal access benchmark of the 75<sup>th</sup> percentile of the market based on a recent market rate survey (Table 3b). As of September 2022, 15 states' base reimbursement rates for infants and toddlers in center-based and family child care arrangements meet or exceed the 75<sup>th</sup> percentile of a market rate survey (MRS) conducted in 2020 or more recently. <sup>57,xxxiii</sup> Some states meet or exceed this standard for either infants or toddlers in center-based or family child care arrangements, but not across all age/type groups. For states that have either recent or outdated MRS, 24 states meet or exceed this threshold for infants in center-based care, 22 states for toddlers in center-based care, 27 states for infants in family child care, and 26 states for toddlers in family child care.

Another example of state variation is how well states' reimbursement rates compare to the estimated true cost of providing child care. In some locations, the market price may not accurately reflect the true cost of care (e.g., price is tied more closely to the perceived ability of families to pay for care through family income, cost for infants and toddlers is offset by the price charged for care

xxxiii States that meet this criterion include: AL, FL, ID, KS, KY, LA, MD, MI, MT, NE, ND, OR, SC, SD, UT.

of preschool-aged children).<sup>74</sup> States vary in how well base reimbursement rates cover the estimated cost of providing care (Table 3b); in 2022, 12 states have base reimbursement rates that fully cover the cost of base-quality care (as estimated by the Center for American Progress).<sup>84,xxxiv</sup> Cost modeling, which allows states to estimate the costs of care by age, type of provider, and quality level (rather than the price charged), is only used by the District of Columbia, New Mexico, and Virginia to inform reimbursement rate setting, as of September 6, 2022.

Increasing provider reimbursement rates represents a potential policy lever that states may use to promote greater access to high-quality child care, because quality improvements, such as adding more experienced staff, implementing staff trainings, or purchasing new curriculum materials, can be costly. However, if rates are raised without additional federal or state funding, states may need to limit the number of families served. States may also set higher reimbursement rates for providers that implement quality initiatives; in 2022, of 44 states with QRIS (statewide, non-statewide, and piloting), 38 states tied subsidy reimbursement rates specifically to QRIS quality tiers (see Table 3c for details).

xxxiv These states include HI, ID, IL, LA, MI, NH, NJ, OR, SD, VA, WA, WI

Table 3a: State Variation in Child Care Subsidies

Tuble 5a. State variation		1		
State	Income Eligibility as a % of the FPL	Monthly Copayment as a % of Income for a Family of 3 at 150% of FPL	State Allows Provider to Charge Family the Difference Between Reimbursement Rate and Provider Rate	Family's Percentage of the Total Cost of Care
Alabama	178%	5.0%	Yes	16.9%
Alaska	261%	6.0%	Yes	39.3%
Arizona	165%	2.2%	Yes	26.4%
Arkansas	226%	1.5%	Yes	5.7%
California	356%	0.0%	Yes	0.0%
Colorado	235%	6.1%	No	9.3%
Connecticut	287%	6.0%	Yes	29.3%
Delaware	185%	9.0%	Yes	34.0%
District of Columbia	243%	2.1%	No	3.0%
Florida	150%	3.5%	Yes	8.7%
Georgia	162%	7.0%	Yes	54.8%
Hawaii	279%	4.0%	Yes	19.5%
Idaho*	145%	2.8%	Yes	7.2%
Illinois	200%	4.8%	Yes	10.4%
Indiana*	127%	1.6%	Yes	30.1%
Iowa*	145%	5.2%	Yes	31.8%
Kansas	250%	2.8%	Yes	9.4%
Kentucky	200%	9.4%	Yes	27.7%
Louisiana	198%	0.0%	Yes	0.0%
Maine	293%	9.0%	No	27.8%
Maryland	274%	0.5%	Yes	0.8%
Massachusetts	251%	2.1%	No	3.3%
Michigan	185%	0.0%	Yes	0.0%
Minnesota	203%	2.9%	Yes	18.8%
Mississippi	223%	6.1%	Yes	30.0%
Missouri*	138%	4.1%	Yes	40.1%
Montana	185%	14.0%	Yes	42.8%
Nebraska	185%	7.0%	No	17.6%
Nevada	268%	11.3%	Yes	28.3%
New Hampshire	220%	12.5%	Yes	34.9%
New Jersey	200%	0.0%	Yes	0.0%
New Mexico	350%	0.0%	No	0.0%
New York	200%	0.3%	Yes	5.0%

