Daycare Accessibility and Maternal Labor Market Outcomes: Do Quality Ratings Matter?*

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Abstract

Using administrative data on the universe of Australian daycare centers, we examine the impact of daycare availability and quality ratings on childcare utilization and mothers' labor market outcomes. Our generalized triple-difference estimation approach exploits spatial and temporal variation in day care availability and quality ratings, leveraging the outcomes of school-aged children and their mothers as counterfactual comparisons. We document a substantial positive impact of daycare availability and higher quality ratings on formal care usage and mothers' employment and earnings. The effect of quality ratings is particularly pronounced among high-income, more-educated, and first-time mothers, whose perceptions of local daycare quality are most responsive to changes in ratings. Overall, our findings underscore the important roles of childcare quality, in addition to accessibility, in shaping families' childcare choices and mothers' employment decisions.

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1 Introduction

The transition to motherhood often results in a substantial and persistent decline in women's employment and earnings (e.g., Angelov, Johansson, and Lindahl 2016; Kuziemko et al. 2018; Kleven, Landais, and Søgaard 2019; Andresen and Nix 2022). In high-income countries, this "child penalty" accounts for a significant portion—and in many cases, nearly all—of the observed gender disparities in labor market outcomes (Cortés and Pan 2023; Kleven, Landais, and Leite-Mariante 2023). Recognizing the unequal distribution of child-rearing responsibilities between parents as a key contributing factor, policymakers are increasingly embracing subsidized childcare as a tool to promote women's employment and reduce gender inequality in the labor market (Olivetti and Petrongolo 2017).

At the same time, the expansion of non-parental care fundamentally reshapes the environment in which children grow up, leading to both short- and long-term consequences for children's development. While high-quality, targeted childcare programs can enhance children's cognitive and socioemotional skills, particularly among disadvantaged populations (Felfe, Nollenberger, and Rodríguez-Planas 2015; Barr and Gibbs 2022; Wikle and Wilson 2023), the impact of universal programs has been mixed, with some studies documenting negative effects that persist well into adulthood (Baker, Gruber, and Milligan 2008; Baker, Gruber, and Milligan 2019). Consequently, the quality of care that children receive may significantly influence families' childcare choices and mothers' employment decisions (Blau and Currie 2006). Despite this important implication, empirical evidence on the relationship between childcare quality and mothers' workforce participation remains scarce, hindering a comprehensive understanding of how childcare policies may concurrently affect child development and mothers' labor market outcomes.

Empirically assessing the relationship between childcare quality and maternal labor market outcomes presents several challenges. First, there is a lack of consensus in the literature on what constitutes quality. Many studies have focused primarily on structural aspects (e.g., staff-to-child ratios), often overlooking harder-to-measure process elements (e.g., caregiver-child interactions)

that are thought to be more closely linked to child development (Currie 2001; Slot et al. 2015). Second, even when process quality information is available, nationally representative data on these measures remain scarce, significantly constraining the scope and generalizability of existing evidence. Lastly, parents' awareness and understanding of these quality aspects may be limited, leading to childcare utilization and labor force participation decisions made without complete information. Consequently, effectively assessing the relationship between quality and family choices requires not only overcoming these data and measurement challenges but also ensuring that quality measures are readily observable and accessible to families.

In this paper, we simultaneously address these challenges to investigate how daycare availability and quality ratings influence families' childcare utilization and mothers' labor market outcomes. To do so, we leverage Australia's National Quality Framework (NQF), implemented in 2012 by the Australian government to regulate the early childhood education and care sector, as our research context. A key feature of the NQF is the establishment of national quality standards against which all childcare services must be rated by regulatory authorities. These standards encompass seven quality areas, assessing both the structural aspects of the care environment and the crucial process quality of child-caregiver interactions. Critically, these quality ratings, along with data on maximum enrollment capacity for each childcare service, are publicly accessible through a national register maintained by the Australian Children's Education and Care Quality Authority (ACECQA). The combination of this administrative dataset with rich household survey data allow us to analyze how childcare usage, mothers' labor market outcomes, and parents' perceptions of local childcare quality respond to variations in daycare availability and quality ratings across labor markets and over time.

To assess the impact of daycare availability and quality, we estimate a generalized triple-difference model using outcomes of mothers with school-aged children for counterfactual comparisons. The first difference captures how outcomes change for mothers of children aged 1-4 in response to shifts in local daycare availability and quality, relative to similar mothers in unaffected labor markets. While this difference controls for unobserved time-invariant factors, it remains vul-

nerable to unobserved time-varying confounders. The second difference compares mothers with youngest children aged 6-10 in affected and unaffected markets. Since older children no longer attend daycare, this difference primarily reflects the influence of local confounds. Subtracting the second difference from the first allows us to isolate the impact of daycare availability and quality on the outcomes of mothers with young children. Our results are robust across several specifications that further account for potentially unobserved local time-varying characteristics and pre-existing trends. Furthermore, a series of falsification tests yield strong evidence for the validity of our identification strategy.

Our findings can be broadly summarized as follows. First, we find a positive and substantial impact of increased local daycare availability on formal care utilization among 1-4-year-olds and on mothers' employment and earnings between 2013 and 2022. Specifically, a 10 percentage point increase in daycare slots per capita for the 1-4 population raises the likelihood of formal care use by over 3 percentage points and mothers' employment by over 2 percentage points in the short term. Notably, we find no evidence of crowding out alternative care arrangements, suggesting that supply constraints were likely binding in many areas of Australia during this period. Second, holding availability constant, an increase in the proportion of daycare slots provided by centers meeting or exceeding the National Quality Standard is associated with higher formal care utilization and increased maternal employment and earnings. These effects are particularly pronounced among high-income, more-educated, and first-time parents. We show suggestive evidence that parents in these groups are especially perceptive of changes in local quality ratings, highlighting the crucial role of quality assessments in mitigating informational asymmetries and boosting families' demand for daycare services.

These findings yield several implications for the design and implementation of childcare policies. First, while much of the existing literature has focused on childcare costs and subsidies, our results underscore the critical importance of addressing supply-side constraints, particularly in areas experiencing rapid population growth or with limited childcare infrastructure.[1] Second, in

[1] Wrohlich (2011) studies a rationed childcare market and provides simulation evidence suggesting that public expenditures aimed at increasing childcare availability have a greater impact on maternal employment compared to

contexts where the childcare market is predominantly served by private providers, the quality of care services may be highly uneven (Bastos and Cristia 2012; Bassok et al. 2016). In such settings, policies designed to enhance and maintain daycare quality—such as targeted investments in workforce development or the implementation of quality-contingent subsidies—may be necessary to promote maternal labor force participation without compromising child outcomes (Berlinski et al. 2024). Lastly, transparent and accessible quality rating systems appear particularly beneficial in mitigating informational asymmetries and enabling parents to make informed choices (Bassok et al. 2016). Given the heterogeneous responses to quality improvements across demographic groups, especially the apparent lack of awareness among disadvantaged families, our findings also highlight the potential importance of targeted interventions aimed at addressing the specific needs and constraints of these households in navigating the childcare market.[2]

Our study contributes to a substantial body of literature examining the effects of childcare subsidies and costs on maternal employment. Existing work has yielded mixed results, largely due to varied institutional contexts and pre-existing conditions.In settings where childcare costs are high, studies have generally found positive impacts of subsidies and increased accessibility on mothers' employment (Gelbach 2002; Baker, Gruber, and Milligan 2008; Lefebvre and Merrigan 2008; Bauernschuster and Schlotter 2015; Nollenberger and Rodríguez-Planas 2015; Carta and Rizzica 2018; Wikle and Wilson 2023). By contrast, in contexts with already broad childcare coverage, strong traditional norms for maternal care, or where subsidies primarily lead to a substitution away from informal care arrangements, the effects on maternal employment have been more limited or even negligible (Lundin, Mörk, and Öckert 2008; Havnes and Mogstad 2011a; Bettendorf, Jongen, and Muller 2015; Givord and Marbot 2015; Busse and Gathmann 2020; Karademir, Laliberté, and Staubli 2024; Kleven et al. 2024). Our research adds to this literature by examining a setting with potentially severe supply constraints, revealing that increased childcare availability—not only af-

reducing parents' fees for existing slots.

