

Caring Dads? Universal Childcare, Paternity Leave, and Fathers' Labor Supply

Mathias Huebener^{a,b}, Malin K. Mahlbacher^{a,c,*}, Sophia Schmitz^a

^a*Federal Institute for Population Research (BiB)*

^b*Institute of Labor Economics (IZA)*

^c*Johannes Gutenberg University Mainz*

Abstract

We study how expansions of publicly subsidized childcare affect the allocation of labor and caregiving within households in early childhood, with a particular focus on fathers. Exploiting variation in the roll-out of childcare places for children under three across German counties, we show that increased childcare availability accelerates children's entry into care and mothers' return to work. At the same time, childcare expansions induce dynamic adjustments in fathers' labor supply. Fathers are more likely to take parental leave and, after childcare entry, shift from full-time to part-time work. These responses imply a joint reallocation of labor supply within households, dampening the net increase in household labor supply implied by maternal responses alone. Despite the more equal allocation of parental leave and market work, increased childcare availability does not generate detectable changes in fathers' weekday caregiving responsibilities. The deliberate policy sequencing of paid parental leave expiration and childcare entitlement creates incentives for coordinated parental adjustments, underscoring that household labor supply is shaped by the interaction of family policies rather than by childcare provision in isolation.

Keywords: Public Childcare, Family Policies, Parental Leave, Paternal Labor Supply

JEL classification: J13, J16, J18, J22, D13

*Corresponding author.

Acknowledgements: We would like to thank our colleagues for their valuable feedback. Special thanks go to Holger Quellenberg for his invaluable assistance with the remote data handling. We are grateful for the financial support from the German Research Foundation (DFG, grant number 490729957). We also appreciate helpful comments from Mara Barschkett, Natalia Danzer, Ludovica Gambaro, Libertad González, Nerina Guri, Clara Schäper, Susanne Schmid, C. Katharina Spiess, Katharina Wrohlich, Astrid Würtz Rasmussen, Elena Ziege, Gundula Zoch, as well as the seminar participants at the Federal Institute for Population Research (BiB), the Research Seminar Applied Microeconomics at FU Berlin 2024, the DGD Annual Meeting 2024, the Berlin Network of Labour Market Research (BeNA) Jubilee Conference 2024, the ESPE Annual Conference 2024, the Verein für Socialpolitik Annual Meeting 2024, the Brownbag Seminar at the University of Mainz, the Annual Meeting of the Population Association of America 2025, the Gender Coffee at Stanford University and at the Sixth World Labor Conference (SOLE/EALE/AASLE).

Email addresses: mathias.huebener@bib.bund.de (Mathias Huebener),
malin.mahlbacher@bib.bund.de (Malin K. Mahlbacher), sophia.schmitz@bib.bund.de (Sophia Schmitz)

1. Introduction

With the birth of children, women experience significant setbacks in their labor market outcomes and take on a large share of care and housework obligations (Cortés and Pan, 2023, Goldin et al., 2024, Kleven et al., 2025). Despite some increases in fathers' involvement in domestic work over the last few decades, their participation in child rearing remains low, and traditional full-time employment patterns persist (e.g. Bartova and Keizer, 2020, Feyrer et al., 2008, Kan et al., 2011). Thus, increasing fathers' involvement in childcare and promoting a more equitable reallocation of labor within households is widely seen as an important strategy to reduce persistent gender gaps in labor market outcomes (Raley et al., 2012, Kleven et al., 2019). Fathers' involvement has recently also been put forward as a key driver of fertility behavior in high-income countries (Fanelli and Profeta, 2021, Doepke et al., 2023, Goldin, 2025).

Major family policies, such as childcare provision and parental leave, are designed to support mothers in balancing work and family. Empirical evidence suggests that these policies have achieved only limited success in narrowing gender gaps in labor market outcomes (Olivetti and Petrongolo, 2017, Zoch and Heyne, 2023, Kleven et al., 2024). While expansions in paid leave can shape mothers' employment trajectories and economic progress in nuanced ways (e.g., Kunze, 2022, Corekcioglu et al., 2024), most studies on parental leave reforms document mixed or context-specific effects on fathers' labor supply and caregiving responses within households (e.g., Ekberg et al., 2013, Cools et al., 2015, Patnaik, 2019, Canaan et al., 2022). Much of the literature evaluates family policies through the lens of individual labor supply responses, primarily those of mothers. We still lack a clear understanding of whether and through which mechanisms family policies can reshape the intra-household allocation of labor and caregiving.

In this paper, we shed light on the impact of subsidized childcare provision, one of the most important measures to support mothers in the labor market, on the division of work and caregiving within the household, paying particular attention to fathers' labor supply responses over early childhood. For identification, we exploit a reform that expanded universal, subsidized early childcare in Germany, creating substantial temporal and spatial variation in childcare coverage. We analyze the effects on labor supply and caregiving across different stages, from initial engagement through parental leave-taking to subsequent responsibilities in child rearing and household labor supply decisions. According

to standard household decision-making models (see Almås et al., 2023, for an overview), the provision of universal, highly subsidized childcare relaxes childcare constraints and raises the opportunity costs of child rearing for mothers. These changes can alter intra-household labor supply incentives and bargaining positions, leading to adjustments in the allocation of market work between partners, including changes in fathers’ labor supply.

Importantly, such labor supply adjustments do not require a corresponding reallocation of unpaid caregiving tasks. If gender norms or persistent household specialization constrain behavioral responses (e.g., Ichino and Olsson, 2023, Jessen et al., 2024), public childcare may primarily substitute for maternal care without inducing substantial changes in fathers’ caregiving involvement. In this case, policy-induced responses may materialize predominantly through fathers’ labor supply decisions—both through increased parental leave-taking and through subsequent reductions in market work after childcare entry.

Our empirical analysis primarily relies on rich individual-level data from the DJI Childcare Study (KiBS), which examines childcare needs and arrangements across different stages of childhood. The dataset includes about 92,000 children under the age of three and their parents. Leveraging the varying pace of the childcare expansion across counties, we employ a generalized difference-in-differences approach. The county-level variation in childcare expansion for children under three is largely driven by idiosyncratic shocks to the local supply of new childcare places stemming from lengthy and complex administrative processes when creating additional places, as well as observable predictors of local childcare demand. We, along with previous studies (Bauernschuster et al., 2016, Felfe and Lalive, 2018, Sandner et al., 2024), argue that these shocks are orthogonal to changes in our main outcome: fathers’ labor supply decisions over early childhood.¹

Our results first show that increased childcare availability substantially accelerates childcare entry and attendance during children’s second and third year of life. This not only induced maternal labor supply responses but also dynamic adjustments in fathers’ labor supply over early childhood: In the child’s first year, fathers are more likely to take parental leave, reducing labor supply along the extensive margin. Parental leave

¹Prior studies on the impact of the German childcare expansion, e.g., on fertility (Bauernschuster et al., 2016), child development (Felfe and Lalive, 2018), child maltreatment (Sandner et al., 2024) and women’s labor supply (Müller and Wrohlich, 2020), document the quasi-random regional pace of expansion. We discuss the implications of recent findings of the new difference-in-differences literature (e.g. de Chaisemartin et al., 2024a, Callaway et al., 2024, de Chaisemartin et al., 2024b) in the empirical strategy Section 4.

adjustments are sizable: An increase in publicly subsidized childcare of 10 pp increases the share of fathers taking parental leave by 4.4 pp, with most of the increase concentrated in the two months following the child’s first birthday. This increase mirrors a comparable reduction in mothers’ leave beyond 12 months. Beyond the period of paid parental leave up until a child’s third birthday, we find that fathers reduce their working hours, consistent with an intensive-margin adjustment in labor supply. In contrast, we find no significant effects on fathers’ weekday caregiving involvement during this period. Complementary analyses of time-use data show modest shifts in daily schedules, such as later work start times that could be attributed to childcare drop-off, while mothers remain the primary caregivers during afternoons and evenings.

In line with the existing literature, mothers exhibit the largest labor supply responses to the childcare expansion, with significant increases in labor market participation and working hours. These impacts are concentrated among first-time mothers and mothers without a migration background. Overall, these patterns imply that subsidized childcare affects household labor supply as a joint outcome: increases in maternal employment are partially offset by reductions in fathers’ labor supply, leading to a smaller net increase in aggregate household labor supply than suggested by maternal responses alone, while largely substituting for maternal caregiving rather than inducing sustained increases in paternal caregiving involvement.

Our paper contributes to three strands of the literature.

First, we shed new light on how family policies impact gender equality by examining fathers’ responses to childcare expansions. The persistent slow progress toward gender parity in the labor market, coupled with the substantial child penalties faced by women in high-income countries, has generated growing interest in reforms designed to promote a more equitable division of child-rearing responsibilities. Central among such policies are parental leave policies and childcare provision, yet evidence on how these policies affect fathers’ labor supply and caregiving involvement remains largely unexplored.

The existing literature has primarily focused on paternity leave policies, with mixed findings regarding fathers’ responses (Canaan et al., 2022). Some studies find no effects of paternity leave on fathers’ caregiving involvement or on the allocation of labor supply between parents (e.g., Ekberg et al., 2013, Cools et al., 2015).² Other studies document

²Ekberg et al. (2013) show that one month of exclusive paternity leave in Sweden increased fathers’

increases in fathers’ engagement in household chores or childcare following leave reforms (e.g., Kotsadam and Finseraas, 2011, Bünning, 2015, Patnaik, 2019, Tamm, 2019, Eerola et al., 2022, González and Zoabi, 2025), though these effects are often limited to specific tasks or time frames, such as weekends.³ Moreover, responses depend sensitively on the design of parental leave systems (e.g., Duvander et al., 2019, Canaan, 2022, Høgholm Jørgensen and Egholt Søgaaard, 2024). Against this background, our contribution is to document that expansions of subsidized childcare induce economically meaningful adjustments in fathers’ labor supply over early childhood—through increased parental leave-taking and subsequent reductions in market work—while we do not find evidence of corresponding changes in fathers’ weekday caregiving involvement within the margins we observe.