Table 3a: State Variation in Child Care Subsidies (Continued)

	Income Eligibility as a	Monthly Copayment as a % of Income for a Family of 3 at 150% of	State Allows Provider to Charge Family the Difference Between Reimbursement Rate	Family's Percentage of the Total
State	% of the FPL	FPL	and Provider Rate	Cost of Care
North Carolina	200%	10.0%	Yes	44.0%
North Dakota	239%	6.1%	Yes	19.2%
Ohio*	142%	8.9%	No	17.8%
Oklahoma	248%	7.3%	No	25.0%
Oregon	200%	0.3%	Yes	0.6%
Pennsylvania	200%	5.6%	Yes	19.8%
<b>Rhode Island</b>	180%	5.0%	No	11.5%
South Carolina	300%	1.7%	Yes	5.2%
South Dakota	217%	0.0%	Yes	0.0%
Tennessee	263%	7.1%	Yes	24.2%
Texas	200%	9.4%	Yes	30.3%
Utah	290%	0.0%	Yes	0.0%
Vermont	297%	0.0%	Yes	0.0%
Virginia	247%	8.0%	Yes	14.5%
Washington	234%	3.1%	No	3.8%
West Virginia*	146%	4.3%	No	14.7%
Wisconsin	185%	8.7%	Yes	16.8%
Wyoming	186%	1.3%	Yes	5.2%
Best State	356%	0.0%	N/A	0.0%
Worst State	127%	14.0%	N/A	54.8%
State Median	200%	4.3%	N/A	16.8%
State Count	N/A	N/A	40	N/A

Notes: An "\*" indicates this state is one of six whose initial income eligibility limit is below 150% FPL. For these states, household income and subsequent copayment fees were based on the maximum household income allowed for subsidy receipt instead of the household income at 150% FPL. The total cost of care is assumed to be the value of care at the 75th percentile of market rates in the most populous geographic area in the state. The family's costs include both copayment fees and any additional fees they may be responsible for that are not fully covered by the state's reimbursement rate. States may update subsidy policies between Roadmap data collection and publication; data for these states will be updated in late 2022/early 2023. For additional details, please see <a href="Methods & Sources">Methods & Sources</a>.

Sources: As of September 6, 2022. Personal communication with state CCDF administrators and other staff overseeing the state's child care subsidy programs, state agency websites, state CCDF plans, and state market rate surveys. When additional fee data could not be verified, data were pulled from the National Women's Law Center (as of February 2019).

Table 3b: State Variation in Child Care Subsidy Reimbursement Rates for Infants in Center-Based Care

State	Current Base Reimbursement Rate	75 <sup>th</sup> Percentile of the Most Recent Market Rate Survey	Estimated Cost of Base- Quality Care	Estimated Cost of High- Quality Care	Year of Market Rate Survey Used to Set Current Reimbursement Rates
Alabama	\$845	\$845	\$1,031	\$1,763	2021
Alaska	\$980	\$1,260	\$1,442	\$2,687	2017*
Arizona	\$1,050	\$1,342	\$1,283	\$1,970	2018*
Arkansas	\$732	\$711	\$1,149	\$1,809	2019
California	\$1,688	\$1,688	\$1,785	\$2,692	2018*
Colorado	\$1,396	\$1,881	\$1,446	\$2,283	2022
Connecticut	\$1,322	\$1,625	\$1,712	\$2,855	2018*
Delaware	\$1,154	\$1,357	\$1,403	\$2,226	2021
District of Columbia	\$1,620	NR	\$2,043	\$2,521	2021
Florida	\$1,155	\$795	\$1,364	\$1,960	2019-2020
Georgia	\$715	\$1,135	\$1,013	\$2,002	2021
Hawaii	\$1,733	\$1,990	\$1,690	\$2,157	2019*
Idaho	\$1,039	960	\$1,002	\$1,799	2021
Illinois	\$1,339	\$1,255	\$1,182	\$2,432	2021
Indiana	\$1,070	\$1,473	\$1,312	\$1,823	2018
Iowa	\$807	\$971	\$1,373	\$1,921	2020
Kansas	\$858	\$811	\$1,295	\$2,398	2021
Kentucky	\$983	\$941	\$1,189	\$2,102	2020
Louisiana	\$1,422	\$690	\$834	\$1,830	2020
Maine	\$932	\$932	\$1,622	\$2,287	2020-2021
Maryland	\$1,638	\$1,636	\$2,040	\$2,886	2021
Massachusetts	\$1,661	\$1,874	\$2,006	\$2,963	2018
Michigan	\$1,531	\$1,218	\$1,135	\$2,001	2021
Minnesota	\$1,586	\$1,850	\$1,658	\$2,226	N/A
Mississippi	\$600	\$607	\$1,098	\$1,728	2018*
Missouri	\$789	\$1,142	\$1,449	\$2,050	2018*
Montana	\$941	\$941	\$1,075	\$1,943	2020
Nebraska	\$1,150	\$1,150	\$1,196	\$2,062	2021
Nevada	\$1,307	\$1,368	\$1,109	\$2,229	2018*
New Hampshire	\$1,192	\$1,278	\$1,150	\$2,243	2021
New Jersey	\$1,524	\$1,455	\$1,462	\$2,647	2021

