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## **A Critical Analysis of Racial Disparities in ECE Subsidy Funding**

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**Abstract:** Participation in high-quality early care and education (ECE) is associated with positive academic and social outcomes for children. However, Black and Latinx children are significantly less likely than White children to attend a high-quality ECE program, a disparity that may be linked to differences in funding. Using a critical policy analysis framework, we explored the extent to which Pennsylvania's tiered funding policy, which awards greater funding to ECE providers with higher quality evaluation scores, differentially benefits children and communities along racial lines. We found that the average Black and Latinx children's ECE providers received substantially less tiered funding than the average White child's provider. Funding also varied by the racial composition of children's communities, with providers serving children from predominantly Black communities receiving far less funding than providers serving children from predominantly White communities. Racial funding gaps widened over time as state policy

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changed to award greater tiered funding to providers with the highest quality scores. We discuss findings within the context of longstanding historical racism in federal ECE funding policy, and make recommendations for more racially just policy alternatives.

**Keywords:** early childhood education; child care; race; finance; policy; equity

### **Análisis crítico de las disparidades raciales en la financiación de los subsidios de ECE**

**Resumen:** La participación en cuidado y educación infantil (ECE) de alta calidad está asociada con resultados académicos y sociales positivos para los niños. Sin embargo, los niños negros y latinos tienen significativamente menos probabilidades que los niños blancos de asistir a un programa ECE de alta calidad, una disparidad que puede estar relacionada con las diferencias en la financiación. Utilizando un marco de análisis de política crítico, exploramos hasta qué punto la política de financiación escalonada de Pensilvania otorga mayor financiación a los proveedores de ECE con puntajes de evaluación de mayor calidad, beneficia de manera diferencial a los niños y las comunidades a lo largo de las líneas raciales. Descubrimos que los proveedores promedio de ECE para niños negros y latinos recibieron sustancialmente menos fondos que el proveedor promedio para niños blancos. La financiación también varió según la composición racial de las comunidades de niños, y los niños que atienden a comunidades predominantemente negras reciben muchos menos proveedores de fondos que los que atienden a niños de comunidades predominantemente blancas. Las brechas raciales de financiamiento se ampliaron con el tiempo a medida que la política estatal cambió para otorgar mayores fondos escalonados a los proveedores con los puntajes de calidad más altos. Discutimos los hallazgos dentro del contexto del racismo histórico de larga data en la política federal de financiamiento de ECE y hacemos recomendaciones para alternativas de políticas antirracistas.

**Palabras-clave:** educación de la primera infancia; cuidado de los niños; raza; finanzas; política; equidad

### **Análise crítica das disparidades raciais no financiamento de subsídios à ECE**

**Resumo:** A participação em cuidados e educação infantil (ECE) de alta qualidade está associada a resultados acadêmicos e sociais positivos para as crianças. No entanto, as crianças negras e latinas são significativamente menos propensas do que as crianças brancas a frequentar um programa de educação infantil de alta qualidade, uma disparidade que pode estar ligada a diferenças no financiamento. Usando uma estrutura de análise crítica de políticas, exploramos até que ponto a política de financiamento escalonado da Pensilvânia, que concede maior financiamento a provedores de ECE com pontuações de avaliação de qualidade mais altas, beneficia de forma diferenciada crianças e comunidades ao longo de linhas raciais. Descobrimos que os provedores médios de ECE para crianças negras e latinas receberam substancialmente menos financiamento do que o provedor médio de crianças brancas. O financiamento também variou de acordo com a composição racial das comunidades infantis, com provedores que atendem crianças de comunidades predominantemente negras recebendo muito menos financiamento do que provedores que atendem crianças de comunidades predominantemente brancas. As lacunas de financiamento racial aumentaram ao longo do tempo, à medida que a política estadual mudou para conceder maior financiamento escalonado aos provedores com as mais altas pontuações de qualidade. Discutimos as descobertas no contexto do racismo histórico de

longa data na política federal de financiamento da ECE e fazemos recomendações para alternativas políticas antirracistas.

**Palavras-chave:** educação infantil; cuidados infantis; raça; finança; política; equidade

## **A Critical Analysis of Racial Disparities in ECE Subsidy Funding**

Participation in early care and education (ECE) leads to positive academic and social outcomes for children. These outcomes include greater kindergarten readiness, lower rates of grade retention and referral for special education, higher rates of high school graduation and postsecondary degree attainment, and fewer interactions with the criminal legal system (Gray-Lobe et al., 2021; Meloy et al., 2019). Importantly, only *high-quality* ECE is associated with sustained positive outcomes (Phillips et al., 2017), and the benefits of exposure to quality ECE are particularly pronounced for Black and Latinx children (Bassok, 2010). However, children of color—and especially Black children—are significantly less likely than their White peers to attend a quality ECE program, a disparity that has been documented across a range of settings, including state-funded pre-kindergarten (Gillispie, 2019; Rothwell, 2016; Valentino, 2018), city-based universal pre-kindergarten (Latham et al., 2020), and Head Start (Hillemeier et al., 2013). Yet, across ECE programs, average quality is lowest in child care subsidy programs (Johnson et al., 2012; Johnson et al., 2020), suggesting racial quality gaps could be even starker for Black and Latinx children served in these settings.

Lower access to quality ECE among children with subsidies is likely a result of several factors, including inadequate funding. Most subsidy programs fund ECE providers at low levels. For example, in 2019, only four states set subsidy payment rates at the federally recommended level, and in 23 states, payment rates were at least 20 percent below the recommended rate (Schulman, 2019). Low funding makes it difficult for ECE providers serving children with subsidies to afford key resources associated with quality, such as well-qualified teachers and developmentally-appropriate curricular materials. Indeed, studies have found that insufficient subsidy payments are linked to fewer resources and lower observed quality among ECE providers (Rohacek et al., 2010), while higher subsidy payments are positively associated with resource investment and higher scores on measures of ECE quality (Greenberg et al., 2018; Rigby et al., 2007; Scott et al., 2011). The relationship between subsidy funding and quality has particular implications for racial equity because Black and Latinx children are disproportionately enrolled in ECE subsidy programs. Of the approximately 1.3 million children served by the Child Care and Development Fund (CCDF), a federal block grant to states that funds ECE subsidies for working families with low incomes, 40% were Black and 24% were Latinx (Office of Child Care, 2019).

Federal and state policymakers have increasingly recognized that higher quality ECE costs more. To offset some of the increased cost of providing quality ECE to children with subsidies, 42 states and the District of Columbia have implemented policies that award additional subsidy funding to ECE providers with high quality ratings on state evaluations (called quality rating and improvement systems, or QRIS). Additional funding through these tiered payment policies is often substantial. For example, in Pennsylvania in 2019, an ECE provider with the highest QRIS score received almost 40% more per child than a provider with a low QRIS score. Research on tiered funding policies has found an association between these financial incentives and quality improvements (Greenberg et al., 2018). However, no studies have examined the distribution of tiered subsidy funding by race, despite evidence showing Black and Latinx children are more likely

to be enrolled with ECE providers with lower QRIS scores that would be excluded from additional funding under these policies.

This study fills that gap by exploring racial disparities in access to tiered subsidy funding in Pennsylvania. Pennsylvania's ECE subsidy program, which is funded by the CCDF, serves the highest share of eligible Black children and the second highest share of Latinx children of any state (Ullrich et al., 2019), making it a particularly crucial case study for exploring racial funding disparities. Our research questions are:

1. To what extent are there disparities by children's race and community racial composition in tiered subsidy funding in Pennsylvania?
2. To what extent have funding patterns changed by children's race and community racial composition as Pennsylvania's tiered funding rates have changed?

To answer these questions, we analyzed de-identified child-level and provider-level data from Pennsylvania's Office of Child Development and Early Learning, along with demographic data for the communities in which children lived from the American Community Survey. Our descriptive analysis found that across all ages of children birth-5, Black and Latinx children's ECE providers received significantly less tiered funding, on average, than providers of their White peers. Gaps were particularly stark for Black children. For example, in 2019, the average Black infant was enrolled with a provider that received \$3.15 in daily tiered funding. Comparatively, non-Hispanic White infants, on average, were enrolled with a provider that received \$6.00. Children living in predominantly White communities also benefited from substantially more tiered funding awarded to their ECE providers compared to children living in predominantly Black communities. Moreover, racial funding disparities widened over time as Pennsylvania's policy changed to award greater tiered funding to providers with the highest quality scores. Given the link between subsidy funding levels and quality, these findings suggest tiered funding policies may contribute to ECE quality gaps experienced by Black and Latinx children and their communities. As ECE providers continue to experience financial stress caused by the Covid-19 pandemic, and as the Biden administration pledges historical federal investments in ECE funding, these findings indicate a need for all levels of government to revise current policy to ensure all children have equal access to high-quality, well-funded early care and education.

## **Conceptual Framework and Historical Overview of ECE Funding Policy**

The Child Care and Development Fund (CCDF) was established in 1996 and most recently reauthorized in 2014. However, the CCDF's policy heritage dates back to the early 1900s. Boddie (2016) argues that racial discrimination is dynamic and regenerative, adapting to laws and social norms over time to entrench racial disadvantage through White privilege, racialized class ideologies, and implicit bias. ECE subsidy policy is a prime example of this theory of adaptive discrimination in practice. In this section, we explore how CCDF policies created racial disparities in ECE funding in the past in order to better understand how contemporary policies—i.e., tiered subsidy rates—may be reproducing them today. This consideration of the historical context surrounding policy is a hallmark of critical policy analysis research (Diem & Young, 2015), and may be especially important in the analysis of ECE given its longstanding neoliberal link to parental employment and economic production (Horsford et al., 2018). Throughout this critical historical overview, we specifically attend to how policy designs shaped the social construction of public ECE funding recipients (Schneider & Ingram, 1993) and reinforced dominant cultural norms around which children and families were deserving of access to ECE (Young & Diem, 2018). While Latinx children have experienced barriers

to participation in CCDF-funded subsidy programs (Gennetian et al., 2019), we focus primarily on how ECE funding policy has marginalized Black children. Black families have been and remain today a disproportionate share of CCDF recipients, and, as Boddie notes, are “the racial group most conventionally identified with racial subordination” (2016, p. 1,241).

### **Racial Exclusion**

Biases surrounding which mothers were deserving of public aid to support the care and education of their young children were a driving social force of early ECE policy. In the 1900s, concern grew for the children of single mothers who were forced to perform wage-earning work (Rose, 1999). In a landmark address at the 1909 White House Conference for the Care of Dependent Children, President Roosevelt proclaimed: “Home life is the highest and finest product of civilization...Except in unusual circumstances, the home should not be broken up for reasons of poverty, but only for considerations of inefficiency or immorality” (Proceedings, 1909, p. 17-18). By 1920, 40 states passed legislation that provided monthly pensions to widowed, divorced, and unmarried mothers with dependent children, marking the first public aid program explicitly intended to support ECE (Rose, 1999). However, to receive a pension, mothers had to demonstrate that they were physically, morally, and mentally fit to care for their children. This subjective “suitable home” policy was administered locally, allowing for inconsistent and discriminatory application, especially on the basis of race (Cahan, 1989). States further excluded Black mothers from pensions by simply not establishing pension programs in localities with large Black populations (Gooden, 2006). These practices created massive disparities in funding access, with data suggesting Black families received only 3% of pensions (Leff, 1973). A stigma quickly grew that single mothers without pensions must be immoral or unfit to care for their children, perpetuating racialized stereotypes around who was deserving of ECE aid (Cahan, 1989).