Our analysis shifts the focus from paternity leave policies to universal childcare provision, a policy commonly regarded as most effective in increasing maternal labor supply, and how it interacts with parental leave. We demonstrate that the provision of subsidized childcare increases fathers’ parental leave take-up in early childhood, aligning with institutional incentives. Fathers’ parental leave effects are concentrated in the two months following their children’s first birthday, during which mothers’ leave was substantially reduced. Despite increased paternal leave, the provision of subsidized childcare does not lead to increased paternal caregiving involvement later on. In the context of the paternal leave literature, our findings show that increased paternal leave does not always correspond with effects on fathers’ later involvement. Overall, childcare expansion leads to a more equal allocation of parental leave and market work between parents, but these changes are not large enough to generate detectable effects on fathers’ caregiving responsibilities within the family.

Second, our paper contributes to the evaluation of universal, publicly subsidized childcare policies by showing that focusing exclusively on maternal employment can provide an incomplete picture of the overall labor market effects. The literature thus far has mostly focused on how childcare prices, subsidies, and availability affect maternal labor supply and career trajectories (e.g., Gathmann and Sass, 2018, Lefebvre and Merrigan,

time off work after birth without affecting fathers’ subsequent take-up of leave to care for sick children.

³Another set of studies examines the effects of paternity leave, or “fathers’ quotas”, on marital stability, producing mixed findings depending on the context (Avdic and Karimi, 2018, Olafsson and Steingrimsdottir, 2020, González and Zoabi, 2025).

2008, Baker et al., 2008, Havnes and Mogstad, 2011, Bauernschuster and Schlotter, 2015, Kunze and Liu, 2019, Müller and Wrohlich, 2020, Huber and Rolvering, 2023, Duletzki and Lim, 2025), but typically abstract from dynamic labor supply responses of fathers. Furthermore, studies explore the effects of universal childcare on fertility (e.g., Bauernschuster et al., 2016), child development (Felfe and Lalive, 2018, Cornelissen et al., 2018, Blanden et al., 2016) or child maltreatment (e.g., Sandner et al., 2024). The few existing studies that touch upon fathers' labor market outcomes typically find small or no effects on paternal employment (Eckhoff Andresen and Havnes, 2019, Huebener et al., 2020, Brewer et al., 2022) . In recent years, however, social norms have evolved considerably, as reflected in the rising share of fathers taking parental leave (see Figure 2), potentially creating more scope for policies to impact paternal labor supply decisions. In line with that, our findings show that recent childcare expansions in a setting that specifically promotes early maternal labor market re-entry and paternal involvement through designated paid paternal leave, induce dynamic and economically meaningful adjustments in fathers' labor supply. These adjustments occur through increased parental leave-taking and through reductions in working hours after childcare entry. By documenting these responses, our study highlights the importance of accounting for labor supply adjustments of both parents when evaluating the labor market effects of childcare policies. Moreover, our results show that changes in fathers' employment are not necessarily accompanied by corresponding increases in caregiving time, underscoring the distinction between labor supply responses and caregiving involvement within households.

Third, our findings contribute to the literature on child penalties and the role of policy design in shaping gender inequality (Kleven et al., 2019, 2024). Recent work emphasizes that child penalties arise from intra-household specialization following childbirth, yet relatively little is known about how coordinated family policies influence these joint decisions. We show that the sequencing of paid parental leave and childcare entitlement and availability generates systematic reallocation of labor supply within households. This highlights that gender gaps and child penalties are not solely the result of individual labor supply responses, but reflect coordinated household decisions that can be altered by coherent policy design.

2. Institutional Background and Potential Mechanisms

2.1. Parents' Labor Supply and Childcare Activities

Over the past 30 years, women's labor force participation has risen significantly in Germany. In the mid-1990s, the employment rate for women aged 15 to 64 was 55 percent; since then, it has increased by nearly 20 percentage points (pp), reaching almost 74 percent in 2023.⁴ However, mothers with children under three have much lower participation rates, with only 40 percent employed in 2024 — of whom nearly three-quarters work part-time. 91 percent of employed fathers with children in this age group work full-time (Statistisches Bundesamt, 2025). The division of work within households is gendered and mothers provide the majority of childcare. In recent time-use data, mothers of children aged 12 to 35 months report an average of almost 4 hours of childcare per weekday as their main activity and 8.7 hours overall with the child — twice as much as fathers (own calculation, see Appendix Figure A.1). Notably, fathers only spend one third of the time with their child alone. For fathers, the amount and composition of childcare activities appear largely inelastic to the use of childcare (2.2 vs. 1.9 hours of childcare activities when the youngest child attends childcare). Mothers, on the other hand, spend on average almost an hour less with childcare activities on a weekday, when the child attends childcare (4.4 vs. 3.5 hours).⁵

The differences become even more noticeable when considering not only explicit childcare activities but also the time parents spend with their child present, irrespective of the activity (for mothers 10.1 vs. 7.7 hours, for fathers 5.1 vs. 4.6 hours). This pattern underscores that, in this context, childcare expansions are more likely to affect fathers' labor supply decisions than the allocation of unpaid childcare.

While the time survey clearly shows that mothers are the main caregivers in the majority of households, further survey evidence indicates that preferences for the division of childcare between parents differ from the actual allocation. Over 60 percent of mothers

⁴Female employment rates, particularly for mothers, have historically been low in West Germany, despite the high level of education among women. East Germany has higher maternal employment rates, and women contribute more to household income compared to West Germany (Lippmann et al., 2020, Jessen et al., 2023). Maternal labor supply in both regions has converged in recent years.

⁵The small reduction in fathers' time is mainly driven by playing and supervision; for mothers by reductions in body care and supervision. This finding aligns with Jessen et al. (2022a), showing that differences in time spent on specific activities, such as reading, talking, and playing with the child, between children attending childcare and those not attending are relatively small.

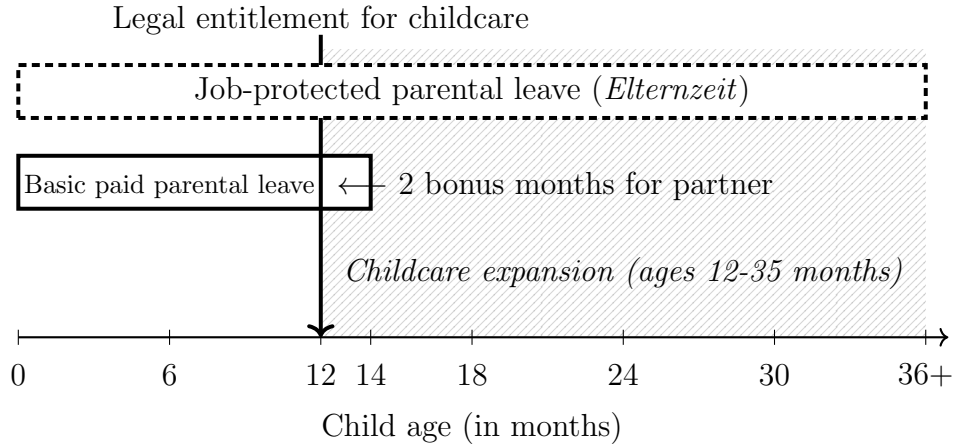


Fig. 1: Sequencing of parental leave and childcare entitlement in Germany

The figure illustrates the institutional sequencing of family policies in Germany over early childhood. Paid parental leave is available for up to 14 months after childbirth in its basic form, with an option since 2015 to extend duration via *Elterngeld Plus*. Legal entitlement to subsidized childcare starts at the child’s first birthday and coincides with the main phase of the childcare expansion. This policy design creates distinct margins of parental labor supply adjustment: parental leave-taking during the first year of life and changes in market work once children enter childcare.

wish for childcare responsibilities to be equally divided, while only a quarter are actually sharing the task equally (see Appendix Figure A.3).

2.2. Parental Leave in Germany

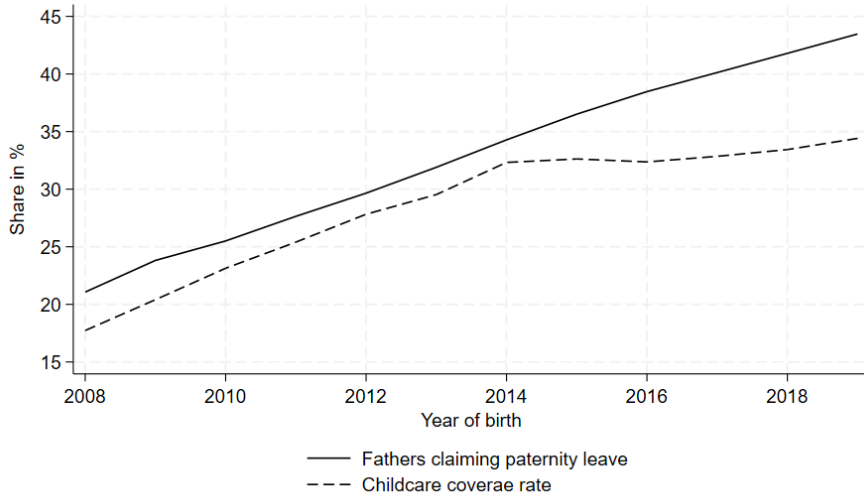
Several recent family-oriented policies in Germany are designed to jointly support parents in balancing work and family life after childbirth by sequencing paid parental leave with a subsequent legal entitlement to subsidized childcare. Figure 1 illustrates this policy sequence over early childhood.

Key initiatives in this regard were the substantial expansion of universal public childcare provision which we use for identification and the introduction of a new parental leave system in 2006 with benefits covering approximately 67 percent of net income from the 12 months prior to birth.⁶ Under this system, couples can share up to 14 months of paid leave: each partner may claim a maximum of 12 months, with an additional two months granted if both parents take leave or in the case of lone parents.

On July 1, 2015, *Elterngeld Plus* was introduced, allowing parents to receive roughly half the monthly benefit over twice the duration, such that one month of baseline benefits corresponds to two months of *Elterngeld Plus*. The reform was designed to increase flexibility, particularly for parents combining benefit receipt with part-time employment,

⁶In total, parents can take up to 36 months of unpaid job-protected parental leave (*Elternzeit*).

Fig. 2: Childcare coverage rate for children under three and the share of fathers claiming parental leave benefits over time



Note: The figure plots the share of fathers claiming parental leave and the share of children below age three in childcare.
Source: Own calculations based on Statistisches Bundesamt (2020) and Statistisches Bundesamt (2023).

and it introduced a partnership bonus that can extend benefit duration when both parents work part-time simultaneously. For our setting, Elterngeld Plus expands the set of feasible leave–work combinations around the transition into childcare and may therefore reinforce couples’ scope to coordinate parental leave and mothers’ labor market re-entry around the child’s first birthday.