[2]Some qualitative evidence discussed in Zellman and Perlman (2008) (p. 41) suggests that some parents have started to associate quality ratings with higher costs, consequently restricting their search to lower-rated childcare options. This limited search behavior may prevent families from discovering and accessing higher-quality care options that could be within their financial reach, especially when considering available public subsidies.

fordability—can significantly increase maternal employment.[3]

Our paper also contributes to the literature on childcare quality and its effects on the childcare market. On the supply side, Chipty (1995) and Hotz and Xiao (2011) have shown that stricter standards can lead to unintended consequences, including reduced availability and increased costs for providers. Blau (2007) suggests that tougher regulations may not always lead to higher price and quality but, in some cases, result in lower staff wages. On the demand side, evidence regarding whether parents value and are aware of quality-related attributes in the childcare market remains mixed. Some studies suggest that parents may not prioritize quality in their childcare decisions, with demand relatively insensitive to quality-related attributes (Blau 2001; Blau and Hagy 1998). Others indicate that parents do value quality but may lack full information and the ability to assess it accurately (Cryer, Tietze, and Wessels 2002; Mocan 2007). More recent studies suggest that parents do respond to quality when information, such as official ratings, is readily available. For example, Bassok, Dee, and Latham (2019) document evidence of declines in enrollment when centers are assigned a lower quality rating, while Herbst (2018) finds that the introduction of Quality Rating and Improvement Systems (QRIS) increased formal care utilization as well as labor supply and earnings among high-skilled mothers. Likewise, Philipp et al. (2024) demonstrate experimentally that when parents are offered high-quality childcare options, they show increased willingness to utilize these services and increase labor supply, particularly among more-educated parents. Our study extends this literature by examining the effects of a comprehensive, nationally implemented quality rating system on childcare usage and mothers' labor market outcomes, providing insights into how parents respond to detailed quality ratings when such information is widely accessible.

The rest of our paper is organized as follows. Section 2 provides institutional background and describes the data. Section 3 outlines our empirical strategy. Section 4 presents and discusses our empirical results. Section 5 offers concluding remarks.

[3]Existing work has found mixed evidence in the Australian context. Earlier studies tend to document low labor supply elasticities of mothers with respect to formal childcare costs (Doiron and Kalb 2005; Rammohan and Whelan 2005; Kalb and Lee 2008). More recent work by Breunig et al. (2011), who analyze mothers' self-reports of local childcare accessibility and quality, find that more reports of lower costs, higher availability, and quality are associated with mothers being more likely to work and working longer hours.

2 Background and Data

2.1 Institutional setting

The center-based daycare market in Australia is supplied by a combination of public and private providers, with private, for-profit centers playing a dominant and growing role. The share of for-profit centers increased from about 40% of total services in 2013 to 52% by 2023. Private, not-for-profit centers, such as those managed by communities, constitute a smaller and declining portion, decreasing from 37% in 2013 to 33% in 2023. Centers managed by state or local governments provide less than 10% of services. Within our study period, the overall expansion of daycare services in Australia was driven entirely by new private for-profit centers entering the market.

To support families with the cost of childcare, the Australian government provides childcare subsidies through the Child Care Subsidy (CCS) program. Introduced in 2018 as a replacement for the previous Child Care Benefit and Child Care Rebate, the CCS is a means-tested subsidy paid directly to childcare providers to reduce out-of-pocket costs for families. The subsidy rate varies based on family income, with lower-income families receiving higher subsidy rates. As of 2023, families earning less than $72,466 annually are eligible for a subsidy of up to 85% of childcare fees, while the rate gradually decreases for higher-income families. The subsidy is also subject to an annual cap for families earning above a certain threshold. This system aims to make childcare more affordable and accessible, particularly for low and middle-income families, while encouraging workforce participation.

The rapid expansion of private for-profit centers in the Australian childcare market has raised concerns about the quality of care provided (Rush and Downie 2006; Kalb 2009). Existing evidence suggests that for-profit centers tend to perform worse on various quality measures compared to their not-for-profit counterparts. For example, a report released in 2021 titled "Unsafe and non-compliant: Profits above safety in Australia's early learning sector," which analyzed both public and Freedom of Information (FOI)-sourced data, found that for-profit centers "have a history of

poorer safety and lower quality" and are more frequently sanctioned for safety issues.

In response to these quality concerns and the growing importance of early childhood education, the Australian government implemented the National Quality Framework (NQF) in 2012 with the overarching goal of ensuring consistent, high-quality early childhood education and care across the country. Central to the NQF is the National Quality Standard (NQS), which sets a national benchmark for the quality of children's education and care services. The NQS comprises seven quality areas: (1) educational program and practice, (2) children's health and safety, (3) physical environment, (4) staffing arrangements, (5) relationships with children, (6) collaborative partnerships with families and communities, and (7) governance and leadership. Under this framework, education and care services are assessed and rated by regulatory authorities against the NQS, receiving one of five ratings ranging from "Significant Improvement Required" to "Excellent." The NQF also includes national approved learning frameworks, such as the Belonging, Being and Becoming: The Early Years Learning Framework for Australia, guiding educators in developing quality educational programs. Additionally, it establishes requirements for educator qualifications and staff-to-child ratios to ensure adequate staffing with qualified professionals.

The implementation of the National Quality Framework represents a significant regulatory shift in the Australian childcare sector. Besides quality, such regulations may introduce substantial impact on the cost and availability of daycare services. For example, increased regulatory requirements may increase operational costs, potentially reducing availability, particularly in lower-income areas (Hotz and Xiao 2011). Quality improvements are likely to be uneven, with more pronounced enhancements in higher-income areas where providers are better positioned to find qualified staff and absorb compliance costs. Childcare costs for families may also rise, especially in areas experiencing supply constraints, as providers may pass on the costs of quality improvements. However, the existing subsidy system may help mitigate these effects, maintaining affordability and access for many families despite regulatory changes. Thus, the net impact of these countervailing forces on childcare availability, quality, and affordability remains an empirical question.

2.2 Data on daycare slots and quality ratings

Our analysis relies on data from the National Quality Standard (NQS) time series, a publicly available database established and maintained by the Australian Children's Education and Care Quality Authority (ACECQA). This database tracks approved services and provides quarterly snapshots of the Australian children's education and care sector, commencing in the third quarter of 2013.

As noted, our study focuses on analyzing the impact of changes in daycare availability and quality across Australian labor markets over the 2013-2022 period. For each long daycare center, we observe key information including service approval date, location (geographic coordinates), management type, and enrollment capacity (the maximum number of children that a service can accommodate at any given time). Furthermore, we observe the latest quality ratings of each service assigned by state or territory regulatory authorities in accordance with national standards (NQS). These assessments encompass an overall rating as well as ratings across the seven quality areas. The vast majority of services are rated as either "Exceeding," "Meeting," or "Working Towards NQS." A very small fraction of services (less than 0.3 percent in our sample) were at some point identified as posing significant risks to the safety, health, and well-being of children, leading to a "Significant Improvement Required" rating. Services undergo regularly monitoring and assessment, with those receiving lower ratings subject to more frequent visits and evaluations.[4]

Using these service-level data, we aggregate the number of center-based daycare slots to the local labor market level (SA4) level, then standardize by the local 1-4 population to construct our measure of local daycare availability. Defined by the Australian Bureau of Statistics, SA4s generally have populations ranging from 100,000 to 500,000, and are specifically designed to for the output of census and labor force survey data. We choose to measure availability at this level instead of a more granular one to minimize potential spillover effects across locations. As described in more detail later, we also aggregate availability by quality ratings to further analyze how

[4]For further information on assessment and rating process, see https://www.startingblocks.gov.au/other-resources/factsheets/assessment-and-rating-process.

mothers' outcomes respond to changes in local child care quality.

2.3 Data on childcare usage and mothers' labor market outcomes

Data to measure child care utilization and women's labor supply come from HILDA, an ongoing longitudinal study that began in 2001 with the collection of data from all adult members (individuals aged 15 years or older) of a nationally representative sample of Australian households. Subsequent follow-up interviews have been sought to be conducted annually with the original respondents, as well as with any children turning 15 years of age and any other persons living in the same household as the original sample. Our analysis focuses on analyzing mother and child outcomes in between 2013 and 2022. As described in more detail in the next section, our triple-difference estimation approach relates changes in the differences in childcare utilization and maternal labor market outcomes between younger (aged 1-4) and older, school-aged children (aged 6-10) to changes in local daycare availability and quality over time. Since this approach requires our sample to be representative at the local labor market level, we exclude a small number of individuals residing in remote and very remote areas as well as foreign-born individuals on temporary visas (about 300 observations in total). Our final analytic sample averages around 2,600 observations of children and 1,600 observations of mothers per survey wave.