Racial bias and racial exclusion were also central to the enactment and implementation of the federal Aid to Dependent Children program (ADC; later renamed Aid to Families of Dependent Children), which was established in 1935 as part of the Social Security Act to augment mothers’ pensions. Congress removed language from the original bill that outlawed racial discrimination, allowing state and local officials to craft policies that excluded families of color, as they did with mothers’ pensions (Neubeck & Cazenave, 2001). Suitable home policies expanded across states, as did policies that denied ADC to mothers thought to have relationships with men who might be providing financial assistance. These “man-in-the-house” policies involved random home searches, often made in the middle of the night, and were disproportionately conducted in Black households. Residency requirements that mandated families live in a state for at least a year before becoming eligible for ADC were implemented in northern states to discourage southern families from joining the Great Migration (Neubeck & Cazenave, 2001). Some states even adopted “employable mother” policies that required Black mothers on ADC rolls to work as agricultural or domestic laborers if jobs were available, such as during cotton picking season, and then discontinued their ADC benefits on the basis of their employment (Goodwin, 1995). A 1942 report by the federal Social Security Board concluded that states’ administrative practices led to fewer Black children receiving ADC aid than White children, though no recommendations were made to remedy the disparity (Neubeck & Cazenave, 2001).

### **White Resistance**

Beginning in the late 1940s and on through the 1980s, a confluence of social and political changes led to substantially more Black families enrolling in ADC, a shift that was met by White resistance and hostility. Following World War II, rates of unemployment and underemployment among Black parents spiked as defense industries closed and White servicemen returned to reclaim

civilian jobs, creating increased demand for ADC benefits. At the same time, ADC enrollment became easier for Black families as a result of civil rights leaders' advocacy, more liberal funding policies in northern cities where Black families increasingly lived, and a series of Supreme Court cases that struck down restrictions like suitable home and employable mother policies (Neubeck & Cazenave, 2001). As the proportion of Black families on ADC rolls grew, states and localities responded by enacting policies that limited spending on Black children. Studies conducted at the time showed these tactics were effective: Black families received less ADC aid than comparable White families (U.S. Commission on Civil Rights, 1966); counties with high shares of Black residents were awarded less generous benefits than predominantly White counties (Schorr & Wagner, 1969); and states with more Black residents had more restrictive eligibility requirements and provided less aid to ADC recipients (Grönbjerg, 1977; Orr, 1976).

State and local policies limiting ADC funding to Black families reflected a hostility toward welfare among White Americans rooted in racial bias, even as evidence repeatedly showed White families benefited more from the program (Wright, 1977). White Americans' strong and negative association between ADC and Black families was animated by their belief that Black families weren't deserving of public dollars. Indeed, studies found that the dual perceptions of welfare recipients as undeserving and Black people as lazy were far more predictive of opposition to welfare programs like ADC than other factors (Gilens, 1999). As White Americans felt increasingly threatened by the civil rights movement's shift from fundamental legal rights in the South to broad economic equality, the growing share of Black families on ADC rolls became "a ready target for growing white racial antipathies" (Neubeck & Cazenave, 2001, p. 120). White politicians mobilized the racist controlling image of the "welfare queen," a "lazy, immoral African-American 'welfare mother'" who defrauded the government by having children in order to receive ADC benefits (Neubeck & Cazenave, 2001, p. 64). This hostility ultimately led to the passage of the 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA), which repealed the ADC, eliminated federal ECE entitlements, and consolidated all federal ECE assistance programs for families with low incomes into the Child Care and Development Fund (CCDF) block grant (Neubeck & Cazenave, 2001).

The PRWORA included several policies intended to exclude the "undeserving" poor from government assistance, including ECE aid (Neubeck & Cazenave, 2001). The trademark feature of PRWORA was its significant expansion of family work requirements. While ostensibly intended to promote personal responsibility and self-sufficiency, work requirements for ECE benefits functioned to reduce eligibility and spending on a program that primarily served Black children (Neubeck & Cazenave, 2001). PRWORA also placed substantial limits on benefits for undocumented families at a time when social perceptions of immigrants from Latin America were becoming increasingly negative, leading some scholars to claim the stereotype of the "undeserving" welfare recipient was shifting from the "welfare queen" to the Hispanic immigrant (Ansell, 1997). Enrollment counts show policies like these were effective at reducing the number of families receiving ECE aid—in 1996, nearly 70% of families in poverty received ADC, while in 2019, the CCDF served only 15% of eligible families (Center on Budget and Policy Priorities, 2021; Chien, 2020).

### **Disparate Administrative Burden**

CCDF policies designed to exclude "undeserving" families continue to make it difficult for Black and Latinx families to access ECE aid today, primarily through administrative burden (Herd & Moynihan, 2018). ECE subsidy applications can be long and complex, and documentation requirements may be especially difficult for parents who work nontraditional hours, hold multiple jobs, or lack a relationship with a financial institution that can provide records. Thirty-three states

require parents to participate in an interview as part of the subsidy application process (Adams & Pratt, 2021), a procedural barrier that not only may be difficult to meet but may also allow for greater racial bias in eligibility determination, especially given evidence that Black and Latinx families are more likely to have negative experiences with subsidy caseworkers (Barnes & Henley, 2018). And as of 2018, 23 states require single mothers receiving CCDF subsidies to work with child support agencies to establish paternity and child support orders and enforce child support obligations (Adams & Pratt, 2021), a seemingly contemporary version of “man-in-the-house” policies that was cited by the U.S. Commission on Civil Rights in an investigation of alleged racial discrimination against CCDF-eligible families in Mississippi (United States Commission on Civil Rights, 2016).

Some CCDF policies are particularly burdensome for Latinx families. For example, seven of the 13 states with the highest percentages of Latinx residents have minimum weekly work hour requirements that are challenging for families who work informal or seasonal jobs (Gennetian et al., 2019). And while CCDF eligibility is based on children’s citizenship status, not their parents’, several states ask for Social Security numbers of family members on enrollment forms, an intimidating administrative hurdle for Latinx parents who may fear revealing family members’ immigration or citizenship status (Gennetian et al., 2019). Notably, CCDF-funded programs operated in public schools cannot restrict access on the basis of children’s citizenship status because such policies are forbidden in K-12 schools (*Plyler v. Doe*, 1982), a fact that highlights the extent to which discriminatory practices banned in other educational sectors remain permissible in subsidy-funded ECE.

In summary, racial disparities and racial exclusion have been a part of ECE funding policy since its beginning. Racialized class ideologies that painted Black and Latinx families with low incomes as undeserving, or even as hoarders or frauds, were used to justify harsh and paternalistic policies that made funding difficult or impossible to obtain. CCDF’s history as a welfare program has led to a persistent focus on compliance and rooting out fraud, as reflected in the burdensome eligibility and documentation requirements in place today (Adams & Pratt, 2021). Notably, policies designed to exclude the “undeserving” poor, like work and child support requirements, are not a part of other means-tested ECE programs like Head Start and state-funded pre-kindergarten, further suggesting CCDF’s association with welfare motivates its policy designs. Altogether, CCDF’s historical and contemporary policies illustrate how racial discrimination has adapted over time to restrict Black and Latinx children and their families from accessing ECE funding. This evidence led us to a deeper investigation of how current funding policies have functioned to either sustain or disrupt these inequities.

### **Access, Quality, and Affordability Under Current CCDF Funding Policy**

The 2014 CCDF reauthorization included significant changes in policy rhetoric, with a new emphasis on both “promoting families’ economic self-sufficiency by making child care more affordable” and “fostering healthy child development and school success by improving the quality of child care” (Child Care and Development Fund (CCDF) Program; Proposed Rule 2013, p. 29, 442). This language recognizing the importance of quality ECE to children’s healthy development was a marked departure from the program’s former and exclusive focus on government-funded ECE as a vehicle for parental employment. Moreover, the 2014 reauthorization recognized that for quality ECE to be accessible to children with subsidies, payment rates have to be adequate. The new rules require states to certify that their base rates—the per-child subsidy amount states pay ECE providers—are high enough to provide children with subsidies with “equal access” to ECE providers. That is, families with subsidies should have the same level of access to providers as

private tuition-paying families. The CCDF recommends base subsidy rates be set at the 75<sup>th</sup> percentile of market rates, or high enough to allow families to access approximately three-quarters of ECE providers in their communities.

However, the CCDF's call for equal access has been far from realized in implementation. In 2019, only four states set base rates equal to or above the 75<sup>th</sup> percentile of market rates, and many states paid a rate substantially below the 75<sup>th</sup> percentile benchmark. Pennsylvania's 2019 base rate fell around the 25<sup>th</sup> percentile of market rates, a rate near the national average (Pennsylvania Department of Human Services, 2019; Schulman, 2019). Low base rates relative to the recommended standard create massive funding gaps for providers. For example, in 19 states, the gap between the base rate and the 75<sup>th</sup> percentile was at least \$200 a month, meaning that in a classroom of 15 four-year-olds with subsidies, a provider would receive \$36,000 less annually than it would if base rates were at the recommended level (Schulman, 2019).

Research suggests funding gaps caused by low base rates are likely to result in lower quality ECE for children with subsidies. ECE providers that enroll children with subsidies receive lower average quality scores compared to providers that don't (Jones-Branch et al., 2004; Raikes et al., 2003). And providers that enroll greater shares of children with subsidies receive lower quality evaluation scores than providers serving fewer children with subsidies (Antle et al., 2008). One interpretation of these findings is that providers that serve children with subsidies are more likely to lack the revenue needed to invest in resources associated with quality (Rohacek et al., 2010). In contrast, when subsidy rates are more generous, evidence indicates providers experience greater financial stability, which in turn leads to investments in quality improvements (Rigby et al., 2007; Scott et al., 2011). A 2019 report found base rates in Pennsylvania covered only 40-66% of the costs assumed by providers serving children with subsidies (Pennsylvania Department of Human Services, 2019). Yet, many performance standards associated with higher levels of quality on the state's quality rating and improvement system (QRIS) are costly. Some of these costs include recruiting and retaining teachers with specialized certifications, providing teachers with professional development, implementing prescribed curriculum and assessment tools, and offering insurance benefits to staff (Pennsylvania Office of Child Development and Early Learning, 2020). ECE providers in Pennsylvania have reported having to compromise on quality, such as by hiring teachers with fewer qualifications who could be paid lower wages, in order to cut costs (Moran et al., 2017; Sirinides & Collins, 2020).

Low base rates may also result in a reduced supply of high-quality ECE providers willing to enroll children with subsidies because the opportunity cost of doing so can be high. ECE providers with higher quality ratings are more likely to have private tuition fees above subsidy rates (Adams et al., 2002), meaning these providers would lose money if they enrolled a child with subsidies over a private tuition-paying family willing to pay more. Indeed, providers that opt not to enroll children with subsidies cite low base rates relative to costs as their primary reason (Adams et al., 2008; Isaacs et al., 2015). CCDF policy does allow ECE providers to charge families the difference between the subsidy base rate and their private tuition rate. However, while some states cap these copayments, others don't, which can put an increased financial burden on families with subsidies seeking quality ECE for their children (Schulman, 2019). Altogether, despite a promise of equal access, current approaches to CCDF funding have created a system that makes access to quality, affordable ECE challenging for children with subsidies.



## Tiered Reimbursement as a Policy Response

Rather than raising base subsidy rates, tiered subsidy rates have become a common policy response for offsetting costs associated with quality ECE and incentivizing high-quality providers to serve children with subsidies. Under tiered subsidy funding policies, often called tiered reimbursement, states reimburse a certain percentage or dollar amount above the base rate for each subsidy recipient a provider serves, and rates increase as providers move up QRIS levels. In 2019, 42 states, including Pennsylvania, had tiered reimbursement policies (Schulman, 2019). The majority of ECE providers in Pennsylvania reported that tiered reimbursement was an extremely important financial incentive (Sirinides et al., 2015), and empirical studies have found tiered rates are linked to growth in provider quality as measured by QRIS (Bassok et al., 2019; Lee, 2021).