Although an equal split is possible, most couples allocate 12 months to mothers and only two months to fathers (see Panel A of Appendix Figure A.4); only 10 percent of fathers claimed more than two months in 2020. Fathers typically take leave immediately after birth and around the child’s first birthday (Panel B of Appendix Figure A.4). We use fathers’ parental leave-taking as an early and institutionally salient margin of fathers’ labor supply adjustment during the first year after childbirth, rather than as a direct measure of caregiving involvement. We discuss in Section 2.4 why childcare provision may play an important role in shaping leave-taking decisions within couples.

Overall, the share of father’s claiming leave has been rising alongside the expansion of universal, highly subsidized childcare for children under the age of three (Figure 2).

2.3. The German Childcare Expansion

Childcare in Germany is accessible through a universal and highly subsidized system.⁷ It is commonly provided in childcare centers, run either by the local government or by non-profit organizations and serve children from age one to when they enter school, usually at age six. Since the mid-2000s, children aged three until school entry have had high childcare coverage rates exceeding 90 percent, due to the universal childcare entitlement introduced in 1996 for this age group. In contrast, public childcare provision for children under the age of three remained severely rationed or virtually non-existent in West Germany until the mid-2000s. As of 2012, around 28 percent of children under the age of three were enrolled in public childcare, but 39 percent of parents stated a demand for childcare (Alt et al., 2013).

To improve the provision of public childcare for children under the age of three, Germany has passed major policy reforms. The 2005 *Tagesbetreuungsausbaugesetz (TAG)* aimed at creating 230,000 additional slots in West Germany, while the 2008 *Kinderförderungsgesetz (KiföG)* committed states to gradual expansion and established a legal entitlement for children aged one to three from August 1, 2013. Both laws are key steps toward providing demand-oriented, high-quality childcare for children under three.⁸ In consequence of these reforms, Germany experienced a substantial increase in childcare coverage rates for children under the age of three from below 5 percent in 2005 to around 36 percent in 2023 (Figure 2).

But the expansion did not happen uniformly across counties and time. On the contrary, Appendix Figures A.5 and A.6 illustrate considerable variation across counties and time in the level and speed of the expansion. It is also evident that there was no substantial convergence (in levels or expansion speed) between counties in West Germany; on the contrary, we observe a steady increase in the standard deviation (even within states) up until 2014 which stayed on high levels thereafter. The coverage rates are higher in East Germany compared to West Germany and show stronger convergence patterns. However,

⁷Public subsidies cover approximately 70 percent of childcare costs, with the remainder covered by income-dependent parental fees. Parental fees, which make up five to ten percent of average earnings are lower than the OECD average and considerably lower than countries with limited public subsidies, such as the United States (OECD, 2023).

⁸The main goal of the reforms was to improve the reconciliation of work and family life, allowing especially mothers to participate more in the labor market. The reforms also aimed to increase fertility and promote early child development. Fathers' involvement in childcare and family responsibilities is not explicitly named as a goal of the childcare expansion reforms.

in both regions, there is substantial and meaningful within-region variation.

Despite the expansion, childcare demand always exceeded the supply of slots, resulting in substantial supply shortages, even at fine regional levels and in later years of the expansion (see Appendix Figure A.7 and Jessen et al. (2020)). Appendix Figure A.7 also shows substantial variation in the amount of excess demand at a given level of childcare coverage, further strengthening the argument that variation in the county-level childcare coverage rate does not appear to reflect different equilibria between supply and demand of childcare, but rather captures the supply of places.

What were the factors driving the variation in the roll-out? As argued in other studies, the key factors determining the speed of the childcare expansion were not only some well-defined predictors of local demand used by local planning authorities but mainly shocks to the local supply of new childcare places emanating from lengthy and intricate administrative processes and rules (see e.g. Bauernschuster and Schlotter, 2015, Sandner et al., 2024, Müller and Wrohlich, 2020). Data on all childcare centers in Germany (see Appendix Figure A.8) indicates that until the mid-2010s, the increase in childcare coverage rate primarily occurred through the creation of new groups for children under three within existing centers serving older children. After that, the focus shifted to constructing new centers for all age groups. The process of establishing new centers and groups within existing centers involved various decisions by authorities at municipal, county, and state levels: municipal and county authorities assessed local demand for childcare, taking into account observable demographic factors such as cohort sizes and population movements, as well as economic factors like labor market conditions. Federal state and municipality authorities (mainly the Youth Welfare Office and the State Youth Welfare Office) were responsible for approving proposals for new childcare centers and groups within existing centers. This administrative process faced several obstacles, including varying levels of knowledge about the complex funding system involving the federal government, the federal state, and the municipality. Additionally, some regions suffered from shortages of construction land for new childcare centers, differing building regulations, a lack of qualified childcare workers, and delays in the approval of new centers.⁹ As a consequence, the county-level variation in childcare expansion for children

⁹Strict state-level regulatory requirements regarding staff qualifications, hygiene standards, and space constraints further slowed expansion.

under three is largely driven by idiosyncratic shocks to the local supply of new childcare places stemming from lengthy and complex administrative processes when creating additional places, as well as observable predictors of local childcare demand. We, along with previous studies (Bauernschuster et al., 2016, Felfe and Lalive, 2018, Sandner et al., 2024), argue that these shocks are orthogonal to changes in our main outcome: fathers' labor supply decisions over early childhood. Note however, that we focus on slightly later expansion years than the previous literature.

This sequencing of family policies is central for understanding the dynamic labor supply responses of fathers and mothers that we study below.

2.4. Potential Mechanisms

To understand how the provision of subsidized childcare may impact fathers' labor supply, it is helpful to consider the theoretical mechanisms behind parents' allocation of their time between paid work and caregiving activities. The provision of universal childcare significantly raises the opportunity costs of mothers remaining out of the labor force (Becker, 1974). By accelerating maternal re-entry, childcare expansions alter the household's relative earnings potential and bargaining positions (Almås et al., 2023). In response to a mother's increased labor market attachment, fathers may find it optimal to adjust their own labor supply—either by taking leave around mothers' re-entry to facilitate this transition or by reducing hours after childcare entry to manage the new logistical demands of a dual-earner household. Crucially, these adjustments are driven by market incentives and can occur independently of any reassignment of actual caregiving tasks.

In the German context, the interaction between parental leave and childcare timing creates a specific coordination problem. Basic paid parental leave is effectively capped at 12 months for the primary claimant (usually the mother); any further leave is unpaid. While parents must commit to leave plans early, the allocation of childcare places is often characterized by high uncertainty and short-notice notifications (Reischmann et al., 2021).¹⁰

¹⁰Women must declare the duration of their parental leave seven weeks before starting and commit to a plan for the two years following childbirth. Changes typically require employer approval, while childcare allocation occurs at short notice and allocation mechanisms are highly inefficient (e.g. Reischmann et al., 2021), leading to considerable uncertainty and variability in the timing of placement notifications. At 11 months of age, 83 percent applied for a childcare slot, 51 percent have a confirmed slot without attending

The introduction of Elterngeld Plus in 2015 further expanded the set of feasible coordination strategies by allowing parents to combine benefit receipt with part-time work and to extend benefit duration through lower monthly payments. This reform increases flexibility around the transition into childcare and reinforces the scope for labor supply adjustments.

With increased childcare availability, the mother’s return to work at month 12 becomes a credible expectation. This increases the marginal benefit of the father’s two ‘bonus months’ of paid leave. Rather than acting as a short-run labor supply buffer for missing care, the father’s leave becomes a strategic tool to manage the transition to childcare. In Germany, childcare entry involves a pedagogical transition phase (Eingewöhnung) that typically lasts several weeks, during which a parent’s presence is required for varying intervals. As mothers shorten their leave durations to reenter the labor market, fathers increase their extensive-margin leave-taking to coordinate the household’s transition into the childcare system.

These adjustments may manifest even before the child enters a facility. The anticipation of maternal re-entry and the high probability of securing a slot may induce some rebalancing of parental leave from the outset. These dynamic responses reflect intertemporal labor supply choices aimed at protecting the mother’s career trajectory, rather than a fundamental shift in paternal caregiving preferences.

However, fathers’ caregiving involvement may not necessarily respond. Unlike housework, childcare is not generally viewed as a disamenity to be avoided. Mothers, in particular, often value time spent on educational or recreational caregiving (Krueger, 2009). Empirical evidence suggests that when mothers enter employment, they reduce housework significantly more than they reduce childcare time (Bastian and Lochner, 2022). If mothers prioritize maintaining “quality time” despite working more, and fathers’ caregiving time remains relatively inelastic to childcare use, the expansion of public slots will substitute for maternal time without inducing paternal substitution.

Persistent gender norms often designate caregiving as the maternal domain and full-time market work as the father’s primary identity (Townsend, 2002, Jessen et al., 2024). Furthermore, “maternal gate keeping”, i.e. the reluctance of mothers to relinquish domestic control, may limit the father’s involvement in direct caregiving tasks (Allen and

yet (Appendix Figure A.9).

Hawkins, 1999). Consequently, fathers may support the household’s new dual-earner status indirectly through labor supply adjustments (e.g., later start times for drop-offs) rather than by increasing their share of direct child-rearing.

Based on these mechanisms, we expect the childcare expansion to produce distinct, timed responses: Increased paternal leave-taking concentrated around the end of the first year of life; and reductions in fathers’ working hours between ages 12–35 months to accommodate the logistics of a dual-earner household. Consistent with these changes, we expect mothers to anticipate an earlier return-to-work when childcare availability increases, before their actual behavior adjusts, with shorter parental leave and higher maternal employment. Overall, these responses reflect mainly labor supply adjustments rather than changes in caregiving preferences. Accordingly, we expect the effects of childcare expansion on fathers’ weekday involvement in childcare to be small.

3. Data

Our empirical analyses combine large, representative survey data on parents and children from the DJI Childcare Study (KiBS; Lippert et al., 2020) with county-level administrative data on childcare coverage rates from the Child and Youth Welfare Statistics (Statistisches Bundesamt, 2023). We describe both data sources in detail below. Descriptive statistics of all variables used in the analysis are provided in Appendix Tables A.1 and A.2.