The content of HILDA is rich, particularly when it comes to measuring child care utilization. Following a few screening questions that ask parents of 0-14-year-olds whether they use any of the shown forms of child care (while parents undertake paid work, while parents are not working, and for non-work purposes), those who answer in the positive proceed to provide details on the actual modes of child care used, the associated costs and hours in a typical week, and the purpose (work or non-work) for each individual child. In addition, parents using or thought of using child care are also asked to rate the difficulty of finding care with certain characteristics (e.g., care in the right location, care their children are happy with). We utilize these data to track net changes in child care use and substitution patterns among different care arrangements for each individual child, as

well as changes in parents' perceptions of local care in response to changes in the composition of local service providers. As for mothers' labor market outcomes, we focus on employment status, hours of work, and earnings.

Figure 1 depicts the trends in children's center-based daycare attendance, constructed using data from HILDA (solid line) and daycare availability (bars) delineated by overall quality ratings using NQS time series. There was a steady increase in the number of daycare slots per 1-4 child at an annual rate of approximately 5 percent, rising from 0.33 slots per child in 2013 to 0.51 slots per child in 2022. Much of this growth can be attributed to an increase in the number of services meeting or exceeding NQS standards, reflecting the policy emphasis on improving childcare quality. Notably, the fraction of 1-4-year-olds enrolled in daycare tracked total availability closely, particularly in the initial years following the introduction of the NQF. This close relationship suggests that supply expansion was largely absorbed by increased demand, indicating that the childcare market was potentially supply-constrained during this period.

In Figure 2, we provide a spatial perspective on these trends and map the average annual growth in daycare slots (Panel A) and in the size of the 1-4 population (Panel B) across SA4s during our study period. Panel A reveals highly uneven growth in the supply of daycare slots across regions, with stronger growth observed in major cities and inner regions. This is not surprising, given that daycare centers in urban areas may find it easier to recruit and retain staff and also face strong demand from dual-earners households. On the other hand, Panel B shows that regions with rapid growth in daycare slots also saw significant population growth, with the latter outpacing supply expansion in many cases. While such differences in daycare availability across regions and time periods are helpful in enabling our spatial correlation approach, they may also mask systematic differences in local characteristics and labor market conditions. We now turn to our triple-difference estimation strategy, which attempts to eliminate the influences of local confounders by using the outcomes of mothers of school-aged children for counterfactual comparisons.

3 Empirical strategy

To study the effects of daycare availability on maternal outcomes, we exploit variation in availability across regions and over time. By construction, differences in local availability are driven by changes in the number of daycare slots in an area (the numerator) as well as changes in the size of the local 1-4 population (the denominator). As such, confounding changes in economic conditions and local population composition, if unaccounted for, could bias our estimates. It is worth noting the direction of bias can be ambiguous in this setting. On one hand, daycare centers may tend to open (and survive) in areas with strong demands for daycare services, which can mask underlying growths in labor demand, resulting in an upward bias. Conversely, faster population growth may occur in areas with strong labor markets and good childcare access, leading to downward bias. As we show in Appendix Table A1, simple regressions of formal care enrollment among 1-4-year-olds (column 1) and mothers' employment (column 2) on local daycare availability, controlling for region and year fixed effects, yield negative point estimates, which indicate the relatively more important influence of population growths in driving these arguably biased estimates.

Given these endogeneity concerns, our empirical analysis attempts to uncover the causal effects of local daycare availability and quality by estimating triple-difference model in which we compare mothers of 1-4-year-olds to mothers whose youngest child is between 6 and 10 years old.[5] As we explain further below, by letting the outcomes of mothers with school-aged children to capture the influences of confounders, our triple-difference framework relies on a weaker identifying assumption than the double-difference model underlying the results presented in Appendix Table A1 (Olden and Møen 2022). Specifically, our approach requires only that changes in local daycare availability and quality are exogenous with respect to differences in outcomes between the two groups of mothers. Our approach thus follows a growing number of studies in this literature

[5] We do not include 5-year-olds in our analysis since, depending on the month of birth, some might still attend daycare while others enter the first year of compulsory schooling. We further exclude children under 1 to minimize endogenous fertility responses.

(e.g., Brodeur and Connolly 2013; Herbst 2017; Halim, Johnson, and Perova 2022; Russell and Sun 2022; Marcos 2023; Wikle and Wilson 2023; Karademir, Laliberté, and Staubli 2024), and is most closely related to Wikle and Wilson (2023), who study the impact of Head Start on mothers' labor market outcomes in the United States.

Formally, we estimate specifications of the following equation:

$$\begin{aligned} Y_{it} =& \beta_1 \text{daycare availability}_{st} \times (\text{child aged 1-4})_{it} + \beta_2 \text{daycare availability}_{st} \\ &+ \beta_3 (\text{child aged 1-4})_{it} + X_{it}^{'}\Gamma + \phi_s + \delta_t + \epsilon_{it} \end{aligned} \tag{1}$$

Y_{it} is a labor market outcome, such as employment status, of mother i measured in year t. The coefficient β_1 captures the effect of local daycare availability, defined as the total number of long daycare slots in SA4 s divided by the 1-4 population, on affected mothers (those with a 1-4-year-old) relative to the comparison group (mothers whose youngest child is between 6 and 10). With the inclusion of SA4 (ϕ_s) and year (δ_t) fixed effects, our analysis compares mothers within the same local labor market while controls for time-varying confounds common to all, such as national changes in economic conditions, policies, or norms regarding maternal employment. In addition to these fixed effects, we include a vector of individual characteristics, X_{it} , which contains a quadratic in age, education level, marital status, indigenous status, foreign-born status, and the number of children. We cluster our standard errors at the SA4 level (85 clusters) to account for potential correlated shocks among mothers in the same labor market and weight all regressions by individual weights provided in HILDA.

Given this setup, the coefficient β_2 captures the effect of any time-varying confounds that are correlated with local daycare availability, so long as they affect the outcomes of mothers of 1-4-year-olds and mothers of school-aged childen similarly. The remaining differences in the gap in labor market outcomes between these two groups can be attributed to the causal effect of local daycare availability. As such, our identifying assumption requires that in the absence of a change in daycare availability, the gap in outcomes between mothers of 1-4-year-olds and those with older, school-aged children would have remained the same in areas that experienced changes in availab-

ility relative to those that did not.

How plausible is the identifying assumption? Focusing on mothers of 1-4-year-olds, Table 1 reveals systematic differences in characteristics across areas that experienced below- versus above-median increases in day care availability between 2013 and 2022. However, mothers with slightly older, school-aged children seem to provide good counterfactual comparisons, as these two groups of mothers are similar along many dimensions, including educational attainment and marital status (columns 3 and 6). Crucially, while there are some diferences in observable characteristics between the two groups, these differences do not predict whether an area experienced an above- or below-median increase in daycare availability during the study period. The fact that these two groups of mothers trend similarly irrespective of changes in local daycare availability suggests that any confounding factors affecting mothers of 1-4-year-olds would most likely be captured by the outcomes of our comparison group. As discussed in the next section, we further corroborate the plausibility of our identifying assumption through a series of pre-trend tests in which we document no significant correlation between past outcomes and future availability.

Following the same logic, we assess the importance of local daycare quality by estimating a similar regression equation

$$\begin{aligned} Y_{it} =& \beta_1 \text{daycare availability}_{st} \times (\text{child aged 1-4})_{it} + \beta_2 \text{daycare availability}_{st} \\ &+ \gamma_1 \text{share of slots meeting NQS or above}_{st} \times (\text{child aged 1-4})_{it} \\ &+ \gamma_2 \text{share of slots meeting NQS or above}_{st} \\ &+ \beta_3 (\text{child aged 1-4})_{it} + X_{it}^{'}\Gamma + \phi_s + \delta_t + \epsilon_{it} \end{aligned} \tag{2}$$

where local quality measured as the share of daycare slots in SA4 s and year t provided by services that either meet or exceed the National Quality Standard. As before, our approach assumes that the outcomes of our comparison group would adequately capture the effects of confounders (through γ_2), and attributes the remaining differences in outcomes between the two groups to the causal effects of changes in local quality ratings. We now turn to discuss our empirical results.

4 Results

4.1 Impact of daycare availability on utilization

We first document the first-order effects of local daycare availability on childcare usage. Our analysis takes advantage of detailed information on the types of care arrangements children receive in each survey year, as we described previously in the data section. We consider the following arrangements: (1) formal care, which includes the use of center-based daycare, kindergarten, preschool, and out-of-school-hours care; (2) family daycare; (3) paid sitter or nanny; and (4) informal care, which includes care given by grandparents, siblings, neighbors, friends, and relatives.