Importantly, research suggests the link between tiered funding and quality may only hold if funding increases for higher quality tiers are substantively greater than lower tiers. Greenberg and colleagues (2018) found an additional \$100 difference between payments in the lowest and highest tiers of a reimbursement system was associated with a 40-50% higher likelihood of ECE providers meeting a composite of quality indicators. Similarly, Gormley and Lucas (2000) studied the effects of tiered funding within states that awarded higher subsidy reimbursement rates to providers that earned national accreditation and found that reimbursements at least 15% higher than the base rate appeared to facilitate accreditation, while rates lower than 10% did not. These findings match qualitative reports from ECE leaders that modest differences between levels of tiered reimbursement are not sufficient to achieve or maintain a high-quality program (Alvarez et al., 2015; Moran et al., 2017; Schulman et al., 2012). Pennsylvania has four funding tiers and, consistent with this evidence, the rate difference for providers at lower versus higher tiers has grown over time. For example, for toddlers in 2015, the difference in daily tiered reimbursement rates between providers with the lowest (i.e., STAR 1) and highest (i.e., STAR 4) QRIS scores was \$7.90. In 2019, that difference had grown to \$12.95 (Table 1).

**Table 1**

*Daily, Per-Child Tiered Reimbursement Rates by QRIS Score in Pennsylvania, 2013-2019*

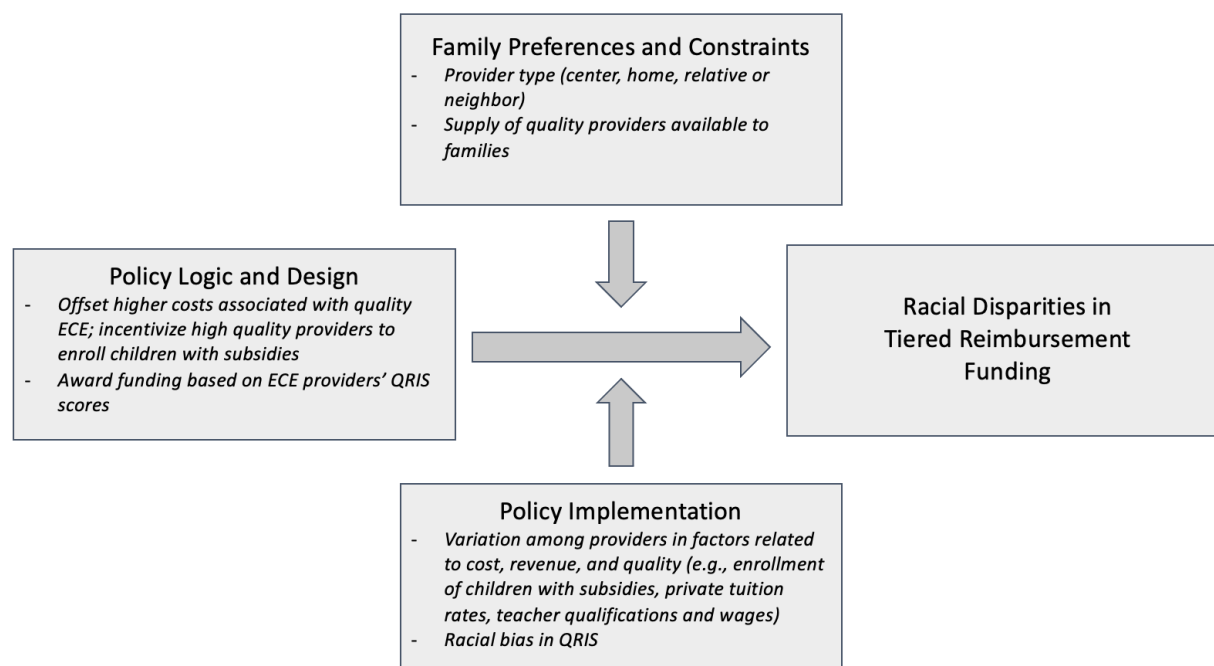
Rates effective 8/1/2013				
	STAR 1	STAR 2	STAR 3	STAR 4
Infant	\$0.35	\$0.95	\$2.80	\$5.00
Toddler	\$0.35	\$0.95	\$2.80	\$5.00
Preschooler	\$0.35	\$0.95	\$2.80	\$5.00
Rates effective 8/1/2015				
	STAR 1	STAR 2	STAR 3	STAR 4
Infant	\$0.35	\$1.55	\$5.55	\$8.40
Toddler	\$0.35	\$1.45	\$5.40	\$8.25
Preschooler	\$0.35	\$0.95	\$4.80	\$7.50
Rates effective 8/1/2017				
	STAR 1	STAR 2	STAR 3	STAR 4
Infant	\$0.00	\$1.55	\$6.80	\$10.30
Toddler	\$0.00	\$1.45	\$6.60	\$10.10
Preschooler	\$0.00	\$0.95	\$5.90	\$9.20

Rates effective 9/1/2019				
	STAR 1	STAR 2	STAR 3	STAR 4
Infant	\$0.00	\$2.00	\$8.70	\$13.20
Toddler	\$0.00	\$1.85	\$8.45	\$12.95
Preschooler	\$0.00	\$0.95	\$5.90	\$9.20

Source: Pennsylvania Office of Child Development and Early Learning

However, despite evidence of the efficacy of tiered reimbursement policies in inducing quality improvements, ECE scholars and advocates have questioned the validity and cultural responsiveness of QRIS (e.g., Cannon et al., 2017; Meek et al., 2020; Sugarman & Park, 2017). These critiques raise concern that if QRIS discriminate in the assignment of quality scores, then tiered reimbursement may also discriminate in the distribution of funding, if funding is tied to QRIS. Studies have found QRIS scores vary based on factors that should be unrelated to instructional quality, such as the ratio of girls to boys (Buell et al., 2017) and the academic content being taught (Cabell et al., 2013). Especially concerning is evidence that QRIS scores vary by race. Neighborhoods with higher shares of Black residents are less likely to have nearby ECE providers with high QRIS scores (Latham et al., 2021), and the QRIS scores of providers in these communities are significantly lower, on average, compared to predominantly White communities (Bassok & Galdo, 2016). ECE facilities owned or operated by Black providers also receive lower quality scores than facilities with White owners or operators (United States Commission on Civil Rights, 2016). Latinx children are much more likely to experience ECE in smaller child care homes or with a relative or neighbor caregiver—settings that are often more culturally and linguistically affirming (Chaudry et al., 2011; Paredes et al., 2020—though home-based providers receive lower average QRIS scores than large child care centers while relatives and neighbors are excluded from QRIS altogether (Bassok et al., 2016). Moreover, QRIS are not aligned with culturally responsive and anti-bias teaching practices (Curenton et al., 2020), and QRIS operators have been criticized for employing majority-White coaches and evaluators, even as teachers of color compose a disproportionate share of the ECE workforce (Nzewi et al., 2020). Altogether, these findings suggest differences in QRIS scores may not result from actual differences in quality, but rather flawed and racially-biased evaluation tools. Indeed, concern around bias within QRIS design and implementation has led some ECE leaders to label QRIS as racist (Nzewi et al., 2020).

Given CCDF's long history of racial inequality and racial exclusion, this evidence led us to question whether contemporary tiered reimbursement policies based on QRIS scores were another example of racial discrimination adapting to exclude Black and Latinx families from ECE funding. A logic model depicting the factors that may influence whether and how tiered reimbursement policy relates to racial disparities in funding is shown in Figure 1.

**Figure 1***Factors Linking Tiered Reimbursement Policy to Racial Funding Disparities*

## Data & Methods

The purpose of our study was to descriptively explore differences in tiered subsidy funding by child race and community racial composition. Descriptive analysis is important for several aims: it helps to provide “basic understanding of a phenomenon” while “identifying hidden patterns in large datasets” (Loeb et al., 2017, p. 2), the latter of which is especially appropriate for the critical analysis of a policy that annually serves over 60,000 individual children. Informed by our critical policy analysis (CPA) framework, our ultimate aim is that this descriptive research can uncover patterns to help policymakers and researchers alike better understand the policy’s implementation and potentially inform policy changes, especially where policy outcomes may differ from stated policy goals. In addition to CPA, we applied tenets of quantitative critical race theory (QuantCrit), which recognizes how statistical analyses can serve equity goals by exposing the “wider structures” that affect the lived experiences of different racialized groups (Gillborn et al., 2018, p. 160). For example, because we used secondary data, we followed Garcia and Mayorga (2018) in considering how data collection methods and the treatment of variables may obscure racial inequities, altering how we operationalized variables as needed.

While we used QRIS scores as a proxy for provider quality, per Pennsylvania policy, we are compelled by evidence of potential bias in QRIS (noted above). Accordingly, we question whether STAR ratings authentically measure the true quality of ECE children experience, and suspend the assumption that a lower STAR rating necessarily indicates an absence of quality ECE.

### Data

Our primary source of data was de-identified information on the universe of ECE subsidy recipients in Pennsylvania from 2014-2019, provided by Pennsylvania’s Office of Child Development and Early Learning (OCDEL). Because subsidies are awarded to individual families,

our analysis was at the child level. Our child-level data included information that permitted us to determine children’s age (which dictates subsidy rates), race and ethnicity, and residential zip code. We merged child-level data with ECE provider-level data that included providers’ zip code, quality rating, and maximum enrollment capacity, which also came from OCDEL. While our sample spanned six years, for the sake of parsimony, we only display data from years when tiered funding rates changed (i.e., 2014, 2015, 2017, and/or 2019).<sup>1</sup> Due to our interest in funding for early care and education, we restricted our sample to children age 5 and younger and eliminated providers that exclusively served school-aged children, as Pennsylvania’s child care subsidy program also serves older children. We eliminated children whose ethnicity was not specified because we used ethnicity to construct our Latinx child population. Our Latinx child population included all children who were identified as Hispanic; our White and Black Latinx populations included children who were identified as being both Hispanic (their ethnicity) and White or Black (their race), respectively.<sup>2</sup> In the years analyzed, we had complete data for more than 60,000 children per year.

Participation in Pennsylvania’s ECE subsidy program declined slightly from 2014 to 2019, with some variation by race and age (Table 2). The number of White and Black children dropped by 12% and 7%, respectively, while the number of Latinx children increased by 12%.<sup>3</sup> For all years, Black children comprised more than half of ECE subsidy recipients, even as Black families made up only 13% of the state population. Latinx residents were 8% of the state’s population in 2019, yet Latinx children were 17% of ECE subsidy recipients. Preschoolers comprised the majority of subsidy program participants across years. The number of toddlers and infants receiving ECE subsidies dropped precipitously from 2014 to 2019.

**Table 2**

*Children with ECE Subsidies in Pennsylvania by Race, Ethnicity, and Age, 2014 to 2019*

	2014	2015	2017	2019
Subsidy recipients, ages birth-5	64,778	61,454	63,086	61,441
White	19,086 (29.5%)	17,647 (28.7%)	17,583 (27.9%)	16,713 (27.2%)
Black	33,681 (52.0%)	32,265 (52.5%)	32,488 (51.5%)	31,119 (50.6%)
Latinx	9,485 (14.6%)	9,218 (15.0%)	10,347 (16.4%)	10,639 (17.3%)

<sup>1</sup> Results for 2016 and 2018 are available on request from the authors.

<sup>2</sup> Because of small sample sizes, our analyses excluded children who were Asian, Native Hawaiian or Pacific Islander, American Indian or Alaskan Native, and whose race was identified as Other or Unknown. In 2019, Black, White, and Hispanic children comprised 95% of all ECE subsidy program enrollment. Results for children of other races are available from the authors by request.