3.1. DJI Childcare Study (KiBS)

The Childcare Study (KiBS) by the German Youth Institute (DJI) is a large, representative survey of parents and children that has been conducted since 2012 (Lippert et al., 2020). It provides rich information on care arrangements, parental leave-taking, parental employment, and the division of childcare responsibilities within households. Each wave surveys more than 33,000 parents of children from birth until their transition to secondary school.¹¹ Survey responses are provided by one parent of the focal child, predominantly the mother (89 percent). Respondents report information about themselves

¹¹The sampling follows a two-stage design and includes families from 428 randomly selected municipalities.

and their partner if they indicate being in a relationship.¹²

Our empirical analyses use information from eleven survey waves conducted between 2012 and 2022. The main analysis focuses on children aged 12 to 35 months at the time of the interview—the age range for which children gained a legal entitlement to a childcare place in 2013. We additionally exploit retrospective information, in particular on parental leave-taking. The combined samples include children born between 2007 and 2021, who were exposed to substantial variation in childcare availability across counties and over time.

To estimate the impact of the universal childcare expansion on parents’ labor supply decisions and the associated allocation of caregiving within households, we study four sets of outcomes. First, we estimate the effects of the childcare expansion on individual-level childcare attendance to identify which age groups and families are affected by the reform. A key advantage of the KiBS data is that, unlike most prior studies exploiting the German childcare expansion (Bauernschuster and Schlotter, 2015, Sandner et al., 2024, Müller and Wrohlich, 2020), we directly observe childcare attendance at the individual level. This allows us to validate the first-stage relationship between childcare availability and take-up. Moreover, mapping age-specific changes in attendance to corresponding outcomes underlines the credibility of our empirical design.

Second, we examine fathers’ parental leave take-up as an indicator of an early labor supply adjustment by fathers around childbirth, which may shape subsequent labor supply trajectories within the household. We use (i) an indicator for whether the father claimed parental leave for a given child and analyze the duration of leave for both parents. Fathers’ leave duration is categorized into (ii) taking exactly the two bonus months and (iii) taking more than two months, while mothers’ leave duration is categorized into (iv) taking exactly 12 months and (v) taking more than 12 months. This information is reported retrospectively for children born between 2007 and 2020.

Third, we assess parental labor supply responses at both the extensive and intensive margins to obtain a comprehensive picture of time allocation decisions within households. At the extensive margin, we look at (i) an indicator capturing employment. At

¹²While the partner need not be the biological parent, supplementary information available in selected waves shows that the partner is the biological parent in 99 percent of cases in our sample. Approximately 4 percent of respondents report being single.

the intensive margin, we consider (ii) an indicator of full-time employment (working more than 34 hours a week), (iii) an indicator for long part-time employment (20 to 34 hours), and (iv) an indicator for short part-time employment (less than 20 hours). We examine employment outcomes for both mothers and fathers in the second and third year after childbirth (birth years 2009-2021). These margins correspond directly to the labor supply adjustments discussed in Section 2.4, including extensive-margin leave-taking and intensive-margin reductions in working hours.

Fourth, we examine the division of childcare responsibilities within households when children are between 12 and 35 months old, the ages for which the childcare expansion had the strongest effects (birth years 2011-2021). Respondents assess the division of weekday childcare on a five-point scale ranging from 1 (solely the mother) to 5 (solely the father). We use this measure in continuous form, as categorical indicators, and as a binary indicator equal to one if the mother is the sole or main caregiver, and zero if childcare is shared equally or primarily undertaken by the father.

Focusing the division on a typical weekday is particularly informative, as this is when parents must reconcile childcare responsibilities with work commitments. In our sample, mothers are the main caregivers on weekdays in 66 percent of households. We emphasize that this measure captures weekday caregiving on the extensive margin and may not reflect subtler reallocations of tasks or weekend involvement. However, policy debates on fathers' involvement and mothers' child penalties predominantly concern weekday caregiving responsibilities.

Other measures of the division of childcare are not consistently available across survey waves. Nevertheless, Appendix Table A.3 shows that our main measure is strongly correlated with related indicators observed in selected waves, including satisfaction with the division of childcare, attitudes toward the preferred allocation of care, and the proximity of the childcare center to the father's workplace.

3.2. Administrative Regional Data

Our main independent variable is county-level administrative data on childcare coverage rates provided by the Federal Statistical Office (Statistisches Bundesamt, 2023). The childcare coverage rate is defined as the number of children under the age of three enrolled in public childcare relative to the total population in this age group within a county and year.

Since 2006, childcare centers have been required to report the number of enrolled children to local authorities as of March 1st each year. Due to persistent excess demand for childcare—even at fine regional levels and in later years of the expansion (see Appendix Figure A.7 and Jessen et al., 2020)—the number of enrolled children closely approximates the number of available childcare places for children under three.¹³

To account for time-varying regional heterogeneity and observable determinants of local childcare demand considered by planning authorities, we include a rich set of county-level control variables. These data are drawn from the regional database maintained by the German Statistical Office and the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR).

Specifically, our baseline specification controls for population density, GDP per capita, the shares of women and men holding an *Abitur* (university entrance qualification), detailed population composition measures by age group, the share of the population with a migration background, and the conservative vote share (INKAR; Bundesinstitut für Bau-, Stadt- und Raumforschung, 2023). In extended specifications, we additionally control for county-level fiscal capacity (debt and tax revenues), net migration, and allow for differential trends by interacting pre-expansion childcare coverage rates with year fixed effects following Blanden et al. (2016). Section 4 provides further discussion of the role of regional controls in our empirical strategy.

4. Empirical Approach

To identify the effects of universal childcare provision for children under three on fathers' labor supply and caregiving involvement, we leverage substantial variation in childcare coverage generated by the legally mandated expansion of childcare slots for children below the age of three beginning in 2008 and the introduction of a universal entitlement to a childcare place from age one onward starting in 2013.

The pace of expansion differed substantially across counties and unfolded gradually over time, generating continuous variation in local childcare coverage. We exploit this continuous treatment intensity with generalized difference-in-differences models. Our main specification is a two-way fixed effects (TWFE) model of the following form:

¹³Prior to 2006, childcare statistics were collected at four-year intervals and reported the number of places by age group. Population counts refer to December 31st of the preceding year.

$$y_{ijb(m)} = \alpha + \delta cr_{j,b+1} + \mathbf{X}'_{ijb}\beta_1 + \mathbf{Z}'_{j,b+1}\beta_2 + \gamma_j + \theta_b + (\mu_m) + \varepsilon_{ijb(m)} \quad (1)$$

where $y_{ijb(m)}$ denotes outcomes for child i in county j born in year b , observed at age m months where applicable. Outcomes include childcare attendance, parental labor supply, parental leave take-up, and measures of parental caregiving on weekdays. The treatment variable $cr_{j,b+1}$ is the childcare coverage rate for children under three in county j one year after birth, corresponding to the year in which children become legally entitled to a childcare slot. The coefficient of interest, δ , captures the marginal effect of a one percentage point increase in childcare availability on these outcomes.

The vector X_{ijb} includes individual-level controls (parental education, their age at childbirth and its square, child gender, and migration background). To support the conditional parallel trends assumption, we include time-varying county characteristics capturing demographic composition, economic conditions, and local gender norms. For example, higher-educated populations may both demand greater childcare expansion and exhibit more egalitarian divisions of labor (e.g., Davis and Greenstein, 2009, Raz-Yurovich and Okun, 2024). Similarly, urbanization and political preferences may correlate with both childcare provision and parental labor supply. The vector $Z_{j,b+1}$ contains time-varying county characteristics measured concurrently with the childcare coverage rate, including the share of women and men with *Abitur*, population density, migration share, the conservative vote share¹⁴, GDP per capita, and population shares by age groups. County fixed effects (γ_j) account for time-invariant regional differences, and birth-year fixed effects (θ_b) control for common cohort shocks. For outcomes observed at different child ages, we include age-in-month fixed effects (μ_m). The i.i.d. error term is denoted by $\varepsilon_{ijb(m)}$. Standard errors are clustered at the county level.

The identification of δ stems from within-county changes in childcare coverage across birth cohorts over time, net of common cohort shocks. Importantly, the childcare expansion occurred at different speeds across counties, creating substantial cross-county heterogeneity in the timing and magnitude of coverage growth, even within federal states. Thus, our estimand is the average marginal effect of increased local childcare availability on parental outcomes. Our TWFE approach aligns with the empirical strategy used in

¹⁴We group vote shares for the CDU and AfD as all other major parties are associated with more liberal family policies.

the literature evaluating the German childcare expansion (Bauernschuster et al., 2016, Müller and Wrohlich, 2020, Felfe and Lalive, 2018, Cornelissen et al., 2018, Sandner et al., 2024). These studies document that differential expansion speeds were largely driven by administrative bottlenecks and supply-side constraints rather than short-run local labor market dynamics, suggesting that differential coverage growth is plausibly orthogonal to short-run changes in household labor supply behavior.

Importantly, we validate the treatment measure directly using individual-level attendance data. As we will demonstrate in Figure 3, increases in county-level childcare coverage correspond to higher individual childcare attendance specifically within the age window in which children become legally entitled to a slot (12–35 months), while no effects are observed before age one or after age three. The fact that coverage affects attendance only within the legally relevant age window provides indirect evidence in favor of the conditional parallel trends assumption. It supports the interpretation that the identifying variation reflects exogenous shifts in effective childcare access tied to institutional eligibility, rather than spurious correlations with broader county trends.

Under the assumption that, absent differential childcare expansion, parental outcomes would have evolved in parallel across counties conditional on fixed effects and observed covariates, δ identifies the causal effect of increased childcare availability on parental outcomes.

Recent work highlights potential biases of TWFE estimators in staggered-adoption settings with heterogeneous treatment effects (e.g., Goodman-Bacon, 2021, Sun and Abraham, 2021, Callaway and Sant’Anna, 2021, de Chaisemartin and D’Haultfoeuille, 2024). These concerns arise primarily in settings with discrete treatment adoption and well-defined event time, where treatment effects may vary across cohorts and periods.

Our setting differs in two important respects. First, treatment intensity evolves continuously rather than through discrete adoption events. Households respond to the level of available childcare at the time of entitlement rather than to a binary policy switch. Second, the expansion was largely monotonic, so there is no sharp adoption margin that would allow for clean switcher-based comparisons. Modern DiD estimators are primarily designed to recover effects of discrete treatment changes across groups and periods. In our setting, treatment evolves gradually. Discretizing childcare coverage into binary treatment indicators would require arbitrary thresholds and would mechanically collapse mean-

ingful within-county variation in expansion intensity into coarse categories and thereby alter the estimand. Moreover, estimators based on discrete treatment changes or switcher comparisons would primarily exploit short-run changes in coverage, whereas our economic mechanism implies that households respond to the level of available childcare at entitlement rather than to marginal year-to-year fluctuations.