Table 2 presents the results obtained from estimating equation 1. Column 1 shows a positive and statistically significant (1 percent level) effect of daycare availability on the use of formal, center-based daycare. Our triple-difference estimate indicates that an increase in local daycare coverage by 10 percentage points (0.8 SD) raises the use of formal care among children aged 1-4 by 3.1 percentage points. Given that 30.4 percent of children in this age range enroll in formal daycare in our sample, this effect represents a 10.2 percent increase and is economically substantial.

Given the observed large impact on formal care usage, a natural question is whether increased daycare availability crowds out other existing care arrangements. For example, in the context of Canada and Norway, Baker, Gruber, and Milligan (2008) and Havnes and Mogstad (2011b) show that the expansion of publicly subsidized childcare resulted in a crowding out of informal arrangements, leading to more modest or even no net change in maternal labor supply. The results in columns 2-4 suggest that there is little evidence of a crowding-out effect in our setting. In particular, obtained estimates of the effects of daycare availability on the use of family daycare, informal care, and paid nannies or babysiters are all close to zero and statistically insignificant.

In table 3, we examine the effects of daycare availability on past and future use of formal care. As shown, we obtain statistically and economically insignificant estimates on whether a child receives formal care in $t-2$ (coef $= -0.093$, se $= 0.073$) and $t-1$ (coef $= 0.019$, se $= 0.089$).

By contrast, there is a sharp uptick in formal care usage starting in t that stabilizes at over 30 percentage points over the following years. These findings support our parallel-trend identifying assumption and highlight the immediate impact of newly introduced daycare slots on utilization rates among 1-4-year-olds.

4.2 Impact of daycare availability on mothers' labor market outcomes

Table 4 presents the effects of daycare availability on mothers' labor market outcomes. Our estimates in column 1 indicate that a 10 percentage point increase in local daycare coverage is associated with a 2.6 percentage point increase in the probability of employment among mothers of 1-4-year-olds. This effect, significant at the 1 percent level, represents a 3.9 percent increase in the employment rate given our sample average of 67.5%. Combining these results with our earlier estimates of the impact on formal care use yields an employment elasticity with respect to formal care use of 0.38 (0.039/0.102). These findings align with recent studies, such as Müller and Wrohlich (2020), who find a 10 percentage point increase in local childcare coverage raises the labor force participation of mothers of toddlers by 2.2 percentage points in Germany, and Wikle (2023), who document an employment elasticity of 0.34 in the context of Head Start in the US. Turning to columns 2 and 3, our estimates reveal that much of the observed employment effect in our setting is driven by an increase in part-time employment (coef = 0.243, se = 0.103) rather than full-time employment (coef = 0.013, se = 0.115).

In columns 4 and 5, we observe a statistically significant effect of daycare availability on the (inverse hyperbolic sine transformed) number of hours worked per week and hourly earnings.[6] The results suggest that an increase in daycare availability by 10 percentage points increases hours worked and hourly earnings by approximately 10%. Assuming the entire 2.6 percentage point increase in employment were due to new entrants working full-time at 40 hours per week, this would

[6] We derive hourly earnings by dividing total weekly wage and salary by the number of hours usually worked per week. We use the inverse hyperbolic sine transformation to accommodate zeros, though our estimates are robust to adding 1 to the outcomes and analyze their natural logs instead

translate into a 5.2% (0.026*40/19.98) increase in hours worked at the mean. The larger observed increase in hours worked by 10% suggests that, in addition to extensive margin entry, there was also an increase in maternal labor supply along the intensive margin.

In Table 5, we analyze the impact of daycare availability on mothers' past and future employment status. As before, we obtain small and statistically insignificant estimates of the effects of daycare availability on past outcomes, which provide futher evidence for our parallel-trend identifying assumption. We likewise observe large and statistically significant effects on mothers' employment in the first few years following an increase in local daycare availability.

Robustness. We assess the robustness of our findings in this section to several alternative sample restrictions (Appendix Table A2) and specifications (Appendix Table A3). In rows 1-3, we exclude each of the three survey years between 2020 and 2022, and obtain qualitatively similar results. These suggest that our findings are not driven by the COVID-19 pandemic. One concern with our main results is endogenous migratory responses in which families with small children move into areas with better access to daycare. Row 4 indicates that removing mothers who report having moved since the last survey wave, if anything, substantially increase our point estimates. In rows 5 and 6, we explore the sensitivity of our results to using non-parents and mothers of 8-12-year-olds as comparison groups. Again, we obtain effects that are larger than our baseline estimates in table 4. Likewise, our results hold when we include mothers with less-than-1-year-olds in our treatment group (with corresponding population adjustment to our measure of daycare availability).

In Appendix Table A3, we first include state by year fixed effects in our regression. The inclusion of these fixed effects, which futher eliminates time-varying confounders at the state level, does not significantly change our baseline estimates. Similarly, our estimates remain large and significant when we instead control for SA4-specific linear time trends (row 2). In row 3, we further control for individual fixed effects, which address compositional changes in our sample. Our estimates, though less precise, remain of similar magnitudes.

Lastly, in row 4, we employ a pre-trend adjustment method developed by Freyaldenhoven, Hansen, and Shapiro (2019) to address any potential violations of our key identifying assumption.

This method permits the existence of pre-event trends in the gap in outcomes between mothers of 1-4-year-olds and those in the comparison group, and attempts to control for these "pre-trends" by exploiting a covariate that is related to the treatment only through confounding factors. In our setting, one might be specifically worried about unobserved labor demand shocks that differentially affect the labor market outcomes of mothers with young and older children. For example, mothers of small children may be more likely to sort into more family-friendly occupations and jobs. As a result, regions that saw larger growths in the number of family-friendly positions may also experienced increases in daycare availability, yet these effects will not be adequately captured in the outcomes of mothers in the comparison group. Freyaldenhoven, Hansen, and Shapiro (2019) show that treatment effect can be recovered if one can find a covariate that is (imperfectly) related to the confounding factor but unaffected by the policy and control for this proxy using the leads of the policy variable as instruments. Mirroring their applications, we use the SA4 male employment-to-population ratio, calculated using ABS data, as a proxy for local labor market conditions, and control for this using the first lead of daycare availability (daycare availability$_{s,t+1}$) as an instrument.[7] Reassuringly, our estimates remain qualitatively unchanged with the addition of the pre-trend adjustment.

Overall, the results presented thus far point to excess demand for daycare slots in Australia in the decade following the implementation of the National Quality Framework. As mentioned, a key aspect of the NQF is the establishment of minimum qualification and educator-to-child ratio requirements, which could theoretically curb the growth of the supply of daycare services (Hotz and Xiao 2011). The results presented here provides strong evidence that relaxing supply constraints leads to an immediate and substantial surge in both formal care utilization and maternal labor supply, all without displacing existing care arrangements. We now turn our attention to quality standards and quality ratings, and examine whether they are important factor behind mothers'

[7] Baker, Gruber, and Milligan (2008) find insignificant effects of the introduction of universal childcare in Quebec on men's labor supply (see their footnote 25). In the Australian context, Doiron and Kalb (2005) and Mumford, Parera-Nicolau, and Pena-Boquete (2020) find fathers' labor supply to be unresponsive to childcare accessibility. Consistent with these findings, we find a near zero and statistically insignificant effect of daycare availability on fathers' employment status when we estimate equation 1 on the male sample.

employment decisions.

4.3 Does quality matter?

A priori, the effects of quality ratings on childcare usage and mothers' employment decisions can be ambiguous. On one hand, parents may view childcare primarily as a cost associated with workforce participation, placing limited emphasis on quality.[8] On the other hand, parents may value quality but lack full information on relevant attributes.[9] Thus, government interventions that reduce informational constraints—such as establishing quality standards and publicizing ratings—can enable parents to make informed decisions regarding daycare utilization and workforce participation.

We begin by investigating whether parents' perceptions of local care quality respond to changes in daycare quality ratings. For this analysis, we take advantage of a HILDA survey question that asks respondents to rate, on a scale of 0 to 10, the difficulty they experienced in the previous 12 months in "finding good quality child care." We convert the responses to a binary variable indicating whether respondents encountered any difficulty (defined as providing a score between 1 and 10, with 0 indicating no difficulty). We then correlate this outcome with the proportion of daycare slots provided by centers rated meeting NQS or above while holding daycare availability constant. Since the survey question is only administered to those who indicated they have used or thought about using any of the listed forms of childcare in the previous 12 months, responses from the vast majority of parents in our comparison group (those with 6-10-year-olds) are unavailable. Accordingly, we focus on analyzing responses of mothers of 1-4-year-olds only.