<sup>3</sup> In 2017-18, many ECE providers changed their service delivery in order to comply with revised federal regulations that called for children to spend more time in center-based care. These changes led to providers serving fewer children but for longer periods of time. Providers’ response to these regulations may partly explain the decline in enrollment observed here. Minimal increases in federal and state appropriations for ECE subsidies may also help explain the decline in subsidy enrollment during our sample years.

	2014	2015	2017	2019
White Latinx	2,584 (4.0%)	2,594 (4.2%)	3,104 (4.9%)	3,216 (5.2%)
Black Latinx	1,124 (1.7%)	1,165 (1.9%)	1,412 (2.2%)	1,511 (2.5%)
Infant	4,989 (7.7%)	4,465 (7.3%)	4,765 (7.6%)	4,078 (6.6%)
Toddler	23,072 (35.6%)	21,603 (35.2%)	21,973 (34.8%)	20,882 (34.0%)
Preschooler	36,717 (56.7%)	35,386 (57.6%)	36,348 (57.6%)	36,481 (59.4%)

Source: Pennsylvania Office of Child Development and Early Learning

Note: Percentages in parentheses are the share of that group's total enrollment.

## Methods

We drew on child- and provider-level information to calculate the tiered reimbursement amount a child's provider should have received under Pennsylvania's subsidy policy. As shown in Table 1, these reimbursement rates changed several times during the years of our analysis, and our tiered funding calculations reflect those changes. We used information about children's age (calculated from birth month and year) in the child-level file to create three categories representing differential funding rates: infant (age 0-12 months), toddler (age 12 months-2 years), and preschooler (age 3-5 years). Then, using the provider ID for each subsidy recipient, we linked information on providers' quality ratings to determine tiered funding amounts.

Similarly, to understand the extent to which subsidy recipients were enrolled with providers serving other subsidy recipients, we constructed a density measure by counting the number of subsidy recipients per provider and dividing by the enrollment capacity reported for each provider. Capacity for relative and neighbor providers were not reported and so are not included in our subsidy density analyses.

We also examined how provider quality ratings and average tiered funding varied by the racial composition of children's communities. For children's community characteristics, we merged American Community Survey (ACS) data at the child zip code level using ACS 2013-2017 estimates. A small number of children with subsidies attended providers out of state, which we excluded from our analysis of community characteristics. Some zip codes in Pennsylvania did not have an associated subsidy recipient. ECE subsidy recipients lived in communities that were disproportionately more racially diverse than Pennsylvania communities not serving subsidy recipients. In part because of our interest in understanding whether funding disparities might have implications for early childhood educators (e.g., teacher wages), we used race/ethnicity counts for the entire community population, not just children. After analyzing the distribution of subsidy recipients' communities, we constructed quartiles for the percentage of White and Black community residents across all years of analysis. White resident quartiles were 0-20%; 20-58%; 58-92% and 82-100%. Black resident quartiles were 0-5%; 5-15%; 15-48%; and 48-100%. We did not construct quartiles for Latinx residents because there were relatively low percentages of Latinx residents in half of the zip codes with subsidy recipients (i.e., under 5%).

Because our research questions were comparative in nature, we used descriptive techniques that allowed comparison between subgroups, across time. Primarily, we used cross tabulations when comparing categorical variables like providers' quality ratings and mean comparison for continuous variables such as tiered funding rates or subsidy density. We tested for statistically significant differences throughout. We described trends for children by background characteristics and also looked at gaps between groups and how they changed over time.

## Findings

### **Access to Quality Providers by Children's Race and Ethnicity and Community Racial Composition**

Given evidence that differences in quality from one QRIS level to the next are typically small (Cannon et al., 2017) and the most meaningful differences are between the lowest and highest levels of the QRIS spectrum (Hestenes et al., 2015), we noted changes in the distribution of children enrolled with STAR 1<sup>4</sup> and STAR 4 providers. We were particularly interested in STAR quality gaps, or the difference between the share of children enrolled with STAR 1 and STAR 4 providers.

Across our sample years, children from all racial groups were increasingly enrolled with providers with STAR 4 ratings (Table A-1). However, White children composed the highest share of those enrolled with STAR 4 providers at each time point, and STAR 4 enrollment gaps between White children and Black and Latinx children widened from 2014 to 2019 (Figure 2). That is, in 2014, the share of White children enrolled with STAR 4 providers was 9.7 percentage points higher than the share of Black children enrolled with STAR 4 providers, a gap that grew to 12.3 percentage points by 2019. The White-Latinx STAR 4 enrollment gap grew from 2.7 in 2014 to 7.6 in 2019.

Lower percentages of children of all races were enrolled with STAR 1 providers by 2019, suggesting Pennsylvania's efforts to improve quality, including through tiered reimbursement policy, were effective. However, the decline in the percentage of Black children with STAR 1 providers was smaller than the decline for White or Latinx children. Even by 2019, half of all Black children were with STAR 1 providers, which received no additional funding under Pennsylvania's tiered reimbursement policy. Within the Latinx child population, White Latinx children had a sharper decline in enrollment with STAR 1 providers compared to Black Latinx children.

When examining STAR quality gaps by racial group, we found the difference between STAR 1 and STAR 4 enrollment was greatest for Black children across years. In 2014, 48.3% of White children were enrolled with STAR 1 providers while 18.3% were enrolled with STAR 4 providers, a quality gap of 30.0 percentage points. But by 2019, as the share of children with STAR 4 providers increased and the share with STAR 1 providers decreased, that gap shrunk to less than one percentage point, meaning nearly the same number of White children were enrolled with STAR 4 providers as were enrolled with STAR 1 providers. In contrast, STAR quality gaps for Black children remained large, at 55.4 and 31.9 percentage points in 2014 and 2019, respectively. Quality gaps for Latinx children (16.0 in 2019, a decline from 40.1 in 2014) were smaller compared to Black children yet greater relative to White children. STAR quality gaps for White Latinx children were similar to White non-Latinx children (Table A-1).

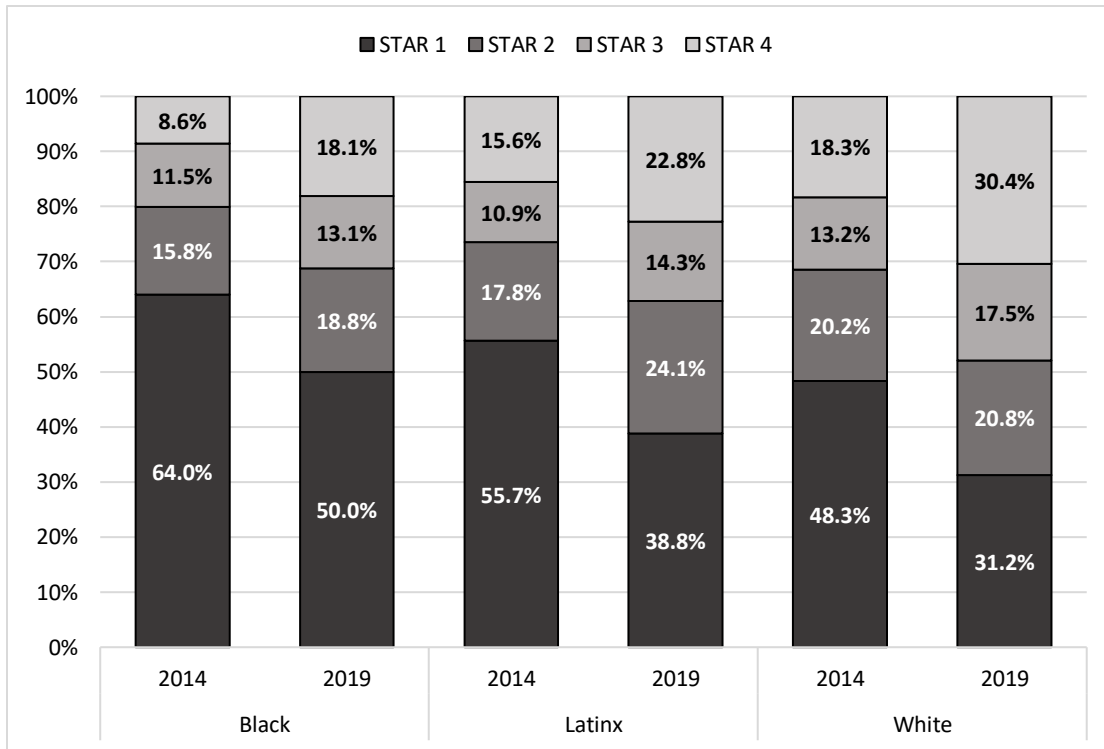
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<sup>4</sup> For various reasons, some ECE providers did not have a STAR rating. Following guidance from OCDEL, we grouped together providers with no STAR rating and STAR 1 ratings, as they are required to meet similar compliance standards. A recent Pennsylvania policy change eliminated the distinction between STAR 1 providers and those with no STAR, automatically assigning any provider without a QRIS rating a STAR 1 designation.

Disparities in access to quality ECE providers for Black and Latinx children may in part be driven by differences in enrollment by provider type. In supplemental analyses (Tables A-2 and A-3), White children were more likely than Black and Latinx children to be enrolled at child care centers, which consistently received higher QRIS scores compared to other provider types. Latinx children had the highest enrollment rates in child care homes. Black children were the most likely to be with relative and neighbor caregivers, who were not eligible to participate in Pennsylvania’s QRIS or receive tiered funding.

**Figure 2**

*Distribution of Children with ECE Subsidies by Provider Quality Rating and Race and Ethnicity, 2014 and 2019*



Source: Pennsylvania Office of Child Development and Early Learning

Note: Differences between racial groups are significant at  $p < .05$  for both years.

Under Pennsylvania’s subsidy policy, providers receive greater tiered funding amounts for younger children because costs associated with their care and education are higher, primarily as a result of the need for lower teacher-child ratios. Evidence that brain development is especially rapid during children’s first years of life (National Research Council, 2000), as well as research finding the emergence of language gaps between children at low and high income levels as early as 18 months old (Fernald et al., 2013), further support the importance of funding ECE subsidies for infants and toddlers at higher levels.

Yet, when analyzing the share of children of different ages and races enrolled with STAR 1 and STAR 4 providers, we found concerning gaps in access (Table 3). White children of all ages were the most likely to be enrolled with STAR 4 providers and the least likely to be enrolled with STAR 1 providers compared to Black and Latinx children in both 2014 and 2019. White children also benefitted from the greatest growth in STAR 4 enrollment and the greatest drop in STAR 1

enrollment, again for all age groups. Among infants, growth in STAR 4 access was lowest for Black subsidy recipients, while among toddlers and preschoolers growth was lowest for Latinx children.

STAR quality gaps by race and age were particularly stark for Black children, especially infants. In 2014, 68.5% of Black infants were enrolled with STAR 1 providers while only 7.1% were enrolled with STAR 4 providers, an enormous gap of 61.4 percentage points. While that gap narrowed over time, it remained a substantial 42.1 percentage points by 2019. Among Black toddlers, STAR quality gaps were 56.8 and 36.2 percentage points in 2014 and 2019, respectively, meaning significantly more Black toddlers were enrolled with STAR 1 providers ineligible for tiered funding than STAR 4 providers that received the greatest tiered funding amounts. By comparison, the 2019 STAR quality gaps for White infants and toddlers were small, at only 4.2 and 3.4 percentage points, respectively.