Accordingly, our design estimates the average marginal effect of childcare availability at the time of entitlement. A TWFE specification with continuous treatment directly maps the identifying variation into this marginal effect estimand of interest. While this approach assumes constant marginal effects across regions and over time, we assess the sensitivity of our results to alternative specifications and additional controls in Section 5.7. Across these exercises, the magnitude, timing, and margins of effects remain stable.

5. Results

5.1. *Effects of Childcare Expansion on Children’s Childcare Attendance*

We begin by examining how the childcare expansion affected children’s childcare attendance in our representative survey data.¹⁵

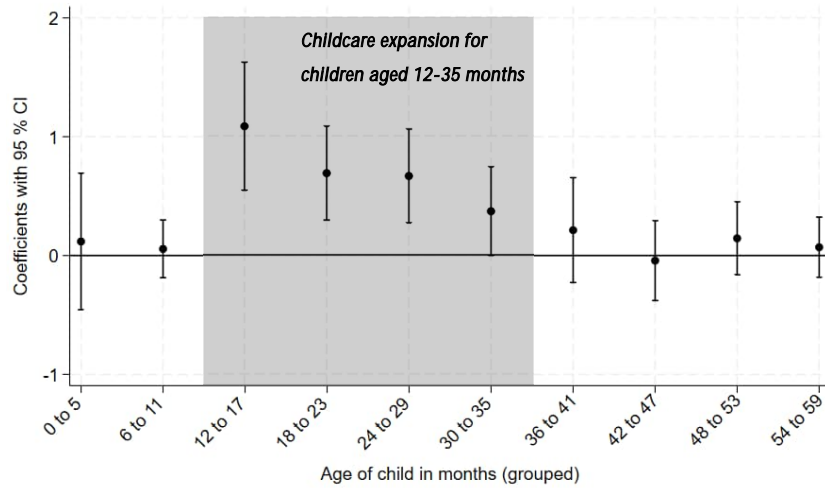
Figure 3 presents estimates separately by children’s age at the time of the interview. The effects are close to zero below age one, become statistically significant immediately after the first birthday, and persist until age three. This pattern indicates that the expansion significantly accelerated children’s entry into childcare between age 12 and 35 months.

The estimated magnitudes are economically meaningful. In particular, at ages 12 to 29 months, a one percentage point increase in childcare coverage raises attendance by 0.7–1.1 percentage points. Although the estimated effects of childcare expansion on attendance are sizable, they are expectedly smaller than a mechanical one-to-one mapping.¹⁶ This

¹⁵Most prior studies exploiting the German childcare expansion rely on reduced-form outcomes and cannot directly observe childcare take-up (Bauernschuster et al., 2016, Müller and Wrohlich, 2020, Sandner et al., 2024). Felfe and Lalive (2018) infer childcare entry from “years in childcare” reported at school entry examinations and further assumptions on the timing of childcare entry. Our data allow us to directly examine how the expansion translated into actual childcare attendance.

¹⁶The expansion relaxes access constraints but does not mandate take-up, implying heterogeneous responses across families. Moreover, increased availability may induce substitution from informal or private childcare arrangements into the subsidized system, attenuating net increases in observed attendance rates. Last, county-level expansion measures may not perfectly align with individual attendance decisions due to cross-county childcare use. The estimates capture average behavioral responses to increased childcare availability rather than a mechanical capacity–attendance relationship.

Fig. 3: Effects of childcare expansion for children under age three on childcare attendance



Notes: Coefficient estimates with 95% CI of the childcare rate on childcare attendance from separate estimations of eq. 1 by age. All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). At 12 months old, children gain legal entitlement to a childcare slot. Paid parental leave expires after a maximum of 14 months. The childcare expansion is targeted to increase childcare slots for children between 12 and 35 months.

Source: Own illustration based on data from the KiBS, the Federal Statistical Office, and INKAR.

finding reflects the severe supply shortage of childcare for children aged one and two years. In contrast, childcare attendance of children below age one and above age three remains unaffected by the expansion.

These age-specific effects closely align with the institutional framework. Parents are eligible for parental leave benefits for up to 14 months after childbirth, and children only gain legal entitlement to a childcare place after their first birthday. Consequently, demand for childcare in the first year after childbirth is low, and the expansion primarily affects attendance once paid leave eligibility expires. This alignment between institutional rules and observed take-up provides strong support for our identification strategy, which focuses on childcare eligibility for children between the ages of one and under three.

Aggregating across ages, we find that for children aged 12 to 35 months, a 10 percentage point increase in childcare availability raises childcare attendance by 6.4 percentage points (Appendix Table A.4, Column 1).¹⁷

¹⁷We also examine changes at the intensive margin of childcare attendance in Appendix Table A.4. The expansion primarily increases full-time attendance, while attendance of less than 35 hours remains largely unchanged (Appendix Table A.4, Columns 2–4).

Table 1: Effects of childcare expansion on fathers' employment (children aged 12 – 35 months)

	Dependent variables:			
	Extensive (> 0 hours) (1)	Full-time (> 34 hours) (2)	Part-time (long) (20 – 34 hours) (3)	Part-time (short) (1 – 19 hours) (4)
Fathers' employment				
Childcare coverage below 3 years	0.0179 (0.0529)	-0.1761** (0.0855)	0.1689*** (0.0629)	0.0251 (0.0254)
Observations	82,712	82,712	82,712	82,712
Mean of dep. var	0.9515	0.8668	0.0727	0.0120
SD of dep. var	0.2147	0.3398	0.2597	0.1087

Notes: All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). Robust standard errors clustered at the county level are given in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Source: Own calculations based on data from the KiBS, the Federal Statistical Office, and INKAR.

5.2. Effects on Fathers' Labor Supply Responses over Early Childhood

We assess fathers' labor supply responses to the expansion of childcare for children under age three in Table 1. The sequencing of paid leave expiration and childcare eligibility implies that labor supply responses should differ sharply before and after the first birthday.

For fathers of children aged 12 to 35 months, we find no evidence of extensive-margin employment effects (Column 1). However, Columns 2 and 3 indicate an intensive-margin shift from full-time to long part-time work. Scaled to a 10 percentage point increase in childcare coverage, the estimates imply a reduction in full-time employment of about 1.8 pp and an increase in long part-time employment of about 1.7 pp. While modest in absolute terms, this shift is sizeable relative to the low baseline share of fathers working part-time.¹⁸ Time-use patterns in Appendix Figures A.10 suggest that these adjustments may be related to childcare logistics, such as fathers starting work later after dropping children off at daycare.

5.3. Effects on Fathers' Parental Leave-Take Up

We next examine fathers' parental leave take-up as an institutionally salient extensive-margin adjustment that can help coordinate mothers' labor market re-entry around the child's first birthday.

¹⁸Appendix Figure A.2 reports the findings by children's age.

Table 2: Effects of an increase in childcare coverage on parental leave take-up and length

	Dependent variables				
	Fathers' parental leave			Mothers' parental leave	
	Take-Up (1)	Exactly two months (2)	More than two months (3)	Exactly 12 months (4)	More than 12 months (5)
Childcare coverage below 3 years	0.4417*** (0.1073)	0.3398*** (0.1074)	-0.0162 (0.1041)	0.3121*** (0.1131)	-0.3042*** (0.1029)
Observations	67,739	67,739	67,739	61,336	61,336
Mean of dep. var	0.5284	0.3653	0.1394	0.4511	0.3536
SD of dep. var	0.4992	0.4815	0.3464	0.4976	0.4781

Notes: All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). Robust standard errors clustered at the county level are given in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Own calculations based on data from the KiBS, the Federal Statistical Office, and INKAR.

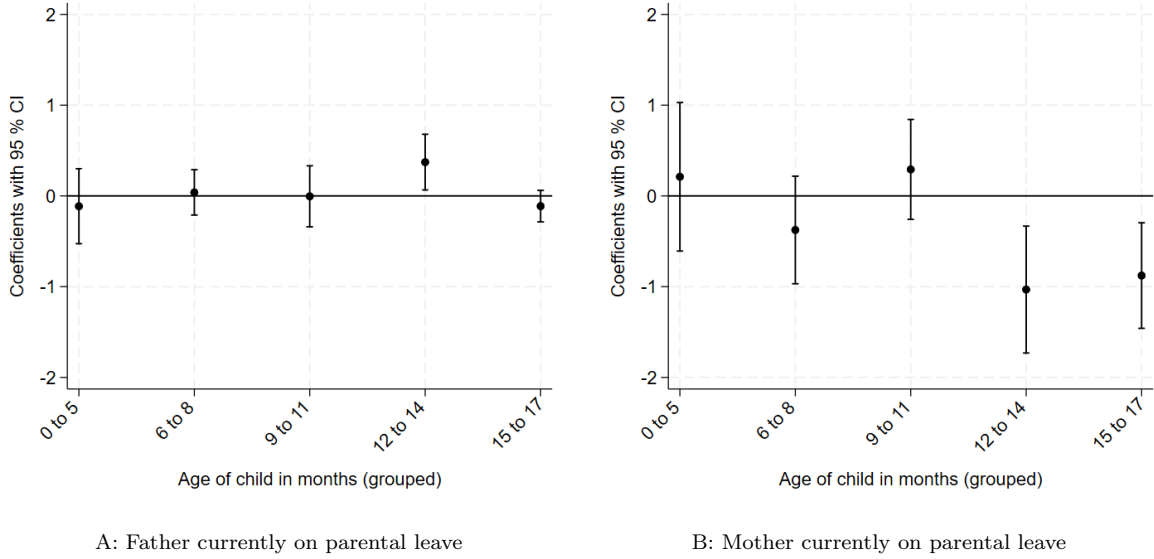
Table 2, Column 1, shows that the expansion of childcare had a positive effect on the take-up of fathers' parental leave. An increase in publicly subsidized childcare of 10 pp increases the share of fathers taking parental leave by 4.1 pp.¹⁹ Most of the increase accrues to fathers taking parental leave for two months (Column 2), which corresponds to the two bonus months paid if both parents claim some leave. The effect on parental leave longer than two months is, however, small and even negative (Column 3). The increased flexibility introduced by Elterngeld Plus after 2015 likely facilitated these adjustments by allowing fathers to combine short periods of leave with part-time work around childcare entry, though our estimates capture reduced-form responses to childcare availability rather than reform-specific effects.