Table 6 presents our results. In column 1, we regress the outcome on daycare availability and the share of daycare slots meeting or exceeding the NQS, controlling for parents' characteristics

[8] Early evidence suggests that parents' demand for childcare services is relatively insensitive to quality-related attributes. For instance, Blau (2001) finds only a small correlation between family income and care quality, while Blau and Hagy (1998) indicate that parents generally do not pay extra for regulated aspects like staff-to-child ratios.

[9] Mocan (2007) suggests that parents do not utilize all available information to assess childcare center quality, often focusing on less relevant factors, such as the cleanliness of entry areas.

(age, education, number of children, marital status, indigenous status, and foreign-born status), as well as SA4 and year fixed effects. The obtained estimates suggest that there is a significant correlation between the local share of daycare slots provided by centers rated meeting NQS or above and parents' perceptions of local daycare quality. Specifically, transitioning from all daycare slots being provided by centers not meeting NQS (either holding a provisional rating or rated as "Working Toward NQS") to all slots being offered by centers rated meeting NQS or above reduces the likelihood of parents reporting difficulty in finding good quality childcare by 25.1 percentage points. This effect is statistically significant at the 5 percent level.

Are certain parents more inclined to seek out information about quality ratings to evaluate local daycare options? In columns 2-7, we conduct heterogeneity analysis by parents' characteristics such as income, education, and whether they are first-time parents. As shown, our results indicate a significant and more pronounced correlation between local daycare quality ratings and perceptions of local quality among more-educated and first-time parents. As we discuss in more detail below, these patterns are compatible with multiple potential mechanisms, though the cost of acquiring information seems to play a prominent role. Importantly, these results suggest that at least a subset of parents are aware of the quality ratings of local daycare centers published under the NQF.

Having examined parents' awareness of quality ratings, we next assess whether local quality ratings influence childcare utilization and mothers' employment decisions. In Table 7, we extend the analysis from Table 2 by incorporating the share of daycare slots meeting NQS or above, as well as this share interacted with an indicator for having a child aged 1-4, as additional regressors. The results indicate that a higher share of high-quality daycare slots substantially impacts daycare utilization. Specifically, the estimate in column 1, significant at the 1 percent level, shows that formal care usage among 1-4-year-olds increases by 13.4 percentage points in response to a complete transition of local daycare ratings to meet NQS or above. Interestingly, there is also a notable increase in the use of informal care associated with higher local daycare quality. This suggests that increased formal care use may complement informal care, such as assistance from grandparents,

especially if daycare alone does not cover all of the hours mothers need in order to participate the labor force.[10]

Our previous findings suggest that these aggregate results may mask substantial heterogeneity, as only some parents are likely to be aware of changes in local quality ratings. In Table 9, we investigate variations in the effects of quality ratings based on mothers' income, education, and number of children. To preserve statistical power, we interact the triple-difference term for the share of daycare slots meeting NQS or above with indicators for high-income, higher-education, and first-time mothers. The results reinforce our earlier findings on quality perceptions, suggesting that high-quality daycare slots have a stronger positive impact on employment likelihood for high-income, more educated, and first-time mothers.

Several mechanisms may underlie the heterogeneous effects of daycare quality on maternal employment across socioeconomic groups. One potential explanation could be the relationship between quality and price. If higher-quality services lead to increased costs, we might expect high-SES parents to be the primary beneficiaries of improved daycare quality, as low-SES families may be priced out of these options. However, existing empirical evidence on the link between price and quality is mixed. In Appendix Table A4, we repeat our analysis in Table 6 using parents' self-reports of the difficulty with finding affordable childcare. While there is a strong negative relationship between availability and the likelihood of parents reporting difficulty in finding affordable care, quality ratings do not seem to have a significant impact except for self-reports among parents with more than one child. In an unreported analysis, we analyze survey responses on the cost of using formal care (after factoring in government supports), and similarly find no significant correlation between the share of daycare slots provided by services rated as meeting NQS or above and costs, suggesting that factors other than price may be driving our heterogenous results.

A second explanation lies in the difficulty with which different families acquire information. High-SES parents may find it easier to access daycare quality ratings through better search tools, more focused attention to service quality, or access to more informed peer networks (Mocan 2007;

[10] Busse and Gathmann (2020) similarly find that formal care and informal care are complements among families with preschoolers in the context of Germany.

Alexandersen et al. 2021). This heightened awareness could enable them to identify and choose better-rated daycare centers more effectively, thus benefiting more directly from quality improvements. This also explains why first-time parents are also more responsive to changes in quality ratings, as the lack of prior experience with daycare services means they may have to rely more on official ratings to make informed decisions.

Lastly, preferences and financial constraints likely contribute to the observed results. While low-SES families may prioritize maintaining steady income, potentially leading to higher reliance on any available care, high-SES families may have the financial flexibility to demand a certain standard of daycare quality before committing to non-parental care options. This difference in constraints and preferences could explain why higher-quality daycare appears to facilitate labor force participation more strongly among high-SES mothers.

In sum, our findings reveal that both daycare availability and quality play crucial roles in shaping maternal employment outcomes, with heterogeneous effects across socioeconomic groups. These results underscore the complex interplay between childcare policy, parental decision-making, and labor market participation, highlighting the need for nuanced approaches to childcare provision that consider both quantity and quality aspects.

5 Conclusion

Taken together, the results presented in this paper indicate that daycare quality, alongside availability, is an important determinant of mothers' employment decisions and labor market outcomes. Our findings contribute to a growing literature that explores the effects of subsidized childcare expansions, which have sometimes been associated with mixed or even adverse impacts on children's long-term developmental outcomes (Baker, Gruber, and Milligan 2008; Baker, Gruber, and Milligan 2019). Where there may be a tension between policies aimed at boosting maternal workforce participation and those focused on fostering child development, our results offer a pathway to bridging this gap. By expanding access to high-quality daycare and increasing the

transparency and accessibility of quality ratings, policymakers could potentially support maternal employment without compromising, and perhaps even enhancing, early childhood development.

Our findings offer several implications for policy design concerning public childcare provision and point to several areas where policies could potentially yield important benefits. First, policymakers may consider a more nuanced approach to childcare subsidies. Rather than focusing solely on increasing the quantity of childcare slots, a tiered subsidy system that incentivizes both the provision and utilization of high-quality care could be explored (Herbst 2018; Berlinski et al. 2024). Such a system could offer higher subsidy rates for childcare centers that meet stringent quality standards, potentially encouraging providers to invest in quality improvements while simultaneously making high-quality care more affordable for families.

Second, our results highlight the potential importance of information dissemination in childcare markets. Future research could investigate the effectiveness of comprehensive quality rating and improvement systems in equipping parents with easily understandable information about childcare quality (Bassok, Dee, and Latham 2019; Philipp et al. 2024). These systems could be coupled with targeted outreach and education programs to help parents, particularly those from disadvantaged backgrounds, understand the importance of quality in early childhood education and how to interpret quality ratings.

Lastly, while our study does not directly examine the childcare workforce, the importance of quality in our findings suggests that this could be a fruitful area for future policy research. Investigations into policies aimed at improving the qualifications, training, and compensation of childcare workers could provide valuable insights into how to enhance care quality, which our results suggest could enhance the welfare of both mothers and young children.

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Figure 1. Trends in Center-Based Daycare Availability and Enrollment, 2013-2022