**Table 3**

*Distribution of Children with ECE subsidies by Provider Quality Rating, Race and Ethnicity, and Age, 2014 and 2019*

Child's race	Child's age	2014		2019		Percentage point change, 2014 to 2019	
		% STAR 1	% STAR 4	% STAR 1	% STAR 4	STAR 1	STAR 4
White	Infant	50.9% (776)	15.1% (231)	32.7% (330)	28.5% (305)	-18.2	13.4
	Toddler	48.3% (3,167)	17.9% (1,176)	32.3% (1,735)	28.9% (1,554)	-16.0	11.0
	Preschooler	47.9% (5,273)	18.9% (2,086)	30.7% (3,156)	31.4% (3,222)	-17.2	12.5
Black	Infant	68.5% (1,789)	7.1% (186)	56.0% (1,220)	13.9% (303)	-12.5	6.8
	Toddler	65.1% (8,077)	8.3% (1,032)	52.6% (5,782)	16.4% (1,805)	-12.5	8.1
	Preschooler	62.7% (11,703)	9.0% (1,678)	47.8% (8,573)	19.6% (3,522)	-14.9	10.6
Latinx	Infant	61.3% (409)	13.2% (88)	42.8% (278)	20.9% (136)	-18.5	7.7
	Toddler	55.9% (1,834)	15.1% (496)	40.1% (1,403)	20.6% (720)	-15.8	5.5
	Preschooler	54.8% (3,036)	16.2% (897)	37.7% (2,450)	24.1% (1,568)	-17.1	7.9

Source: Pennsylvania Office of Child Development and Early Learning

Note: *N* are in parentheses. Differences between racial groups, by age, are statistically significant at  $p < .05$  for both years.

We supplemented our analysis by children's race by examining the extent to which children with subsidies living in communities of varied racial composition were enrolled with providers with



high and low quality ratings. These patterns have significant implications for access to quality ECE for children, given residential segregation.

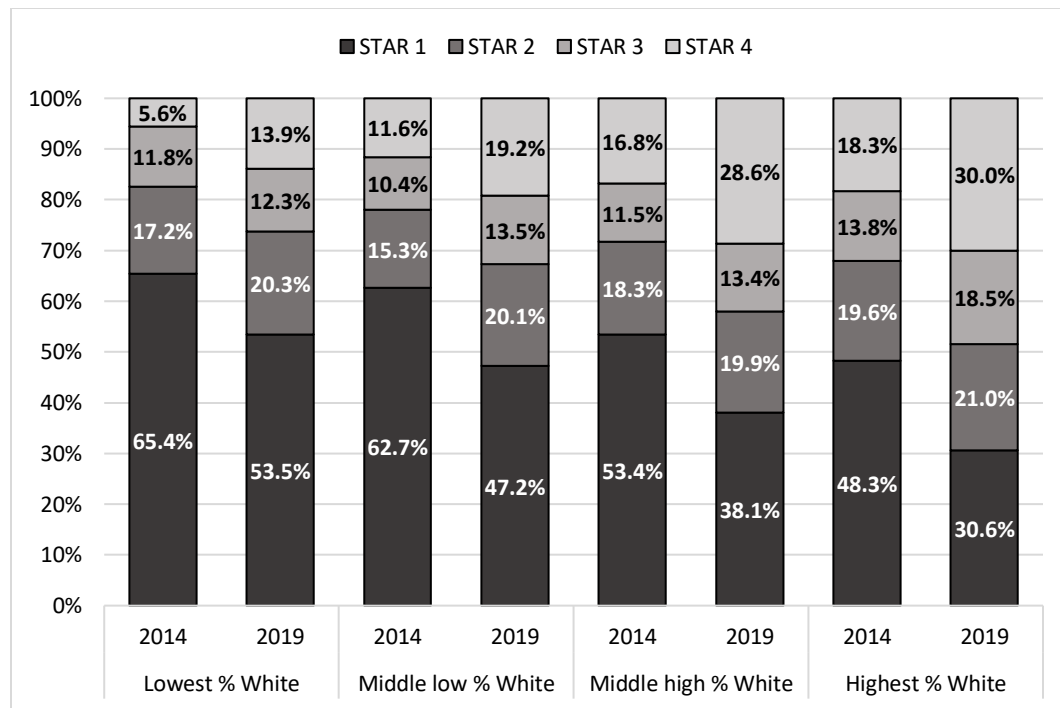
Overall, enrollment with STAR 4 providers was greater for children living in communities with more White residents and fewer Black residents, and growth in access to STAR 4 providers increased at a higher rate from 2014 to 2019 for these children (Figure 3, and Tables A-4a and A-4b). Enrollment with STAR 1 providers was also substantially lower for children living in predominantly White communities.

The STAR quality gap was greatest for children living in communities with the most Black residents. In 2014, 66.2% of subsidy recipients from predominantly Black communities were with STAR 1 providers while only 6.0% were with STAR 4 providers, a gap of 60.2 percentage points. While that gap decreased by 2019, it remained a massive 39.6 percentage points (Panel B). By contrast, the 2019 STAR quality gaps for children living in communities with the two lowest quartiles of Black residents were 11.6 and -1.5 percentage points. That negative quality gap meant that in communities with the fewest Black residents, more children were enrolled with STAR 4 providers than STAR 1 providers. A similar pattern in the opposite direction was seen in terms of White residential composition (Panel A).

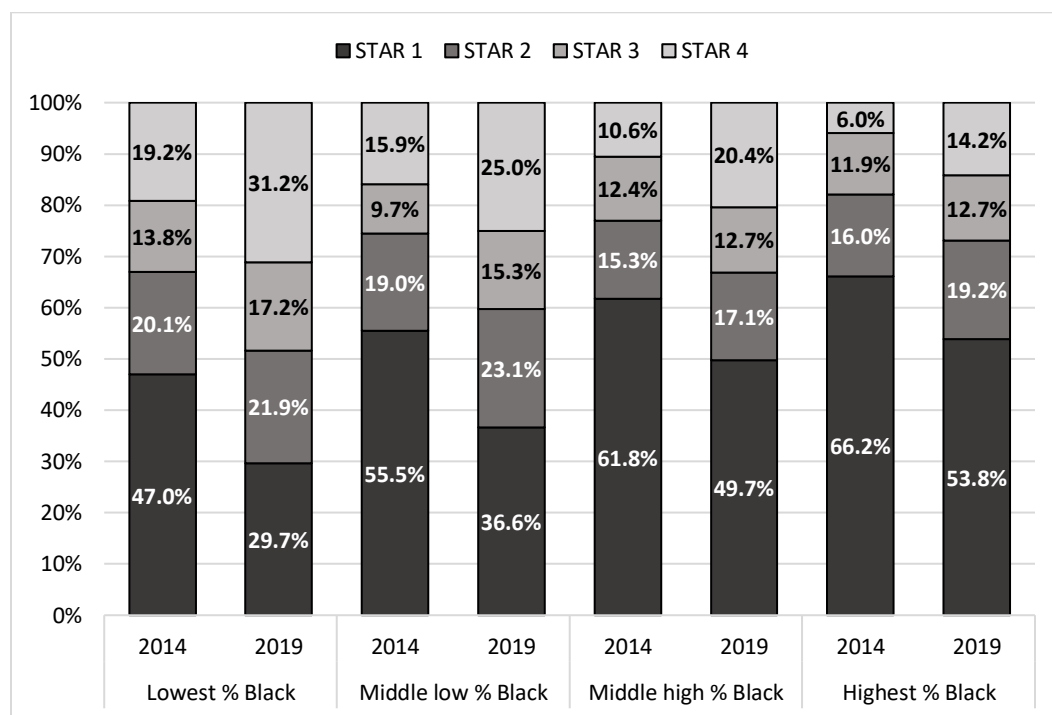
**Figure 3**

*Distribution of Children with ECE Subsidies by Provider Quality Rating and Community Racial Composition, 2014 and 2019*

Panel A



Panel B



Source: Pennsylvania Office of Child Development and Early Learning

Note: Panel A shows quality ratings by the share of White residents in children’s communities. Panel B shows quality ratings by the share of Black residents in children’s communities. Differences between community quartiles for both panels are significant at  $p < .05$  for both years.

### Subsidy Density by Quality Rating and Community Racial Composition

Subsidy funding policy may have a differential effect on providers depending on the share of children with subsidies they enroll, i.e., their subsidy density. That is, subsidy base rates, and any additional tiered funding, account for a larger share of providers’ total revenue when subsidy density is higher. In 2014, 5,519 ECE providers enrolled at least one child with a subsidy.<sup>5</sup> Median subsidy density for these providers was 22.4%; for 20% of providers, children with subsidies comprised more than half of their total enrollment capacity. By March 2019, the number of providers (4,774) serving children with subsidies declined. Median subsidy density in 2019 was 21.9%, and again a fifth of providers filled at least half of their enrollment capacity with children with subsidies.

In 2014, children with subsidies living in communities with the fewest White residents were enrolled with providers where nearly half their classmates also had subsidies; subsidy density was similar for children living in predominantly Black communities (Table 4). In contrast, subsidy density was lowest for children living in predominantly White communities. Indeed, average subsidy density was twenty percentage points higher for children in communities with the fewest White residents than it was for children living in communities with the most White residents in each of the four years examined. On the other hand, while provider subsidy density declined slightly over time across all communities, the decline was greatest for children in communities with the fewest White residents.

<sup>5</sup> Excludes relative and neighbor caregivers.

Similar patterns were present when examining provider subsidy density by children's race, although gaps were not quite as large in magnitude. Across years, Black children were with providers with the highest subsidy density and White children were with providers with the lowest subsidy density, on average. Latinx children's providers experienced the largest average decline in subsidy density. These results suggest providers serving Black children and children from communities with the fewest White residents and most Black residents were those that most depended on, and were most influenced by, subsidy funding policy.

**Table 4**

*Mean Subsidy Density by Children's Race and Ethnicity and Community Racial Composition, 2014-2019*

Child characteristics		2014	2015	2017	2019	Change, 2014 to 2019
<b>Race and ethnicity</b>						
White		27.6%	26.5%	26.8%	25.4%	-2.2
Black		45.9%	45.1%	44.7%	43.2%	-2.7
Latinx		43.9%	43.9%	43.1%	39.5%	-4.4
White Latinx		41.9%	42.7%	41.2%	36.7%	-5.2
Black Latinx		42.8%	41.7%	42.0%	38.3%	-4.5
<b>Community composition</b>						
	Quartile					
% White residents	Lowest	49.2%	47.5%	46.2%	45.2%	-4.0
	Middle low	46.1%	46.0%	47.0%	43.8%	-2.3
	Middle high	36.5%	36.8%	37.5%	35.3%	-1.2
	Highest	26.4%	25.9%	25.6%	24.7%	-1.7
% Black residents	Lowest	26.5%	25.7%	26.0%	24.9%	-1.6
	Middle low	40.3%	41.4%	40.5%	36.7%	-3.6
	Middle high	43.1%	42.3%	43.7%	42.2%	-0.9
	Highest	49.0%	47.3%	46.3%	45.5%	-3.5

Source: Pennsylvania Office of Child Development and Early Learning

Note: Change (far right column) is measured in percentage points. Differences between child and community groups are statistically significant at  $p < .05$  for all years.

One rationale for tiered funding policies is that they will incentivize ECE providers with higher quality scores to enroll children with subsidies. However, our assessment of subsidy density patterns did not provide clear evidence that has happened in Pennsylvania. Subsidy density was highest for STAR 1 providers and lowest among providers with STAR 3 and 4 ratings across years (Table 5), concerning trends given the relationships between subsidy density and children's race and community racial composition. Though, average subsidy density did decline for most providers from 2014 to 2019.

Notably, subsidy density jumped among STAR 2 providers, a shift that was perhaps in response to the 2017 policy change eliminating tiered reimbursement funding for STAR 1 providers. Performance standards associated with moving from STAR 1 to STAR 2 may be more feasible for providers to meet in comparison to the programmatic changes required to move to STARs 3 and 4,

which may explain the rise of subsidy density for STAR 2 amidst the absence of density growth among STAR 3 and 4 providers.