Table 3b: State Variation in Child Care Subsidy Reimbursement Rates for Infants in Center-Based Care (Continued)

		75 <sup>th</sup>			Year of Market
		Percentile of the Most	Estimated Cost of	Estimated Cost of	Rate Survey Used to Set
State	Current Base Reimbursement Rate	Recent Market Rate Survey	Base- Quality Care	High- Quality Care	Current Reimbursement Rates
New Mexico	\$880	N/A	\$1,061	\$1,974	N/A
New York	\$1,759	\$1,842	\$1,872	\$2,593	2017-2018
North Carolina	\$963	\$1,205	\$1,155	\$1,879	2015*
North Dakota	\$913	\$913	\$1,140	\$2,078	2021
Ohio	\$994	\$1,300	\$1,060	\$2,031	2020
Oklahoma	\$795	\$837	\$1,318	\$1,817	2017*
Oregon	\$1,705	\$1,595	\$1,580	\$2,502	2020
Pennsylvania	\$1,033	\$1,088	\$1,437	\$2,196	2019
<b>Rhode Island</b>	\$1,024	\$1,252	\$1,625	\$2,713	2021
South Carolina	\$923	\$923	\$1,138	\$1,742	2020
South Dakota	\$922	\$922	\$810	\$1,793	2021
Tennessee	\$1,018	\$1,075	\$1,398	\$1,887	2020
Texas	\$891	\$874	\$1,254	\$1,947	2021
Utah	\$1,040	\$999	\$1,381	\$1,985	2020-2021
Vermont	\$1,257	\$1257	\$1,742	\$2,320	2019
Virginia	\$1,715	N/A	\$1,581	\$2,243	2018
Washington	\$2,323	\$2,362	\$1,710	\$2,521	2018*
West Virginia	\$753	\$782	\$1,368	\$2,057	2021
Wisconsin	\$1,491	\$1,473	\$1,385	\$2,009	2018*
Wyoming	\$731	\$732	\$1,248	\$2,110	2017

Notes: An "\*" indicates that there is a more recent Market Rate Survey available to use in setting base reimbursement rates. The estimated cost of base-and high-quality care were derived from child care cost-estimation models developed by the Center for American Progress. NA = Not Applicable. The District of Columbia and New Mexico currently use a cost-estimation model rather than a market rate survey (MRS) and do not have values for the 75th percentile. Virginia does not report the 75th percentile value in their most recent MRS and is in the process of moving to a cost estimation model. States may update subsidy policies between Roadmap data collection and publication; data for these states will be updated in late 2022/early 2023. For additional details, please see Methods & Sources.

Sources: As of September 6, 2022. Personal communication with state CCDF Administrators and other staff overseeing the state's child care subsidy programs; State children and families department websites; and State Market Rate Surveys.

Table 3c: State Variation in Tiered Reimbursement Rates

State	Subsidy Reimbursement Rate Tied to QRIS Quality Tier
Alabama	Yes, and QRIS participation is Mandatory for all licensed providers
Alaska	No, and QRIS participation is voluntary.
Arizona	Yes, but QRIS participation is voluntary.
Arkansas	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.
California	No, and QRIS participation is voluntary.
Colorado	Yes, and QRIS participation is mandatory for all licensed providers
Connecticut	No QRIS (pilot)
Delaware	Yes, but QRIS participation is voluntary.
District of Columbia	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.
Florida	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies
Georgia	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies
Hawaii	No QRIS
Idaho	No, and QRIS participation is voluntary.
Illinois	Yes, and QRIS participation is mandatory for all licensed providers
Indiana	Yes, but QRIS participation is voluntary.
Iowa	Yes, but QRIS participation is voluntary.
Kansas	No, and QRIS participation is voluntary.
Kentucky	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies
Louisiana	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.
Maine	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.
Maryland	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.
Massachusetts	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.
Michigan	Yes, but QRIS participation is voluntary.
Minnesota	Yes, but QRIS participation is voluntary.
Mississippi	No QRIS
Missouri	No QRIS
Montana	Yes, but QRIS participation is voluntary.
Nebraska	Yes, but QRIS participation is voluntary.
Nevada	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.