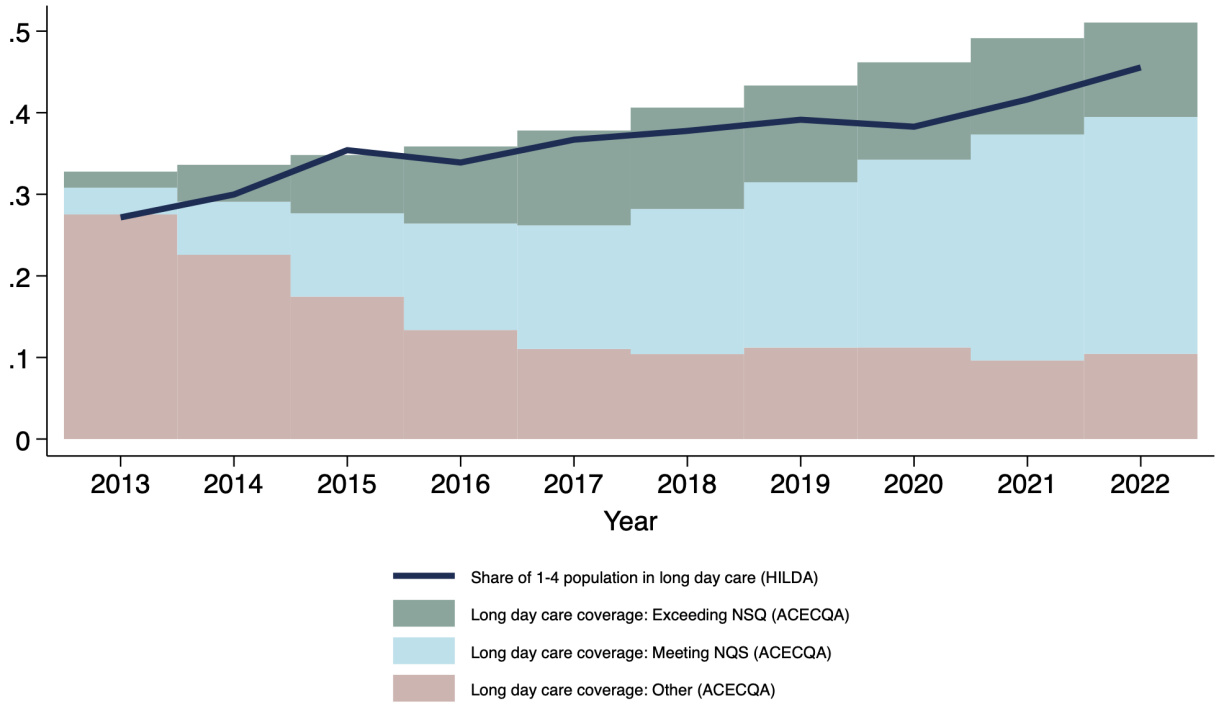
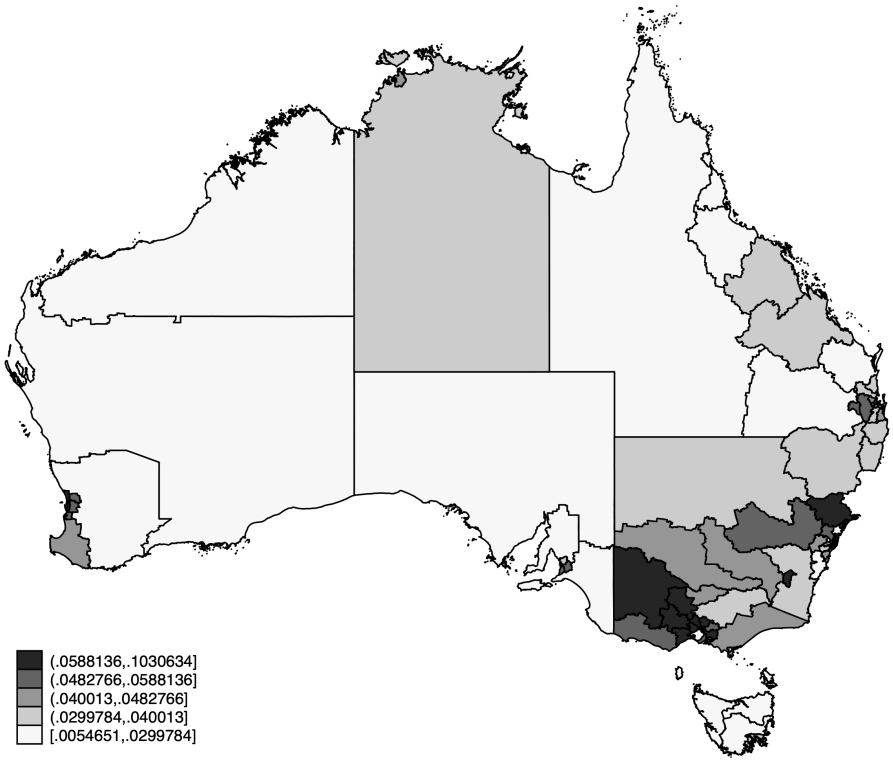
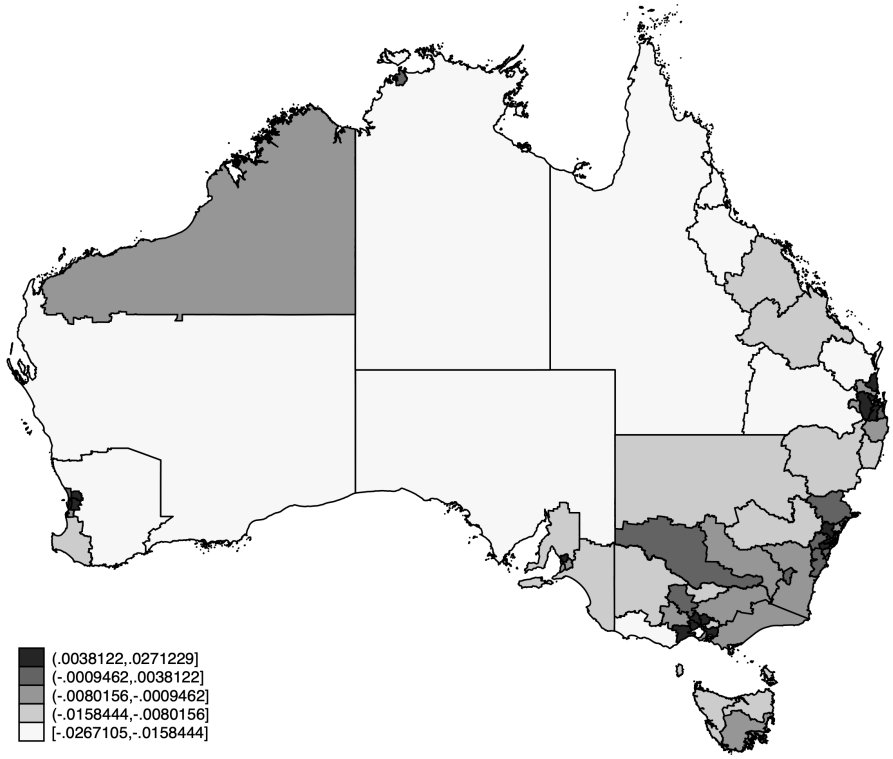


Figure 2. Spatial Distribution of Daycare Slots and Population by SA4, 2013-2022



Panel A. Average Annual Growth in Daycare Slots



Panel B. Average Annual Growth in 1-4-Year-Old Population

Table 1. Summary Statistics for Analysis Sample of Mothers, 2013-2022

	Below-Median Increase in Day Care Availability from 2013 to 2022			Above-Median Increase in Day Care Availability from 2013 to 2022				
	With a 1-4-Year-Old	No 1-4-Year-Old	Diff.	With a 1-4-Year-Old	No 1-4-Year-Old	Diff.	(4) - (1)	(6) - (3)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Employed	0.54	0.75	-0.21	0.66	0.78	-0.12	0.13***	0.10***
Usual hours worked	15.1	23.8	-8.7	18.4	24.2	-5.8	3.71***	3.07***
Weekly earnings	524.9	787.8	-262.9	764.1	925.1	-161	263.91***	108.05*
Hourly earnings	18.9	25.1	-6.2	27	29.8	-2.8	8.69***	3.47**
Age	32.6	39.8	-7.2	34.4	41.1	-6.7	1.81***	0.44
Bachelor's degree or above	0.33	0.34	-0.01	0.49	0.47	0.02	0.15***	0.02
Foreign born	0.3	0.36	-0.06	0.31	0.36	-0.05	-0.01	0.01
Married	0.65	0.63	0.02	0.72	0.71	0.01	0.05***	0.08
Number of children	2.21	2.46	-0.25	2.07	2.25	-0.18	-0.13***	0.10
Age of youngest child	1.72	7.88	-6.16	1.74	7.98	-6.24	0.02	-0.08
Used institutional formal care	0.41	0.15	0.26	0.52	0.21	0.31	0.11***	0.05*
Used family day care	0.14	0.017	0.123	0.11	0.021	0.089	-0.02*	-0.03*
Used a paid sitter/nanny	0.014	0.0091	0.0049	0.054	0.04	0.014	0.04***	0.01
Used informal care	0.39	0.37	0.02	0.45	0.37	0.08	0.05***	0.06*
Observation	4,369	2,396		5,983	3,449			

Notes—The sample includes mothers with a child aged 1-4 (columns 1 and 4) or whose youngest child is between 6 and 10 (columns 2 and 5). Sample means are weighted using individual weights. Column 7 and 8 indicates statistically significant differences between columns 1 and 4 and columns 3 and 6, respectively. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 2. Effects of Daycare Availability on Childcare Usage