**Table 5**

*Mean Subsidy Density by Providers' Quality Rating, 2014-2019*

Quality rating	2014	2015	2017	2019	Percentage point change, 2014 to 2019
STAR 1	45.7%	46.1%	45.8%	42.9%	-2.8
STAR 2	36.2%	35.9%	42.2%	42.3%	6.1
STAR 3	32.6%	31.0%	29.7%	29.3%	-3.3
STAR 4	28.2%	26.8%	27.2%	28.0%	-0.2
Total	39.6%	39.1%	39.0%	37.2%	-2.4

Source: Pennsylvania Office of Child Development and Early Learning

Note: Differences between STAR groups are statistically significant at  $p < .05$  for all years.

### Access to Tiered Funding by Children's Race and Ethnicity and Community Racial Composition

Because tiered reimbursement rates vary by providers' quality ratings, we predicted the differences described above would result in differential tiered funding by children's race and community racial composition. Our findings confirmed that prediction (Table 6a). White children's providers received more funding on average across all age groups and sample years. Not only were average tiered funding amounts higher for White children, but they also increased the most over time, and especially for White infants. Black children, on average, had the lowest additional revenue awarded to their providers, and the least growth in funding over time, likely driven by their higher enrollment with STAR 1 providers and relative/neighbor caregivers without STAR ratings. The fact that Black children consistently received the least financial benefit from Pennsylvania's tiered funding policy is especially concerning given that they make up almost half of all subsidy recipients.

Differences in both initial funding and funding growth meant that average funding disparities between Black and White children widened between 2014 and 2019. For example, in 2014, White infants' providers received, on average, \$0.54 more per day than Black infants' providers. By 2019, that difference grew to \$2.85. Among toddlers and preschoolers, White-Black provider funding gaps grew by \$1.49 and \$0.77, respectively. These findings show that as Pennsylvania's tiered funding policies changed—that is, as differences in tiered funding amounts between providers with high and low QRIS scores grew—racial funding inequalities increased.

Latinx children's providers received, on average, lower tiered funding amounts than White children's providers, but higher amounts than Black children's providers. Likewise, the average growth in tiered funding for Latinx children's providers at every age level was lower than White children's providers but higher than Black children's providers. Consistent with Pennsylvania's policy goal of providing greater funding for younger children with higher costs of care, the funding increase for Latinx infants over time was larger than for older children. Yet, as was the case for Black children, the Latinx-White funding gap for infants, which was relatively small in 2014 (\$0.26), widened by 2019 (\$1.48). When disaggregating separately for White Latinx and Black Latinx children, White Latinx children's providers received higher tiered funding, on average, than did Black Latinx children's providers, and they received greater increases in funding during the time examined.

**Table 6a***Providers' Mean Daily Tiered Funding Amount by Children's Race and Ethnicity and Age, 2014-2019*

Child age	Group	2014	2015	2017	2019	Change, 2014 to 2019
Infant	White	\$1.38	\$2.51	\$3.80	\$6.00	\$4.62
	Black	\$0.84	\$1.54	\$2.38	\$3.15	\$2.31
	Latinx	\$1.12	\$2.03	\$2.96	\$4.52	\$3.40
	White Latinx	\$1.28	\$1.97	\$3.67	\$4.82	\$3.54
	Black Latinx	\$0.88	\$1.70	\$2.64	\$4.07	\$3.19
Toddler	White	\$1.52	\$2.70	\$3.89	\$5.56	\$4.04
	Black	\$0.96	\$1.72	\$2.37	\$3.51	\$2.55
	Latinx	\$1.30	\$2.27	\$3.14	\$4.29	\$2.99
	White Latinx	\$1.37	\$2.43	\$3.33	\$4.67	\$3.30
	Black Latinx	\$1.34	\$2.15	\$3.10	\$4.31	\$2.97
Preschooler	White	\$1.57	\$2.49	\$3.73	\$4.12	\$2.55
	Black	\$1.02	\$1.64	\$2.36	\$2.80	\$1.78
	Latinx	\$1.37	\$2.15	\$3.00	\$3.30	\$1.93
	White Latinx	\$1.41	\$2.14	\$3.12	\$3.44	\$2.03
	Black Latinx	\$1.37	\$2.09	\$2.65	\$3.29	\$1.92

Source: Pennsylvania Office of Child Development and Early Learning

Note: Differences between racial groups, by age, are statistically significant at  $p < .05$  for all years.

Differences in daily tiered reimbursement amounts add up. For example, White infants' providers received an estimated additional \$1,440.00 a year per infant, on average, in 2019 (Table 6b). By comparison, Black infants' providers received an estimated \$756.00 in tiered funding in 2019. The average Black-White yearly funding gap for infants in 2019 was \$684.00, while the average Latinx-White funding gap for infants was \$356.00. Funding differences add up even further at the classroom level. In 2019, ECE providers in Pennsylvania enrolled seven preschoolers with subsidies, on average. If those preschoolers were Black, the provider would have been reimbursed \$4,704.00 in tiered funding over the course of the year, per our estimates. If those preschoolers were White, the provider would have been reimbursed \$6,921.60, and for a classroom with seven Latinx preschoolers with subsidies, the additional reimbursement would have been \$5,544.00. Given the relationships between cost and provider quality discussed earlier, these calculations show that providers serving White children with subsidies received substantially higher revenue, likely making it easier for them to invest in key resources associated with quality early learning and higher QRIS scores.

**Table 6b**

*Providers' Estimated Mean Monthly and Yearly Tiered Funding Amounts by Children's Race and Ethnicity and Age, 2014 and 2019*

Child age	Racial group	Estimated average tiered funding, 2014		Estimated average tiered funding, 2019		Change, 2014 to 2019	
		Monthly	Yearly	Monthly	Yearly	Monthly	Yearly
Infant	White	\$27.60	\$331.20	\$120.00	\$1,440.00	\$92.40	\$1,068.80
	Black	\$16.80	\$201.60	\$63.00	\$756.00	\$46.20	\$554.40
	Latinx	\$22.40	\$268.80	\$90.40	\$1,084.80	\$68.00	\$816.00
	White Latinx	\$25.60	\$307.20	\$96.40	\$1,156.80	\$70.80	\$849.60
	Black Latinx	\$17.60	\$211.20	\$81.40	\$976.80	\$63.80	\$765.60
Toddler	White	\$30.40	\$364.80	\$111.20	\$1,334.40	\$80.80	\$969.60
	Black	\$19.20	\$230.40	\$70.20	\$842.40	\$51.00	\$612.00
	Latinx	\$26.00	\$312.00	\$85.80	\$1,029.60	\$59.80	\$717.60
	White Latinx	\$27.40	\$328.80	\$93.40	\$1,120.80	\$66.00	\$792.00
	Black Latinx	\$26.80	\$321.60	\$86.20	\$1,034.40	\$59.40	\$712.80
Preschooler	White	\$31.40	\$376.80	\$82.40	\$988.80	\$51.00	\$612.00
	Black	\$20.40	\$244.80	\$56.00	\$672.00	\$35.60	\$427.20
	Latinx	\$27.40	\$328.80	\$66.00	\$792.00	\$38.60	\$463.20
	White Latinx	\$28.20	\$338.40	\$68.80	\$825.60	\$40.60	\$487.20
	Black Latinx	\$27.40	\$328.80	\$65.80	\$789.60	\$38.40	\$460.80

Note: Estimated average tiered funding amounts assume enrollment of 20 days each month and 240 days each year.

We observed similar patterns of differential reimbursement by the racial composition of children's communities (Table 7). Providers serving children from communities with the highest percentages of White residents saw their average daily tiered funding increase by \$3.20, while providers serving children from communities with the lowest percentages of White residents saw an increase of barely half that amount (\$1.71). Put another way, the mean daily funding gap between communities with the highest and lowest percentages of White residents grew from \$0.69 in 2014 to \$2.18 in 2019. The reverse pattern held when looking at communities' share of Black residents. Communities with the highest percentages of Black residents received the lowest average tiered funding amount *and* experienced the least growth in tiered funding over time. (Similar trends were observed by children's age and community racial composition; see Tables A-5a and A-5b). These findings indicate providers serving children from disproportionately Black communities received the least financial benefit from tiered funding policy.

A legacy of discriminatory governmental policies (e.g., housing) is that racial concentration often overlaps with other characteristics that may also affect the extent to which providers are able to achieve higher quality ratings and, therefore, greater tiered funding. Specifically, as shown in Table 7, children from communities with more Black residents and other residents of color also lived in communities with higher poverty, on average. These data are important for understanding the various, intersecting factors that create inequitable tiered funding patterns as an outcome of implementing Pennsylvania's ECE subsidy policy.

**Table 7***Providers' Mean Daily Tiered Funding Amount by Children's Community Racial Composition, 2014-2019*

	Community quartile	2014	2015	2017	2019	Change, 2014 to 2019	Mean % of residents above 200% FPL	% of children with high-quality providers
% White residents	Lowest	\$0.86	\$1.49	\$2.01	\$2.57	\$1.71	48.4%	26.2%
	Middle low	\$1.09	\$1.82	\$2.58	\$3.22	\$2.13	57.1%	32.7%
	Middle high	\$1.40	\$2.29	\$3.44	\$4.23	\$2.83	67.1%	42.0%
	Highest	\$1.55	\$2.59	\$3.73	\$4.75	\$3.20	71.4%	48.5%
% Black residents	Lowest	\$1.59	\$2.62	\$3.85	\$4.79	\$3.20	71.6%	48.4%
	Middle low	\$1.31	\$2.16	\$3.13	\$4.01	\$2.70	62.6%	40.3%
	Middle high	\$1.09	\$1.88	\$2.68	\$3.26	\$2.17	58.8%	33.1%
	Highest	\$0.87	\$1.49	\$2.01	\$2.63	\$1.76	50.2%	26.9%

Source: Pennsylvania Office of Child Development and Early Learning

Note: "High-quality" ECE providers are those with QRIS scores of STAR 3 or STAR 4. Mean percentages of residents with incomes above 200% FPL and percentages of children enrolled with providers with high QRIS scores are from 2019. Mean differences in tiered reimbursement between community groups are statistically significant at  $p < .05$  for all years.

Finally, because we observed variation in subsidy density by children's race, we examined differences in tiered funding by children's race and the subsidy density of their ECE providers. In 2019, among those with low subsidy density, Black and Latinx children's providers received an average tiered funding amount (\$5.16) *greater* than the amount received by the average White child's provider (\$4.97; see Table 8). This pattern flipped for children enrolled with providers with moderate and high subsidy density, where White children's providers received more tiered funding than Black or Latinx children's providers, on average. Within racial groups, average tiered funding was lowest among children with providers with high subsidy density, with especially large gaps for Black and Latinx children. These high subsidy density providers also experienced the lowest average funding increases since 2014. Among high subsidy density providers, White children's providers received the largest average increase (\$2.40, compared to \$1.37 for Black and Latinx children's providers).

Black and Latinx children were overwhelmingly enrolled with providers with high subsidy density. In 2019, 14,694 (49.7%) and 4,292 (41.8%) of all Black and Latinx children were enrolled with providers that served the largest shares of children with subsidies. By comparison, just 2,862 (17.5%) of White children were enrolled with providers with such high dependency on subsidies for revenue. These findings suggest differential enrollment with ECE providers with high subsidy density may help explain overall differences in quality scores and tiered funding by race. Moreover, trends show the combination of high enrollment of children with subsidies *and* low QRIS scores creates especially low funding levels for providers, a condition that disproportionately effects Black and Latinx children.