Table 3c: State Variation in Tiered Reimbursement Rates (Continued)

State	Subsidy Reimbursement Rate Tied to QRIS Quality Tier			
New	Yes, but QRIS participation is voluntary			
Hampshire				
New Jersey	Yes, but QRIS participation is voluntary.			
<b>New Mexico</b>	Yes, but QRIS participation is voluntary			
New York	No, and QRIS participation is voluntary.			
North Carolina	Yes, and QRIS participation is mandatory for all licensed providers			
North Dakota	No, and QRIS participation is voluntary.			
Ohio	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies			
Oklahoma	Yes, and QRIS participation is mandatory for all licensed providers			
Oregon	Yes, and QRIS participation is mandatory for all licensed providers			
Pennsylvania	Yes, and QRIS participation is mandatory for all licensed providers			
Rhode Island	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.			
South Carolina	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.			
South Dakota	No QRIS (in planning)			
Tennessee	Yes, and QRIS participation is mandatory for all licensed providers			
Texas	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.			
Utah	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.			
Vermont	Yes, and QRIS participation is mandatory for all licensed providers			
Virginia	Yes, but QRIS participation is voluntary.			
Washington	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.			
West Virginia	No QRIS (in planning).			
Wisconsin	Yes, and QRIS participation is mandatory if a provider serves children receiving subsidies.			
Wyoming	No QRIS			
<b>State Count</b>	38			

Source: As of July 2022. The Build Initiative and Child Trends' Quality Compendium Data System, State QRIS and Administrative Child Care websites, and State 2022-2024 CCDF Plans. For additional source and calculation information, please refer to the  $\underline{\text{Methods and Sources}}$  section of  $\underline{\text{pn3policy.org}}$ .

#### **How Did We Reach Our Conclusions?**

# Method of Review

This evidence review began with a broad search of all literature related to the policy and its impacts on child and family wellbeing during the prenatal-to-3 period. First, we identified and collected

relevant peer-reviewed academic studies as well as research briefs, government reports, and working papers, using predefined search parameters, keywords, and trusted search engines. From this large body of work, we then singled out for more careful review those studies that endeavored to identify causal links between the policy and our outcomes of interest, taking into consideration characteristics such as the research designs put in place, the analytic methods used, and the relevance of the populations and outcomes studied. We then subjected this literature to an indepth critique and chose only the most methodologically rigorous research to inform our conclusions about policy effectiveness. All studies considered to date for this review were released on or before February 28, 2022.

## Standards of Strong Causal Evidence

When conducting a policy review, we consider only the strongest studies to be part of the evidence base for accurately assessing policy effectiveness. A strong study has a sufficiently large, representative sample, has been subjected to methodologically rigorous analyses, and has a well-executed research design allowing for causal inference—in other words, it demonstrates that changes in the outcome of interest were likely caused by the policy being studied.

The study design considered most reliable for establishing causality is a randomized controlled trial (RCT), an approach in which an intervention is applied to a randomly assigned subset of people. This approach is rare in policy evaluation because policies typically affect entire populations; application of a policy only to a subset of people is ethically and logistically prohibitive under most circumstances. However, when available, RCTs are an integral part of a policy's evidence base and an invaluable resource for understanding policy effectiveness.

The strongest designs typically used for studying policy impacts are quasi-experimental designs (QEDs) and longitudinal studies with adequate controls for internal validity (for example, using statistical methods to ensure that the policy, rather than some other variable, is the most likely cause of any changes in the outcomes of interest). Our conclusions are informed largely by these types of studies, which employ sophisticated techniques to identify causal relationships between policies and outcomes. Rigorous meta-analyses with sufficient numbers of studies, when available, also inform our conclusions.

# Studies That Meet Standards of Strong Causal Evidence

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