For mothers, we find a significant decrease in leave-taking of more than 12 months of about 2.8 pp if provision of childcare increases by 10 pp (Column 5). Leave-taking of exactly 12 months, on the other hand, increases by a similar amount (Column 4).

Figure 4 shows that the effects on paternal leave are concentrated when the child is about 12 – 14 months old (Panel A), the time period during which parental leave of mothers is significantly reduced (Panel B) and where we see the largest responses

¹⁹As we use regional childcare availability (an intention-to-treat design), we estimate reduced-form effects on fathers' leave-taking rather than effects of individual childcare attendance. However, by utilizing our first-stage results from Appendix Table A.5, Column 1, we can consider the childcare expansion as an instrument for childcare attendance and scale our reduced form findings accordingly. Regarding the impact on fathers' parental leave take-up, we find that if the child attends childcare at age 12 to 35 months, the probability of fathers claiming parental leave rises by 64 pp.

Fig. 4: Effects of childcare expansion for children under 18 months on parental leave take-up



Notes: Coefficient estimates with 95% CI of the childcare rate on parental leave take-up. Estimates stem from separate estimations of eq. 1 by age. All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2).

Source: Own illustration based on data from the KiBS, the Federal Statistical Office, and INKAR.

in childcare take-up. Given the substantial uncertainty around the timing of childcare admission (see Section 2.4), this behavior likely reflects mothers adhering to their plan of returning to work once the maximum paid leave period ends, while fathers take over the daycare transition during their own leave—a process that typically lasts several weeks and is increasingly assumed by fathers.

5.4. Benchmark: Effects on Mothers' Labor Supply

Before turning to realized employment outcomes, we examine whether increased childcare availability affects mothers' planned timing of labor market re-entry. Using an indicator for whether mothers report intending to return to work within the next six to twelve months, we find that higher childcare coverage significantly accelerates planned re-entry. A 10 pp increase in childcare availability raises the probability that mothers plan to return to work within the first two years by 2 pp ($\beta=0.20$, s.e. 0.14). Increased childcare availability appears to shift mothers' intertemporal planning and to reduce uncertainty about post-leave employment prospects.

Consistent with these shifts in planned re-entry, we observe subsequent realized maternal labor supply responses at both the extensive and intensive margin (Table 3): If childcare rates increase by 10 pp, mothers' employment increases by 4.6 pp (Column 1).

Table 3: Effects of childcare expansion on mothers' employment (children aged 12 – 35 months)

	Dependent variables:			
	Extensive (> 0 hours) (1)	Full-time (> 34 hours) (2)	Part-time (long) (20 – 34 hours) (3)	Part-time (short) (1 – 19 hours) (4)
Mothers' employment				
Childcare coverage below 3 years	0.4281*** (0.1185)	0.2262** (0.0951)	0.2964** (0.1206)	-0.0945 (0.0856)
Observations	92,497	92,497	92,497	92,497
Mean of dep. var	0.6418	0.2107	0.3280	0.1031
SD of dep. var	0.4795	0.4078	0.4695	0.3041

Notes: All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). Robust standard errors clustered at the county level are given in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Source: Own calculations based on data from the KiBS, the Federal Statistical Office, and INKAR.

This increase is primarily driven by an increased probability to work full-time of about 2.3 pp (Column 2) and longer part-time hours of about 2.9 pp (20 - 34 hours, Column 3) when increasing childcare provision by 10 pp.²⁰

Overall, the changes in expectations and planned re-entry provide a natural explanation for why fathers adjust their parental leave precisely around the child's first birthday and thereafter.

The results are consistent with other evidence on positive effects of universal childcare provision on maternal labor supply (Lefebvre and Merrigan, 2008, Bauernschuster and Schlotter, 2015, Müller and Wrohlich, 2020, Duletzki and Lim, 2025).²¹ We also examine parental employment outcomes at later child ages (up to age 10) and find small positive effects on mothers' intensive labor supply margin in the long-run, but no statistically or economically meaningful effects on fathers' labor supply beyond age 3 (Appendix Table A.8).

²⁰Predicted probabilities of ordered logit models using these different employment outcomes as categorical variable are shown in Appendix Figure A.12 and confirm results from separate regressions in Table 3.

²¹Depending on the context, the provision of childcare subsidies or universal childcare can also have very small effects on maternal employment. For example, Havnes and Mogstad (2011) find that the large-scale expansion of subsidized childcare in Norway did not increase maternal employment, but mainly crowded out informal childcare arrangements. Givord and Marbot (2015) find that a 50 percent subsidy to childcare spending introduced in France had only a marginal impact on female labor force participation. Note that results in Müller and Wrohlich (2020) who examine the effects of the childcare expansion in Germany, find the strongest effects on mothers' employment participation and extended part-time employment; yet they do not find effects on maternal full-time employment or reductions in short part-time as we do. These differences are likely due to the different expansion periods considered.

Table 4: Heterogeneity in labor supply and leave responses to childcare expansion

	Dependent variables				
	Childcare attendance at 12 – 35 months (1)	Father works full-time (2)	Mother is employed (3)	Father took 2 months of leave (4)	Mother took 12 months of leave (5)
Panel A: By mothers' education					
Childcare Coverage	1.0041*** (0.1434)	-0.2143** (0.0839)	0.5088*** (0.1229)	0.3701*** (0.1086)	0.4165*** (0.1171)
Coverage × Mother has <i>Abitur</i>	-0.4408*** (0.0364)	0.0583** (0.0266)	-0.0887** (0.0449)	-0.0381 (0.0307)	-0.2011*** (0.0315)
Observations	85,280	78,446	88,244	63,722	57,612
Panel B: By parent's migration background					
Childcare Coverage	0.6759*** (0.1390)	-0.1493* (0.0870)	0.4698*** (0.1167)	0.3486*** (0.1049)	0.3120*** (0.1113)
Coverage × At least one parent born abroad	-0.1985*** (0.0548)	-0.1804*** (0.0400)	-0.2654*** (0.0451)	-0.1140** (0.0483)	-0.0199 (0.0436)
Observations	93,541	82,712	92,497	67,739	61,336
Panel C: By child being firstborn					
Childcare Coverage	0.5782*** (0.1506)	-0.1836* (0.0939)	0.3637*** (0.1334)	0.3214** (0.1342)	0.2757** (0.1331)
Coverage × Child is firstborn	-0.0435 (0.0302)	0.0014 (0.0212)	-0.0874*** (0.0303)	-0.0887*** (0.0296)	0.0376 (0.0408)
Observations	79,613	71,976	78,784	56,717	51,328

Notes: All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). In Columns 1 to 3, children are 12 – 35 months old at time of outcome measurement. Robust standard errors clustered at county level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Own calculations based on data from the KiBS, the Federal Statistical Office, and INKAR.

5.5. Heterogeneity in Labor Supply and Leave Responses

To assess whether the effects of childcare expansion vary systematically across families, we examine heterogeneity along three dimensions closely related to labor supply incentives and access constraints: maternal education, migration background, and whether the child is firstborn. These dimensions are also characterized by substantial baseline differences in childcare use, with lower attendance rates among children of less-educated parents and families with a migration background despite stated demand for care (Jessen et al., 2020, Huebener et al., 2023). Table 4 reports results for key outcomes. Interaction terms capture differential responses relative to the reference group and must therefore be interpreted jointly with the main effect.

Panel A reveals pronounced heterogeneity by maternal education. Among households in which the mother does not hold a university entrance qualification (*Abitur*), increases in

childcare availability substantially raise childcare attendance and induce strong labor supply adjustments: fathers are less likely to work full-time, mothers' employment increases, fathers are more likely to take the two bonus months of parental leave, and mothers shorten leave durations beyond 12 months. For households with higher-educated mothers, these responses are significantly attenuated. Joint interpretation of the coefficients implies that childcare expansions continue to affect higher-educated households, but with smaller marginal effects, consistent with higher baseline levels of childcare use, employment, and paternal leave-taking in these families. This pattern aligns with evidence that reductions in supply-side childcare shortages disproportionately increase attendance among less-educated families, for whom search frictions and rationing constraints are most binding (Jessen et al., 2020, Hermes et al., 2025).

Panel B documents markedly weaker responses among families in which at least one parent was born abroad. While childcare expansion increases attendance and induces labor supply and leave-taking responses among non-migrant households, interaction terms indicate substantially smaller effects for migrant families across all outcomes. This pattern is consistent with persistent access frictions and informational barriers that weaken the translation of aggregate childcare expansion into effective take-up and coordinated labor supply adjustments among migrant households.

Panel C examines heterogeneity by birth order. Independent of whether the child is firstborn, increases in childcare availability raise childcare attendance. Effects on fathers' full-time employment are also similar across birth order. In contrast, maternal employment responses and fathers' parental leave take-up are weaker for firstborn children. These patterns are consistent with greater uncertainty and learning costs at first birth, which may delay coordinated adjustments in parental leave-taking and maternal labor supply compared to families with prior childcare experience.

Taken together, these findings support our interpretation that childcare availability primarily operates through labor supply incentives and coordination margins that vary systematically across families, rather than through uniform changes in caregiving preferences.

5.6. Effects on Weekday Division of Childcare

Finding positive effects on fathers' parental leave take-up raises the question of whether this is accompanied by detectable changes in fathers' weekday caregiving responsibilities

later on. Figure 5 shows predicted probabilities based on a categorical measure of the division of unpaid work between parents on weekdays, ranging from 1 (solely the mother) to 5 (solely the father). The figure presents the predicted probabilities of each outcome category of division of childcare across different values of the county-level childcare rate based on separate estimations of eq. 1 using ordered logit models. In contrast to parental employment (see Appendix Figure A.12), we see little change in care division when provision of childcare increases. Note that we observe a slight increase in the probability of equal division and a corresponding slight decline in situations where the mother is the sole or main caregiver; though differences in coefficients never reach statistical significance.²²

To complete the picture, we also assess the effects of the childcare expansion on other forms of childcare provided by grandparents or other paid or unpaid care arrangements, such as nannies, au pairs, surrogate grandparents, neighbors, friends, or siblings in Appendix Table A.6. We find negative but insignificant effects of the childcare expansion on grandparental care, and marginally significant reductions in other care arrangements for children between the ages of 12 to 35 months.

We conclude that increasing the availability of publicly subsidized childcare promoted a more equal allocation of parental leave and market work within couples, but it did not alter the role of main caregivers on a normal weekday.