**Table 8**

*Providers' Mean Daily Tiered Funding Amount by Children's Race and Ethnicity and Subsidy Density, 2014 and 2019*

Subsidy density	Group	2014		2019		Change, 2014 to 2019
		Mean	N	Mean	N	
Low	White	\$1.73	8,483	\$4.97	8,022	\$3.24
	Black	\$1.58	4,570	\$5.16	4,767	\$3.58
	Latinx	\$1.94	1,860	\$5.29	2,586	\$3.35
	White Latinx	\$1.94	675	\$5.08	973	\$3.14
	Black Latinx	\$1.84	242	\$5.69	369	\$3.85
Moderate	White	\$1.81	5,697	\$5.21	5,454	\$3.40
	Black	\$1.35	8,713	\$3.79	10,086	\$2.44
	Latinx	\$1.85	2,676	\$4.59	3,400	\$2.74
	White Latinx	\$1.81	723	\$4.77	1,012	\$2.96
	Black Latinx	\$1.98	303	\$4.06	522	\$2.08
High	White	\$1.20	3,586	\$3.60	2,862	\$2.40
	Black	\$0.86	16,446	\$2.23	14,694	\$1.37
	Latinx	\$0.98	4,100	\$2.35	4,292	\$1.37
	White Latinx	\$0.97	988	\$2.52	1,127	\$1.55
	Black Latinx	\$0.96	459	\$2.36	573	\$1.40

Source: Pennsylvania Office of Child Development and Early Learning

Note: *N* = number of children. Subsidy density categories are: Low = 0-20%; Moderate = 21-40%; High = >40%. Differences between subsidy density groups are statistically significant at  $p < .05$  for all years.

## Discussion

This study contributes to literature measuring racial disparities in access to quality ECE (e.g., Latham et al., 2020), as well as to the broader education literature that has documented racial disparities in educational resources and spending (e.g., Sosina & Weathers, 2019). This study makes a unique contribution by assessing the extent to which Pennsylvania's tiered subsidy reimbursement policies differentially benefit children and communities along racial lines.

We found significant racial disparities in access to high-quality ECE providers. Analysis of quality gaps by children's race and age illustrated especially severe disparities for Black infants and toddlers, a particularly concerning gap since these earliest years have a profound effect on children's cognitive and emotional development. Given the link between participation in quality ECE and children's future academic outcomes, this evidence indicates Black subsidy recipients in Pennsylvania are being held back from educational opportunities even before stepping foot in elementary school. Recent evidence of the relationship between quality ECE and long-term non-cognitive outcomes that are costly to both individuals and society, such as juvenile incarceration (Gray-Lobe et al., 2021), further underscores the negligence of a system that allows Black children to receive lower quality ECE than their White peers. Findings of quality gaps for Latinx children, and especially for Black Latinx children, add to our growing understanding of how Latinx children



experience early education, and highlight the importance of distinguishing race and ethnicity variables when exploring these trends. Moreover, as their share among ECE subsidy recipients grows, racial disparities for Latinx children are particularly important to monitor.

Mirroring child-level patterns, we found substantial disparities in access to high-quality ECE providers by children's community racial composition. Patterns of subsidy density also mapped on to community racial composition, with the providers of children in communities with the most Black residents and fewest White residents enrolling classrooms where half of children had subsidies. Providers with higher subsidy density were also less likely to have a high QRIS score. Given patterns of residential segregation—and the historical and contemporary policies that continue to reinforce it—these findings suggest Black families have fewer high-quality options for their children's ECE.

Findings related to quality and subsidy density help explain our central findings around access to tiered subsidy funding, which paint a concerning picture of the resources available to young Black and Latinx learners, particularly at the youngest ages. Funding gaps by children's race and community racial composition were substantial, adding up to hundreds of dollars over the course of the year. For both children and communities, racial funding gaps widened over time as differences in tiered funding amounts between providers with high and low QRIS scores grew. This finding is particularly relevant given recent evidence showing tiered reimbursement systems are the most effective at inducing quality improvements when differential funding rates by quality score are substantial (e.g., Greenberg et al., 2018). Our findings provide a critical counterpoint to that evidence, indicating that while greater differences between tiered funding levels may boost quality, they will do so primarily for White children.

In addition to restricting Black and Latinx children's access to key resources to support their early care and education, racial funding gaps may also have stark implications for teachers. Because 80% of ECE provider revenue goes toward paying teachers (Sirinides & Collins, 2020), and because Black and Latinx children are more likely to have Black and Latinx ECE teachers (Paschall et al., 2020), racial gaps in tiered funding may mean lower wages for these teachers of color. Significant wage disparities have been documented between Black and White ECE teachers with similar training and experience, a particularly egregious finding given that ECE teachers earn the lowest wages of any educator group in the P-20 workforce (Austin et al., 2019). Low teacher wages in ECE are linked to higher attrition and lower program quality (Markowitz, 2019; Whitebook & Sakai, 2003), suggesting a potentially vicious cycle where lower tiered funding contributes to lower wages which in turn perpetuate lower QRIS scores that result in persistently lower tiered funding.

Altogether, our findings suggest that current CCDF policy is not living up to its promise of "equal access." Worse, our evidence indicates racial discrimination is continuing to adapt through contemporary subsidy funding policies to exclude Black and Latinx children, as well as their teachers and communities, from the benefits of quality ECE.

## **Implications**

While there is some evidence linking tiered reimbursement funding policies to quality improvements among ECE providers, our findings suggest it is not an effective policy design if racial equity is a goal. Using CCDF funding to raise base subsidy rates, rather than funneling it through tiered reimbursement models, may be a more effective policy strategy for ensuring all children attend a well-funded, high-quality ECE provider. And Pennsylvania is moving in this direction. In March and November of 2021, Pennsylvania announced two separate increases to base subsidy rates, to the 40<sup>th</sup> and 60<sup>th</sup> percentiles of market rates, respectively, marking significant

increases from the longstanding previous base rate at the 25<sup>th</sup> percentile. Pennsylvania also increased base rates for relative and neighbor caregivers. At the same time, Pennsylvania announced no plans to increase tiered funding rates. Additionally, Pennsylvania's Department of Human Services released its CCDF state plan for the 2022-2024 cycle and noted that "A broad overarching goal is to improve racial equity in Pennsylvania's child care system" and "a priority will be to equalize the representative enrollments" of Black and White children with high-quality providers. While substantial work is needed to close racial quality and funding gaps in Pennsylvania, these changes in policy goals are a promising start.

Equalizing funding amounts across provider types could be another step toward racial equity. Black and Latinx children are enrolled with home-based providers at higher rates than White children, though home-based providers receive lower average QRIS scores, meaning they also receive lower amounts of tiered funding. At the same time, relative and neighbor caregivers are ineligible for any form of tiered funding, and Black and Latinx children are significantly more likely than their White peers to receive ECE from these providers. While CCDF allows families with subsidies to choose their preferred provider type, those that choose non-center options may be penalized financially for doing so under current funding policy. Investing more funding in home-based and relative and neighbor providers may better support quality ECE for Black and Latinx children, while also honoring the individual choices families make about the early learning environments that are most welcoming and effective for their children.

In addition to raising base subsidy rates and equalizing funding across provider types, states should consider progressive funding formulas that differentially allocate subsidy funding based on factors related to quality and cost of care. In current systems, funding varies by provider type, child age, locale, and provider quality rating. Instead, funding could consider the unique context in which each child is learning, and the differential costs providers may incur in providing high-quality ECE under those conditions. One example for ECE subsidy systems is K-12 foundation funding formulas that adjust amounts based on student and school district factors such as poverty, size, and English language status, generating more money for school districts that need more resources (Verstegen & Knoepfel, 2012). ECE providers with higher subsidy density, who serve greater shares of infants, or who are located in areas of concentrated poverty could receive higher per-child subsidy amounts. ECE funding as a form of reparations, where more funding is given to providers serving Black children and predominantly Black communities, could also be considered.

Importantly, any form of tiered reimbursement policy can only achieve equitable funding outcomes if the quality rating system it is based on is also inherently equitable. Along with other ECE scholars and leaders, we contend that equity must be explicitly included in definitions of ECE quality and in corresponding QRIS at all levels. Specific equity indicators for QRIS proposed by Meek and colleagues (2020) provide an excellent starting point. Making QRIS more accessible to all providers, especially those who serve historically marginalized groups of children and those who have historically had less access to resources, should be a central goal of QRIS as they are reconceptualized, along with ensuring any accompanying policies, like tiered reimbursement, do not penalize providers that experience systemic barriers.

These policy recommendations are particularly relevant given the potential passage of the Biden administration's Build Back Better Act, or other similar legislation, that would fundamentally change how ECE is funded in the United States. Current proposals would reintroduce an ECE entitlement for most families and raise wages for teachers, policies that would make our nation's ECE system significantly more accessible and equitable. However, current legislative drafts also require ECE providers to participate in states' QRIS in order to receive funding, and mandate that states create new cost estimation models and payment rates that incorporate costs associated with

meeting different QRIS standards. These provisions mean that new federal policies, while potentially transformative, could reinforce the same funding hierarchies—and disparities—as tiered reimbursement. To put an end to adaptive discrimination within federal ECE funding policy, we strongly recommend that any future legislation include anti-racist approaches to subsidy funding, such as those listed here.

Lastly, our study yields implications for future research. Our descriptive findings lay a foundation for further causal work that can examine why patterns in quality access and funding persist, such as the extent to which provider type or community economic composition explain racial gaps. Additionally, more research is needed on whether and to what extent racial disparities exist in the distribution of base subsidy rates, which are typically derived from market rate surveys that may reflect arbitrary trends in private tuition rates rather than the true costs of providing quality ECE (Bipartisan Policy Center, 2020). Qualitative research that seeks to understand how disparities in tiered funding impact providers serving Black and Latinx children and Black communities, including their perceived quality, teacher wages, and financial stability, could also augment these findings. More broadly, the disparities we found by race and age demonstrate the importance of using samples that include all children ages birth-5 when conducting ECE research. While we recognize the value of studies that examine pre-kindergarten programs, which typically include only three- and four-year-olds, we believe expanding education research to more regularly include infants and toddlers will lead to better evidence, interventions, policies, and ultimately outcomes for our youngest learners.

## Conclusion

Racial disparities in access to funding have been a part of ECE policy from its beginnings, adapting over time through the creation and perpetuation of racial biases, racialized class ideologies, and systems of White privilege that were codified in law, policy, and practice. Funding was denied or limited under the pretense that Black and Latinx families were less deserving, and contemporary CCDF policies continue to affect access through burdensome eligibility and documentation requirements. Findings from our critical policy analysis indicate racial discrimination has again adapted through tiered reimbursement policies to limit the resources available to Black and Latinx children and Black communities, results that are all the more concerning given the widespread use of these policies across states. Equity-oriented and anti-racist policy alternatives, such as replacing tiered funding with substantial increases in base subsidy rates and establishing progressive funding formulas, could disrupt the intergenerational cycle of adaptive discrimination and help to re-envision a national ECE system that gives all children access to the life-changing promises of quality early learning.