	Child Outcomes: Childcare Usage			
	Use Formal Daycare	Use Family Daycare	Use Informal Care	Use Care By A Paid Sitter or Nanny
	(1)	(2)	(3)	(4)
Daycare availability	0.313***	-0.006	0.041	-0.025
× (aged 1-4)	(0.095)	(0.048)	(0.087)	(0.036)
Daycare availability	-0.395***	-0.042	-0.272*	-0.114
	(0.131)	(0.061)	(0.162)	(0.094)
Dependent mean	0.304	0.059	0.353	0.037
Observation	26,839	23,650	23,650	23,650

Notes—Sample includes 1-4-year-olds and 6-10-year-olds in waves 2013-2022 of HILDA. Daycare availability is the total number of center-based daycare slots divided by the population of 1-4-year-olds in a Statistical Area 4 (SA4). All specifications include an indicator for the 1-4 age group, the child's age, number of younger and older siblings; mother's age, education group, marital status, indigenous status, and foreign-born status; and SA4 and year fixed effects. All regressions are weighted by individual weights. Standard errors are clustered at the SA4 level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3. Effects of Daycare Availability on Past and Future Formal Care Use

	Child Outcomes: Use Formal Care				
	$t-2$	$t-1$	t	$t+1$	$t+2$
	(1)	(2)	(3)	(4)	(5)
Daycare availability	-0.093	0.019	0.313***	0.335***	0.376***
× (aged 1-4)	(0.073)	(0.089)	(0.095)	(0.085)	(0.085)
Daycare availability	0.052	-0.213	-0.395***	-0.682***	-0.733***
	(0.148)	(0.149)	(0.131)	(0.177)	(0.210)
Observation	23,260	25,972	26,839	23,269	20,216

Notes—Sample includes 1-4-year-olds and 6-10-year-olds in waves 2013-2022 of HILDA. Daycare availability is the total number of center-based daycare slots divided by the population of 1-4-year-olds in a Statistical Area 4 (SA4). All specifications include an indicator for the 1-4 age group, the child's age, number of younger and older siblings; mother's age, education group, marital status, indigenous status, and foreign-born status; and SA4 and year fixed effects. All regressions are weighted by individual weights. Standard errors are clustered at the SA4 level. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 4. Effects of Daycare Availability on Mothers' Labor Market Outcomes

				Inverse Hyperbolic Sine of	
	Employed	Employed: < 35 Hours per Week	Employed: >= 35 hours per Week	Usual hours worked	Hourly Earnings
	(1)	(2)	(3)	(4)	(5)
Daycare availability × (child aged 1-4)	0.256***	0.243**	0.013	0.996**	0.983**
	(0.097)	(0.103)	(0.115)	(0.403)	(0.402)
Daycare availability	-0.237	-0.229	-0.011	-0.726	0.005
	(0.154)	(0.207)	(0.200)	(0.636)	(0.806)
Dependent mean	0.675	0.384	0.291	19.980	2.589
Observation	16,197	16,197	16,197	15,955	15,955

Notes—Sample includes mothers with a 1-4-year-olds or whose youngest child is between 6 and 10 in wave 2013-2022 of HILDA. Daycare availability is the total number of center-based daycare slots divided by the population of 1-4-year-olds in a Statistical Area 4 (SA4). All specifications include an indicator for having a child aged 1-4, number of children, a quadratic in age, education level, marital status, indigenous status, foreign-born status, and SA4 and year fixed effects. All regressions are weighted by individual weights. Standard errors clustered at the SA4 level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5. Effects of Daycare Availability on Past and Future Mothers' Employment

	Employed in $t-3$	Employed in $t-2$	Employed in $t-1$	Employed in t	Employed in $t+1$	Employed in $t+2$
	(1)	(2)	(3)	(4)	(5)	(6)
Daycare availability × (child aged 1-4)	0.033	0.065	0.083	0.256***	0.233**	0.207*
	(0.116)	(0.102)	(0.093)	(0.097)	(0.113)	(0.123)
Daycare availability	0.003	0.027	-0.175	-0.237	-0.407**	-0.540**
	(0.252)	(0.218)	(0.192)	(0.154)	(0.192)	(0.217)
Observation	10,916	12,782	14,020	16,197	13,917	12,002

Notes—This table show regression results for lagged and lead outcomes of the sample analyzed in Table 4. All specifications include an indicator for having a child aged 1-4, number of children, a quadratic in age, education level, marital status, indigenous status, foreign-born status, and SA4 and year fixed effects. All regressions are weighted by individual weights. Standard errors clustered at the SA4 level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6. Correlation between Perceptions of Local Daycare Quality and Quality Ratings

	Outcome: Experienced Difficulty in Finding High-Quality Childcare in the Past 12 Months						
	Full sample	Household income below median	Household income above median	No bachelor's degree	Bachelor's degree	First-Time Parents	Parents with More than One Child
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Share of daycare slots meeting NQS or above	-0.251**	-0.182	-0.342**	-0.098	-0.365**	-0.398**	-0.190
	(0.106)	(0.178)	(0.154)	(0.111)	(0.148)	(0.181)	(0.116)
Daycare availability	-0.884**	-0.760	-0.962**	-0.725**	-0.935**	-0.905*	-0.711**
	(0.347)	(0.475)	(0.410)	(0.312)	(0.453)	(0.457)	(0.344)
Dependent mean	0.494	0.482	0.505	0.466	0.513	0.532	0.476
Observation	12,382	6,190	6,191	5,940	6,441	3,682	8,700

Notes—Sample includes parents with 1-4-year-olds who used or thought about using childcare in the previous 12 months and were asked to rate the difficulty with finding good-quality childcare on a scale of 0 to 10. The outcome variable is an indicator for whether parents reported experiencing difficulty (if they provided a score between 1 and 10). All specifications include controls for sex, age, education level, number of children, marital status, indigenous status, and foreign-born status; and SA4 and year fixed effects. All regressions are weighted by individual weights. Standard errors clustered at the SA4 level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7. Effects of Daycare Availability and Quality Ratings on Childcare Usage

	Child Outcomes: Childcare Usage			
	Use Formal Care	Use Family Daycare	Use Informal Care	Use Care By A Paid Sitter or Nanny
	(1)	(2)	(3)	(4)
Share of daycare slots meeting NQS or above × (aged 1-4)	0.134***	0.013	0.091**	-0.009
	(0.043)	(0.021)	(0.042)	(0.019)
Share of daycare slots meeting NQS or above	-0.049	-0.001	-0.043	-0.011
	(0.050)	(0.026)	(0.059)	(0.020)
Daycare availability × (aged 1-4)	0.210**	-0.016	-0.029	-0.018
	(0.098)	(0.049)	(0.090)	(0.039)
Daycare availability	-0.348**	-0.035	-0.245	-0.125
	(0.134)	(0.063)	(0.166)	(0.098)
Dependent mean	0.451	0.111	0.351	0.037
Observation	26,839	26,839	26,839	26,839

Notes—Sample includes 1-4-year-olds and 6-10-year-olds in waves 2013-2022 of HILDA. Daycare availability is the total number of center-based daycare slots divided by the population of 1-4-year-olds in a Statistical Area 4 (SA4). All specifications include an indicator for age 1-4, the child's age, number of younger and older siblings; mother's age, education level, marital status, indigenous, and foreign-born status; and SA4 and year fixed effects. All regressions are weighted by individual weights. Standard errors are clustered at the SA4 level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8. Effects of Daycare Availability and Quality Ratings on Mothers' Labor Market Outcomes

				Inverse Hyperbolic Sine of	
	Employed	Employed: < 35 Hours per Week	Employed: >= 35 hours per Week	Usual hours worked	Hourly Earnings
	(1)	(2)	(3)	(4)	(5)
Share of daycare slots meeting NQS or above × (child aged 1-4)	0.083*	0.033	0.050	0.356	0.445*
	(0.050)	(0.063)	(0.069)	(0.214)	(0.227)
Share of daycare slots meeting NQS or above	-0.023	0.008	-0.033	-0.080	0.042
	(0.066)	(0.067)	(0.063)	(0.270)	(0.323)
Daycare availability × (child aged 1-4)	0.201**	0.221*	-0.020	0.848*	0.671
	(0.100)	(0.122)	(0.127)	(0.433)	(0.408)
Daycare availability	-0.190	-0.201	0.007	-0.515	0.534
	(0.165)	(0.218)	(0.213)	(0.702)	(0.826)
Dependent mean	0.675	0.384	0.291	19.980	2.589
Observation	16,197	16,197	16,197	15,955	15,955