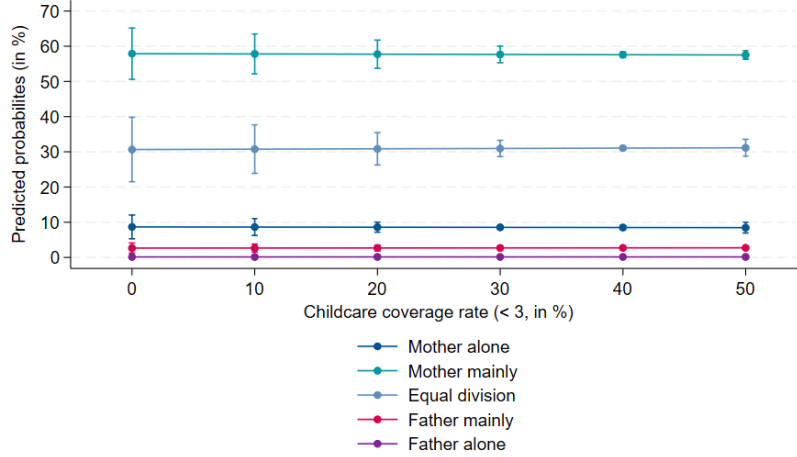
5.7. Robustness Checks

To assess the robustness of our main findings, namely the dynamic and margin-specific labor supply responses of fathers to childcare availability, we conduct a series of sensitivity checks addressing identification, sample composition, and alternative sources of regional heterogeneity.

First, we examine the sensitivity of our findings to alternative model specifications that address concerns regarding time-varying heterogeneity at the county level, as well as the potential confounding influence of contemporaneous regional (primarily state-level) childcare and family policies that coincide with the expansion and may affect paternal

²²Results on binary and continuous measures of our outcome are summarized in Appendix Table A.7, where we find no significant effects. The coefficient on our binary measure amounts to about a 1.7 pp decrease in mothers' role as main caregiver when the childcare coverage rate increases by 10 pp. Based on the bounds of our results, we can exclude the possibility that the share of mothers being the main caregivers decreases by more than 5 pp when childcare coverage increases by 10 pp. We also find no systematic patterns on the binary outcome of whether the mother is the sole/main caregiver across children's ages until age 5 (see Figure A.13).

Fig. 5: Predicted probability of division of parental childcare when child is 12 to 35 months old conditional on childcare coverage rate for children below 3 years



Notes: Coefficient estimates with 95% CI of the childcare rate on division of childcare on a normal working day conditional on different childcare coverage rates. Estimates stem from separate estimations of eq. 1 using ordered logit models. All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2).

Source: Own illustration based on data from the KiBS, the Federal Statistical Office, and INKAR.

labor supply. The results are reported in Table 5, Panel A. Across all specifications, the qualitative pattern of results remains unchanged: childcare availability increases attendance, induces fathers’ parental leave-taking and reductions in full-time work, and raises maternal employment.

First, we estimate models with an extended set that not only controls for net migration, county debt, and the tax capacity, but also flexibly accounts for pre-expansion differences in childcare coverage by including the 2002 coverage rate interacted with cohort fixed effects. By adding this term we control for the fact that the childcare expansion could be systematically related to the pre-treatment levels of childcare coverage (see Blanden et al. (2016) for a similar approach). In addition, this helps us to capture the convergence patterns which we observe in East Germany (Appendix Figure A.6).

Second, we include the share of fathers taking leave in the year preceding the child’s birth. This control variable serves a dual purpose: It captures prevailing social norms regarding leave-taking and fathers’ involvement. It also helps to address potential concerns of reverse causality, namely the direct effect of paternal leave behavior on the demand for, and potentially also the supply of childcare slots. Coefficients remain unchanged.

Third, we incorporate state-by-year fixed effects, which absorb all state-level shocks and policy changes common within a federal state in a given year (e.g., fee reforms or

Table 5: Robustness checks for main outcomes

	Dependent variables				
	Childcare attendance at 12 – 35 months (1)	Father works full-time (2)	Mother is employed (3)	Father took 2 months of leave (4)	Mother took 12 months of leave (5)
Main specification	0.6434*** (0.1418)	-0.1761** (0.0855)	0.4281*** (0.1185)	0.3398*** (0.1074)	0.3121*** (0.1131)
Observations	93,541	82,712	92,497	67,739	61,336
Panel A: Model specifications					
Extended set of control variables	0.6593*** (0.1837)	-0.2379** (0.0966)	0.3810** (0.1623)	0.2790** (0.1344)	0.3290** (0.1514)
Observations	88626	78,060	87,614	61,836	55,803
Include pre-birth paternal leave share (county level)	0.6684*** (0.1387)	-0.1783** (0.0885)	0.4342*** (0.1175)	0.2791** (0.1203)	0.3520*** (0.1300)
Observations	92,066	81,283	91,022	65,874	59,271
Include state-cohort fixed effects	0.3535** (0.1473)	-0.1428 (0.1040)	0.0586 (0.1552)	0.2441* (0.1283)	0.4890*** (0.1559)
Observations	93,535	82,707	92,491	67,735	61,332
Panel B: Sample restrictions					
Only West Germany	0.5850*** (0.1987)	-0.1433 (0.1015)	0.3587** (0.1662)	0.4557*** (0.1445)	0.1267 (0.1690)
Observations	61,213	54,158	60,557	41,642	36,281
Only counties with > 24 observations per year	0.6625*** (0.1762)	-0.1902 (0.1189)	0.3548** (0.1516)	0.2032 (0.1299)	0.1774 (0.1283)
Observations	73,144	61,707	72,131	54,909	48,553
Exclude movers	0.6411*** (0.1419)	-0.1770** (0.0858)	0.4277*** (0.1191)	0.3453*** (0.1079)	0.3114*** (0.1139)
Observations	93,097	82,288	92,056	67,559	61,090
Only counties with excess demand	0.6518*** (0.1537)	-0.1478 (0.0915)	0.3433** (0.1331)	0.3586** (0.1402)	0.2866* (0.1587)
Observations	84,773	75,053	83,798	59,214	52,896

Notes: All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). In Columns 1 to 3, children are 12 – 35 months old at time of outcome measurement. In Panel B, Row 3, the sample consists only of observations from counties with significant excess demand. This is determined by calculating the mean of the difference between the demand from parents for childcare slots and the child's actual attendance of childcare for those under 3 years old for each county and birth year combination. Observations in the lowest quartile of county-level unmet demand for children below 3 in the year following birth are excluded. Robust standard errors clustered at county level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: Own calculations based on data from the KiBS, the Federal Statistical Office, and INKAR.

state parental allowances). This specification is demanding because it relies only on within-state, within-year differences across counties. Reassuringly, the estimated effects on fathers' leave-taking and fathers' intensive-margin labor supply adjustments remain within the confidence intervals of the baseline specification. By contrast, estimates for

maternal employment become less precise and are no longer statistically significant.²³

In Panel B of Table 5, we assess how sensitive our results are to various sample adjustments that might bias our main findings.

First, we address concerns about time-varying heterogeneity between East and West Germany that we might not fully account for by including the rich set of county controls or by controlling for pre-expansion coverage rates. When we focus only on West German counties, coefficients are very similar in magnitude with the exception of mothers' leave-taking of exactly 12 months. Differences for mothers' leave-taking in West Germany likely reflect stronger norms around maternal caregiving, rather than a failure of identification.

Second, we restrict the sample to counties with more than 24 observations per birth year to limit noise from sparsely sampled counties. Estimates remain similar; the coefficient on fathers' leave take-up of exactly two months becomes less precise.²⁴

Third, we address potential selective mobility between counties. We exclude observations in which the county code changes between survey waves for children repeatedly observed. The results are very similar to the main results.

Lastly, we run regressions including only counties with excess demand²⁵ to make sure that our identifying variation reflects supply-side shortages rather than other underlying heterogeneity across counties and over time. Results are very similar.

A remaining potential concern is that expansions in subsidized childcare may affect fertility decisions and thereby alter family composition. While childcare availability may influence completed fertility at longer horizons (Bauernschuster et al., 2016), we find no evidence that it affects the probability of having an additional child within the age window we study. Appendix Table A.9 shows that childcare coverage does not predict the

²³We also include control variables for the share of all-day childcare slots in the county, as an increase in the availability of all-day slots was initiated during our time period (see, e.g., Felfe and Zierow, 2018). This makes sure that our estimates reflect the impact of childcare provision rather than the impact of full-time slots (vs. half-day slots). The increase in all-day care is sufficiently orthogonal to the childcare expansion we are studying, such that we draw the same conclusions.

²⁴We also run regressions excluding all cities with more than 500,000 inhabitants to reduce within-county heterogeneity in our sample. Results remain similar. Results are also similar when excluding the survey years 2020 to 2022 (waves 9, 10 and 11) from our sample, as they fell within the COVID-19 pandemic, which had a significant impact on care arrangements, the division of childcare, and parental employment during that time (e.g., Del Boca et al., 2020, Jessen et al., 2022b). The results also prove robust to altering the sample with respect to the cohorts considered in the analysis, further strengthening the assumption of homogeneous treatment effects across units and across time periods. These additional robustness checks are available upon request.

²⁵Calculated as the county-level average of demand minus supply of slots, similar to Jessen et al. (2020).

presence of a younger sibling at any child age considered, suggesting that our estimates capture labor supply responses to childcare availability for the focal child rather than changes in family size.

Finally, we test the sensitivity of our results to variations in the considered birth cohorts. Our baseline sample includes children born between 2009 and 2019. Results are robust to alternative birth cohort definitions and age ranges, and the estimated effects of childcare availability on attendance are stable across all specifications, indicating that they are not driven by cohort composition or differential exposure across survey waves (Appendix Table A.10).

Across all robustness checks, the timing, sign, and margins of fathers' labor supply responses remain stable, reinforcing our interpretation that childcare expansions induce labor supply adjustments of fathers.

6. Conclusions

This paper examines how the expansion of publicly subsidized childcare affects the allocation of labor supply and caregiving within households, with a particular focus on fathers' labor supply responses over early childhood. We exploit a policy environment in Germany designed to promote maternal employment and increase fathers' involvement, orchestrating parental leave, paternal quotas, and a legal entitlement to subsidized childcare. We identify causal effects of childcare availability using exogenous regional variation in the expansion of childcare slots for children under three. We find that expanding universal childcare significantly accelerates children's entry into childcare and mothers' re-entry into the labor market. While mothers take shorter parental leave, the expansions increase fathers' likelihood of taking paternity leave. After paid parental leave expires and children enter childcare, we document modest declines in fathers' full-time employment alongside pronounced labor supply responses among mothers at both the intensive and extensive margins. Fathers' subsequent caregiving roles remain largely unaffected.