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**Appendix**

**Table A-1**

*Distribution of Provider Quality Ratings by Children’s Race and Ethnicity, 2014 to 2019*

	Group	2014		2015		2017		2019		Change
		N	%	N	%	N	%	N	%	
STAR 1	White	9,216	48.3%	7,979	45.2%	6,440	36.6%	5,221	31.2%	-17.1
	Black	21,569	64.0%	20,140	62.4%	17,922	55.2%	15,575	50.0%	-14.0
	Latinx	5,279	55.7%	4,914	53.3%	4,582	44.3%	4,131	38.8%	-16.9
	White	1,432	55.4%	1,400	54.0%	1,342	43.2%	1,139	35.4%	-20.0
	Black	627	55.8%	648	55.6%	669	47.4%	610	40.4%	-15.4
STAR 2	White	3,856	20.2%	3,675	20.8%	3,586	20.4%	3,479	20.8%	0.6
	Black	5,328	15.8%	4,884	15.1%	5,607	17.3%	5,852	18.8%	3.0
	Latinx	1,690	17.8%	1,599	17.3%	2,187	21.1%	2,564	24.1%	6.3
	White	452	17.5%	444	17.1%	650	20.9%	819	25.5%	8.0
	Black	197	17.5%	197	16.9%	295	20.9%	352	23.3%	5.8
STAR 3	White	2,521	13.2%	2,473	14.0%	2,928	16.7%	2,932	17.5%	4.3
	Black	3,888	11.5%	4,105	12.7%	4,584	14.1%	4,062	13.1%	1.6
	Latinx	1,035	10.9%	1,307	14.2%	1,568	15.2%	1,520	14.3%	3.4
	White	249	9.6%	296	11.4%	410	13.2%	481	15.0%	5.4
	Black	127	11.3%	142	12.2%	199	14.1%	190	12.6%	1.3
STAR 4	White	3,493	18.3%	3,520	19.9%	4,629	26.3%	5,081	30.4%	12.1
	Black	2,896	8.6%	3,136	9.7%	4,375	13.5%	5,630	18.1%	9.5
	Latinx	1,481	15.6%	1,398	15.2%	2,010	19.4%	2,424	22.8%	7.2
	White	451	17.5%	454	17.5%	702	22.6%	777	24.2%	6.7
	Black	173	15.4%	178	15.3%	249	17.6%	359	23.8%	8.4

Note: N = number of children. Change (far right column) is measured in percentage points. “Latinx White” and “Latinx Black” refer to children whose ethnicity was identified as Hispanic and whose race was identified as White or Black, respectively. Differences between racial groups are statistically significant at  $p < .05$  for all years.

States are required by CCDF policy to allow families receiving subsidies to use any type of ECE provider registered or licensed by their state, including child care centers, child care homes, or relative or neighbor caregivers. Consistent with prior literature, most subsidy recipients in our sample were enrolled in child care centers, and this trend increased over time for White, Black, and Latinx children (Crosby et al., 2005; De Marco & Vernon-Feagans et al., 2015; Ryan et al., 2011). White children were the most likely to be with child care centers at each point in time. The share of children receiving ECE from relatives or neighbors declined precipitously among all groups between 2014 and 2019, including among Black children, who used relative/neighbor ECE arrangements at the highest rates. The percentage of subsidy recipients in child care homes remained relatively stable, and Latinx children were enrolled in child care homes at higher percentages than Black or White children.

**Table A-2***Distribution of Children with Subsidies by Race, Ethnicity, and Provider Type, 2014 to 2019*

Provider type	Group	2014		2015		2017		2019	
		N	%	N	%	N	%	N	%
Child care center	White	15,998	83.8%	15,127	85.7%	15,689	89.2%	15,244	91.2%
	Black	26,122	77.6%	25,887	80.2%	27,387	84.3%	26,572	85.4%
	Latinx	7,489	79.0%	7,598	82.4%	8,839	85.4%	9,176	86.2%
Child care home	White	1,768	9.3%	1,554	8.8%	1,341	7.6%	1,094	6.5%
	Black	3,607	10.7%	3,422	10.6%	3,188	9.8%	2,975	9.6%
	Latinx	1,147	12.1%	1,042	11.3%	1,112	10.7%	1,102	10.4%
Relative/neighbor	White	1,320	6.9%	966	5.5%	553	3.1%	375	2.2%
	Black	3,952	11.7%	2,956	9.2%	1,913	5.9%	1,572	5.1%
	Latinx	849	9.0%	578	6.3%	396	3.8%	361	3.4%

Note: *N* = number of children. There are four provider types in our sample. Child care centers are facilities in which seven or more children not related to the operator receive ECE. Group child care homes are facilities in which 7-12 children of various ages not related to the operator receive ECE. Family child care homes are located in a residence and serve 4-6 children unrelated to the caregiver. Relative and neighbor caregivers provide ECE to three or fewer children, not including their own children. Because of low sample sizes, we group together group child care homes and family child care homes into one “child care home” category. Differences between racial groups are statistically significant at  $p < .05$  for all years.

Consistent with prior research on the relationship between provider type and quality ratings, fewer child care centers enrolling subsidy recipients had STAR 1 ratings while a higher percentage of child care centers were rated STAR 4 (Ryan et al., 2011). (Relative/Neighbor providers were not eligible to participate in Pennsylvania’s QRIS and hence do not have a STAR rating.) Moreover, the percentage of child care centers that were rated STAR 4 increased substantially over time, nearly 20 percentage points. By contrast, the percentage of child care homes with similarly high ratings increased from 2.6% in 2014 to 5.9% in 2019.

**Table A-3***Distribution of Children with Subsidies by Provider Type and Quality Rating, 2014 to 2019*

	Provider type	2014		2015		2017		2019	
		N	%	N	%	N	%	N	%
STAR 1	Child care center	25,450	49.2%	24,422	48.3%	22,569	41.5%	20,001	37.2%
	Child care home	5,535	82.9%	5,079	82.1%	4,546	78.6%	3,646	68.7%

	Provider type	2014		2015		2017		2019	
		N	%	N	%	N	%	N	%
STAR 2	Child care center	10,658	20.6%	9,887	19.5%	11,073	20.4%	11,411	21.2%
	Child care home	727	10.9%	702	11.4%	748	12.9%	1,086	20.5%
STAR 3	Child care center	7,480	14.5%	7,933	15.7%	9,178	16.9%	8,650	16.1%
	Child care home	243	3.6%	238	3.8%	294	5.1%	265	5.0%
STAR 4	Child care center	8,160	15.8%	8,363	16.5%	11,516	21.2%	13,677	25.5%
	Child care home	175	2.6%	164	2.7%	193	3.3%	312	5.9%

Note: *N* = number of children. Relative and neighbor providers are not included because they are ineligible to participate in Pennsylvania’s QRIS. Differences between provider type groups are statistically significant at  $p < .05$  for all years.

**Table A-4a**

*Distribution of Provider Quality Ratings by the Racial Composition (% White) of Children’s Communities, 2014 and 2019*

QRIS score	% White residents	2014		2019		Percentage point change, 2014 to 2019
		N	%	N	%	
STAR 1	Lowest	11,464	65.4%	8,543	53.5%	-11.9
	Middle low	10,385	62.7%	7,365	47.2%	-15.5
	Middle high	6,988	53.4%	5,014	38.1%	-15.3
	Highest	8,430	48.3%	5,087	30.6%	-17.7
STAR 2	Lowest	3,008	17.2%	3,239	20.3%	3.1
	Middle low	2,536	15.3%	3,136	20.1%	4.8
	Middle high	2,389	18.3%	2,617	19.9%	1.6
	Highest	3,428	19.6%	3,489	21.0%	1.4
STAR 3	Lowest	2,065	11.8%	1,964	12.3%	0.5
	Middle low	1,728	10.4%	2,106	13.5%	3.1
	Middle high	1,511	11.5%	1,762	13.4%	1.9
	Highest	2,405	13.8%	3,070	18.5%	4.7
STAR 4	Lowest	982	5.6%	2,213	13.9%	8.3
	Middle low	1,927	11.6%	2,998	19.2%	7.6
	Middle high	2,202	16.8%	3,767	28.6%	11.8
	Highest	3,188	18.3%	4,985	30.0%	11.7

Note: *N* = number of children. Differences between community racial composition groups are statistically significant at  $p < .05$  for both years.

**Table A-4b**

*Distribution of Provider Quality Ratings by the Racial Composition (% Black) of Children's Communities, 2014 and 2019*

QRIS score	% Black residents	2014		2019		Percentage point change, 2014 to 2019
		N	%	N	%	
STAR 1	Lowest	7,628	47.0%	4,661	29.7%	-17.3%
	Middle low	8,701	55.5%	5,536	36.6%	-18.9%
	Middle high	10,006	61.8%	7,652	49.7%	-12.1%
	Highest	10,932	66.2%	8,160	53.8%	-12.4%
STAR 2	Lowest	3,257	20.1%	3,441	21.9%	1.8%
	Middle low	2,981	19.0%	3,496	23.1%	4.1%
	Middle high	2,478	15.3%	2,632	17.1%	1.8%
	Highest	2,645	16.0%	2,912	19.2%	3.2%
STAR 3	Lowest	2,233	13.8%	2,709	17.2%	3.4%
	Middle low	1,514	9.7%	2,308	15.3%	5.6%
	Middle high	2,002	12.4%	1,953	12.7%	0.3%
	Highest	1,960	11.9%	1,932	12.7%	0.8%
STAR 4	Lowest	3,112	19.2%	4,896	31.2%	12.0%
	Middle low	2,489	15.9%	3,771	25.0%	9.1%
	Middle high	1,710	10.6%	3,144	20.4%	9.8%
	Highest	988	6.0%	2,152	14.2%	8.2%

Note: *N* = number of children. Differences between community racial composition groups are statistically significant at  $p < .05$  for both years.

**Table A-5a**

*Mean Daily Tiered Funding Amount for Providers by Children's Age and Community Racial Composition (% White), 2014 and 2019*

% White residents	Child age	2014		2019		Change, 2014 to 2019
		N	Funding	N	Funding	
Lowest	Infant	1,269	\$0.69	1,102	\$2.56	\$1.87
	Toddler	6,446	\$0.83	5,657	\$2.80	\$1.97
	Preschooler	9,804	\$0.91	9,200	\$2.43	\$1.52
Middle low	Infant	1,251	\$0.91	949	\$3.25	\$2.34
	Toddler	5,969	\$1.06	5,346	\$3.71	\$2.65
	Preschooler	9,356	\$1.14	9,310	\$2.93	\$1.79
Middle high	Infant	1,051	\$1.13	874	\$5.07	\$3.94
	Toddler	4,618	\$1.37	4,425	\$4.92	\$3.55
	Preschooler	7,421	\$1.45	7,861	\$3.75	\$2.30

% White residents	Child age	2014		2019		Change, 2014 to 2019
		N	Funding	N	Funding	
Highest	Infant	1,403	\$1.44	1,149	\$5.83	\$4.39
	Toddler	5,992	\$1.52	5,434	\$5.67	\$4.15
	Preschooler	10,056	\$1.58	10,048	\$4.12	\$2.54

Note: *N* = number of children. Differences between community racial composition groups are statistically significant at  $p < .05$  for both years.

**Table A-5b**

*Mean Daily Tiered Funding Amount for Providers by Children's Age and Community Racial Composition (% Black), 2014 and 2019*

% Black residents	Child age	2014		2019		Change, 2014 to 2019
		N	Funding	N	Funding	
Lowest	Infant	1,284	\$1.47	1,056	\$5.89	\$4.42
	Toddler	5,527	\$1.57	5,086	\$5.69	\$4.12
	Preschooler	9,419	\$1.63	9,565	\$4.19	\$2.56
Middle low	Infant	1,248	\$1.12	970	\$4.83	\$3.71
	Toddler	5,497	\$1.28	5,060	\$4.76	\$3.48
	Preschooler	8,940	\$1.35	9,081	\$3.51	\$2.16
Middle high	Infant	1,222	\$0.84	974	\$3.39	\$2.55
	Toddler	5,938	\$1.06	5,315	\$3.72	\$2.66
	Preschooler	9,036	\$1.15	9,092	\$2.98	\$1.83
Highest	Infant	1,220	\$0.74	1,074	\$2.64	\$1.90
	Toddler	6,063	\$0.85	5,401	\$2.87	\$2.02
	Preschooler	9,242	\$0.90	8,681	\$2.48	\$1.58

Note: *N* = number of children. Differences between community racial composition groups are statistically significant at  $p < .05$  for both years.

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