Notes—Sample includes mothers with a 1-4-year-olds or whose youngest child is between 6 and 10 in wave 2013-2022 of HILDA. Daycare availability is the total number of center-based daycare slots divided by the population of 1-4-year-olds in a Statistical Area 4 (SA4). All specifications include an indicator for having a child aged 1-4, number of children, a quadratic in age, education level, marital status, indigenous status, foreign-born status, and SA4 and year fixed effects. All regressions are weighted by individual weights. Standard errors clustered at the SA4 level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 9. Effects of Daycare Availability and Quality Ratings on Mothers' Labor Market Outcomes, Heterogeneity Analysis

				Inverse Hyperbolic Sine of	
	Employed	Employed: < 35 Hours per Week	Employed: >= 35 hours per Week	Usual hours worked	Hourly Earnings
	(1)	(2)	(3)	(4)	(5)
Panel A. Heterogeneity by income					
Share of daycare slots meeting NQS or above × (child aged 1-4) × low-income	0.014	-0.041	0.056	0.198	0.203
	(0.054)	(0.060)	(0.061)	(0.226)	(0.235)
Share of daycare slots meeting NQS or above × (child aged 1-4) × high-income	0.100*	0.072	0.028	0.413*	0.350
	(0.054)	(0.071)	(0.081)	(0.231)	(0.248)
p-value (high-income = low income)	0.044**	0.017**	0.551	0.225	0.432
Panel B. Heterogeneity by education					
Share of daycare slots meeting NQS or above × (child aged 1-4)× less-educated	0.073	0.017	0.055	0.377*	0.382
	(0.053)	(0.059)	(0.062)	(0.222)	(0.240)
Share of daycare slots meeting NQS or above × (child aged 1-4) × more educated	0.106**	0.073	0.034	0.435*	0.347
	(0.053)	(0.085)	(0.094)	(0.241)	(0.282)
p-value (more-educated = less-educated income)	0.435	0.349	0.722	0.759	0.868
Panel C. Heterogeneity by number of children					
Share of daycare slots meeting NQS or above × (child aged 1-4) × more than one child	0.028	-0.018	0.047	0.186	0.162
	(0.050)	(0.063)	(0.067)	(0.212)	(0.242)
Share of daycare slots meeting NQS or above × (child aged 1-4) × first-time mother	0.275***	0.184***	0.090	1.169***	1.136***
	(0.061)	(0.068)	(0.080)	(0.263)	(0.265)
p-value (first-time mother = more than one child)	0.000***	0.000***	0.385	0.000***	0.000***

Notes—Sample includes mothers with a 1-4-year-olds or whose youngest child is between 6 and 10 in wave 2013-2022 of HILDA. Daycare availability is the total number of center-based

daycare slots divided by the population of 1-4-year-olds in a Statistical Area 4 (SA4). All specifications include an indicator for having a child aged 1-4, number of children, a quadratic in age, education level, marital status, indigenous status, foreign-born status, and SA4 and year fixed effects. All regressions are weighted by individual weights. Standard errors clustered at the SA4 level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A1. OLS Estimates of the Effects of Daycare Availability on Formal Care Use and Maternal Employment

	Child Using Formal Care	Mother Employed
	(1)	(2)
Daycare availability	-0.499**	-0.134
	(0.228)	(0.225)
Dependent mean	0.43	0.61
Observation	12,916	10,444

Notes—This table presents OLS estimates of the effects of daycare availability on daycare utilization (column 1) and mothers' employment (column 2). The sample analyzed in column 1 includes children aged 1-4, while the sample analyzed in column 2 includes mothers with a 1-4-year-old, both constructed using data from waves 2013-2022 of HILDA. Daycare availability is the total number of long daycare slots divided by the 1-4 population in a Statistical Area 4 (SA4). All regressions are weighted by individual weights. Standard errors are clustered at the SA4 level.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A2. Robustness of Labor Market Effects to Alternative Sample Restrictions

Independent variable: Daycare availability × (child aged 1-4)	Employed	Employed: < 35 Hours per Week	Employed: >= 35 hours per Week	Inverse Hyperbolic Sine of: Usual hours worked	Inverse Hyperbolic Sine of: Hourly Earnings
	(1)	(2)	(3)	(4)	(5)
(1) Dropping 2020	0.257***	0.257**	0.001	0.981**	1.013**
	(0.095)	(0.107)	(0.115)	(0.393)	(0.395)
(2) Dropping 2021	0.204*	0.250**	-0.044	0.870**	0.786*
	(0.104)	(0.120)	(0.137)	(0.433)	(0.423)
(3) Dropping 2022	0.266**	0.200*	0.066	1.086**	1.118***
	(0.105)	(0.117)	(0.134)	(0.427)	(0.419)
(4) Excluding Movers	0.336***	0.237**	0.099	1.347***	1.207***
	(0.102)	(0.117)	(0.136)	(0.432)	(0.453)
(5) Non-parents as comparison group	0.363***	0.187**	0.174**	1.585***	1.418***
	(0.085)	(0.086)	(0.083)	(0.348)	(0.423)
(6) Mothers of 8-12-year-olds as comparison group	0.352***	0.261**	0.089	1.517***	1.595***
	(0.104)	(0.108)	(0.111)	(0.426)	(0.441)
(7) Including mothers with less-than-1-year-olds	0.233***	0.203**	0.030	0.977***	1.163***
	(0.071)	(0.085)	(0.091)	-0.29	-0.391

Notes—Daycare availability is the total number of center-based, long daycare slots divided by the 1-4 population at the Statistical Area 4 (SA4) level. All specifications include an indicator for having a child aged 1-4; a quadratic in mother's age, mother's education group, marital status, indigenous status, and foreign-born status; SA4-level unemployment rate; and SA4 and year fixed effects. All regressions are weighted by individual weights. Standard errors clustered at the SA4 level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A3. Robustness of Labor Market Effects to Alternative Specifications

Independent variable: Daycare availability × (child aged 1-4)	Employed	Employed: < 35 Hours per Week	Employed: >= 35 hours per Week	Inverse Hyperbolic Sine of: Usual hours worked	Inverse Hyperbolic Sine of: Hourly Earnings
	(1)	(2)	(3)	(4)	(5)
(1) Including state x year FEs	0.253***	0.256**	-0.003	0.978**	0.975***
	(0.091)	(0.110)	(0.121)	(0.377)	(0.369)
(2) Including SA4-specific linear time trends	0.242**	0.256**	-0.014	0.954**	0.883**
	(0.095)	(0.109)	(0.121)	(0.391)	(0.370)
(3) Including individual FEs	0.233*	0.334**	-0.101	0.878*	0.773
	(0.127)	(0.158)	(0.119)	(0.504)	(0.550)
(4) Pre-trend adjustments	0.262**	0.254**	0.008	1.024**	1.067**
	(0.109)	(0.124)	(0.138)	(0.452)	(0.443)

Notes—Daycare availability is the total number of center-based, long daycare slots divided by the 1-4 population at the Statistical Area 4 (SA4) level. All specifications include an indicator for having a child aged 1-4; a quadratic in mother's age, mother's education group, marital status, indigenous status, and foreign-born status; SA4-level unemployment rate; and SA4 and year fixed effects. All regressions are weighted by individual weights. Standard errors clustered at the SA4 level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A4. Correlation between Perceptions of Local Daycare Affordability and Quality Ratings

	Outcome: Experienced Difficulty in Finding Affordable Childcare in the Past 12 Months						
	Full sample	Household income below median	Household income above median	No bachelor's degree	Bachelor's degree	First-Time Parents	Parents with More than One Child
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Share of daycare slots meeting NQS or above	0.086	0.147	0.014	0.030	0.175	-0.293	0.267**
	(0.097)	(0.139)	(0.129)	(0.115)	(0.135)	(0.190)	(0.119)
Daycare availability	-0.584**	-0.934**	-0.267	-0.720**	-0.518	-0.676	-0.321
	(0.283)	(0.378)	(0.373)	(0.317)	(0.370)	(0.554)	(0.296)
Dependent mean	0.494	0.483	0.504	0.463	0.515	0.533	0.476
Observation	12,255	6,127	6,127	5,865	6,389	3,624	8,631

Notes—Sample includes parents with 1-4-year-olds who used or thought about using childcare in the previous 12 months and were asked to rate the difficulty with finding affordable childcare on a scale of 0 to 10. The outcome variable is an indicator for whether parents reported experiencing difficulty (if they provided a score between 1 and 10). All specifications include controls for sex, age, education level, number of children, marital status, indigenous status, and foreign-born status; and SA4 and year fixed effects. All regressions are weighted by individual weights. Standard errors clustered at the SA4 level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$