The observed increases in fathers' leave-taking and modest shifts from paternal full- to part-time employment align with evidence from paternity leave reforms and fathers' quotas in Norway, Sweden, Finland, and Spain (Kotsadam and Finseraas, 2011, Patnaik, 2019, Eerola et al., 2022, González and Zoabi, 2025). As in these studies, we find that fathers respond to policy incentives by taking leave, which can temporarily increase child-

care involvement. However, these short-term adjustments in Germany do not translate into substantial or persistent increases in fathers' weekday caregiving. This is consistent with findings from Eerola et al. (2022), who emphasize that leave-taking alone often does not equalize caregiving responsibilities without broader cultural or institutional support, and González and Zoabi (2025), who find that sustained paternal engagement depends on leave intensity and structures of leave policies. While Kotsadam and Finseraas (2011) and Patnaik (2019) document long-term behavioral and normative shifts following quota-based reforms, our results suggest that modest changes in fathers' labor supply and leave-taking in Germany are not sufficient to produce persistent redistributions of childcare within households.²⁶

Prior research suggests that increases in fathers' involvement in domestic work often relate to housework or caregiving on weekends (Tamm, 2019). We focus explicitly on fathers' involvement in *childcare* on a *weekday*, a margin that is highly relevant for understanding persistent gender gaps in labor markets. Overall, our findings are consistent with a "stalled gender revolution," reflected in stagnating improvements in paternal childcare engagement and persistent gender gaps in the labor market despite substantial policy efforts to increase fathers' involvement in child rearing (Raley et al., 2012, Kleven et al., 2024, Zoch and Heyne, 2023). Childcare provision thus appears to primarily substitute for maternal care rather than enabling a substantial redistribution of childcare responsibilities between parents.

The limited changes in fathers' caregiving may partly reflect the weak association between maternal employment and paternal childcare. While childcare availability enables mothers to increase market work, working mothers may be reluctant to reduce time spent with their children to the same extent as time spent on housework. Feelings of guilt from outsourcing childcare may lead some mothers to maintain quality time with their children despite employment, as suggested by our supplementary time-use analysis. As a result, increases in maternal employment can coexist with continued primary responsibility for childcare, resulting in what is often described as a "double shift" for mothers.

Our findings do *not* imply that universal childcare is ineffective in promoting gender

²⁶For Germany, Bünning and Pollmann-Schult (2015) show that fathers increased their involvement in childcare even after short leaves. However, fathers' choice of parental leave length may be correlated with their preferences for childcare or housework, which the fixed-effects approach may not fully account for without an exogenous source of variation in the length of fathers' parental leave.

equality more broadly. Prior work shows that childcare expansions can shift gender norms and attitudes, particularly among mothers (Zoch and Schober, 2018). Behavioral adjustments to such normative changes likely occur only gradually and may not be captured in short- to medium-run estimates such as ours.

In sum, our analyses shed new light on the interplay between different family policies, showing that substantial family policy efforts can alter the division of paid labor within households without generating corresponding changes in the division of caregiving. Evaluations of childcare policies that focus exclusively on maternal employment risk overstating their aggregate labor supply effects and overlooking offsetting responses by fathers. Accounting for dynamic labor supply adjustments of both parents is therefore crucial to understanding the full labor market and distributional consequences of childcare policies.

Declaration of Generative AI in the Writing Process

During the preparation of this work, the authors used editGPT and ChatGPT to enhance readability and check the language. Following the use of this tool, the authors reviewed and edited the suggestions as needed. They take full responsibility for the content of the published article.

References

- ALLEN, S. AND A. J. HAWKINS (1999): “Maternal Gatekeeping: Mothers’ Beliefs and Behaviors That Inhibit Greater Father Involvement in Family Work,” *Journal of Marriage and Family*, 61, 199–212.
- ALMÅS, I., O. ATTANASIO, AND P. CARNEIRO (2023): “Chapter 3 - Household Decisions and Intra-Household Distributions,” in *Handbook of the Economics of the Family*, ed. by S. Lundberg and A. Voena, North-Holland, vol. 1, 111–149.
- ALT, C., S. HUBERT, AND U. PÖTTER (2013): “Der U3-Ausbau: Angebote, Bedarfe und Zufriedenheit. Eine Analyse auf Basis der KiföG-Bundesländerstudie 2012,” *DJI, München*.
- AVDIC, D. AND A. KARIMI (2018): “Modern Family? Paternity Leave and Marital Stability,” *American Economic Journal: Applied Economics*, 10, 283–307.
- BAKER, M., J. GRUBER, AND K. MILLIGAN (2008): “Universal Child Care, Maternal Labor Supply, and Family Well-Being,” *Journal of Political Economy*, 116, 709–745.
- BARTOVA, A. AND R. KEIZER (2020): “How Well Do European Child-Related Leave Policies Support the Caring Role of Fathers?” in *The Palgrave Handbook of Family Policy*, ed. by R. Nieuwenhuis and W. van Lancker, Cham: Springer International Publishing, 369–395.
- BASTIAN, J. AND L. LOCHNER (2022): “The Earned Income Tax Credit and Maternal Time Use: More Time Working and Less Time with Kids?” *Journal of Labor Economics*, 40, 573–611.
- BAUERNSCHUSTER, S., T. HENER, AND H. RAINER (2016): “Children of a (Policy) Revolution: The Introduction of Universal Child Care and Its Effects on Fertility,” *Journal of the European Economic Association*, 14, 975–1005.
- BAUERNSCHUSTER, S. AND M. SCHLOTTER (2015): “Public Child Care and Mothers’ Labor Supply—Evidence from Two Quasi-Experiments,” *Journal of Public Economics*, 123, 1–16.
- BECKER, G. S. (1974): “A Theory of Social Interactions,” *Journal of Political Economy*, 82, 1063–1093.
- BLANDEN, J., E. DEL BONO, S. MCNALLY, AND B. RABE (2016): “Universal Pre-school Education: The Case of Public Funding with Private Provision,” *The Economic Journal*, 126, 682–723.
- BREHM, U., M. HUEBENER, AND S. SCHMITZ (2022): “15 Jahre Elterngeld: Erfolge, aber noch Handlungsbedarf - Ein Blick auf partnerschaftliche Arbeitsteilung und Karrieren,” *Bevölkerungsforschung aktuell*, 6/2022, 3–7.
- BREWER, M., S. CATTAN, C. CRAWFORD, AND B. RABE (2022): “Does More Free Childcare Help Parents Work More?” *Labour Economics*, 74, 102100.
- BUNDESINSTITUT FÜR BAU-, STADT- UND RAUMFORSCHUNG (2023): “INKAR - Indikatoren und Karten zur Raum- und Stadtentwicklung,” *www.inkar.de*.
- BÜNNING, M. (2015): “What Happens after the ‘Daddy Months’? Fathers’ Involvement in Paid Work, Childcare, and Housework after Taking Parental Leave in Germany,” *European Sociological Review*, 31, 738–748.

- BÜNNING, M. AND M. POLLMANN-SCHULT (2015): “Family Policies and Fathers’ Working Hours: Cross-National Differences in the Paternal Labour Supply,” *Work, Employment and Society*, 30, 256–274.
- CALLAWAY, B., A. GOODMAN-BACON, AND P. H. SANT’ANNA (2024): “Difference-in-Differences with a Continuous Treatment,” *NBER Working Paper Series*.
- CALLAWAY, B. AND P. H. SANT’ANNA (2021): “Difference-in-Differences with Multiple Time Periods,” *Journal of Econometrics*, 225, 200–230.
- CANAAN, S. (2022): “Parental Leave, Household Specialization and Children’s Well-Being,” *Labour Economics*, 75, 102127.
- CANAAN, S., A. S. LASSEN, P. ROSENBAUM, AND H. STEINGRIMSDOTTIR (2022): “Maternity Leave and Paternity Leave: Evidence on the Economic Impact of Legislative Changes in High Income Countries,” *The Oxford Research Encyclopedia of Economics and Finance*.
- COOLS, S., J. H. FIVA, AND L. J. KIRKEBØEN (2015): “Causal Effects of Paternity Leave on Children and Parents,” *The Scandinavian Journal of Economics*, 117, 801–828.
- COREKCIOGLU, G., M. FRANCESCONI, AND A. KUNZE (2024): “Expansions in Paid Parental Leave and Mothers’ Economic Progress,” *European Economic Review*, 169, 104845.
- CORNELISSEN, T., C. DUSTMANN, A. RAUTE, AND U. SCHÖNBERG (2018): “Who Benefits from Universal Child Care? Estimating Marginal Returns to Early Child Care Attendance,” *Journal of Political Economy*, 126, 2356–2409.
- CORTÉS, P. AND J. PAN (2023): “Children and the Remaining Gender Gaps in the Labor Market,” *Journal of Economic Literature*, 61, 1359–1409.
- DAVIS, S. N. AND T. N. GREENSTEIN (2009): “Gender Ideology: Components, Predictors, and Consequences,” *Annual Review of Sociology*, 35, 87–105.
- DE CHAISEMARTIN, C. AND X. D’HAULTFŒUILLE (2024): “Two-Way Fixed Effects and Differences-in-Differences with Heterogeneous Treatment Effects: A Survey,” *American Economic Review*, 114, 2963–3005.
- DE CHAISEMARTIN, C., X. D’HAULTFŒUILLE, AND G. VAZQUEZ-BARE (2024a): “Difference-in-Difference Estimators with Continuous Treatments and No Stayers,” *AEA Papers and Proceedings*, 114, 610–613.
- DE CHAISEMARTIN, C., X. D’HAULTFŒUILLE, AND G. VAZQUEZ-BARE (2024b): “Difference-in-Difference Estimators with Continuous Treatments and No Stayers,” *AEA Papers and Proceedings*, 114, 610–613.
- DEL BOCA, D., N. OGGERO, P. PROFETA, AND M. ROSSI (2020): “Women’s and Men’s Work, Housework and Childcare, Before and During COVID-19,” *Review of Economics of the Household*, 18, 1001–1017.
- DOEPKE, M., A. HANNUSCH, F. KINDERMANN, AND M. TERTILT (2023): “The Economics of Fertility: A New Era,” in *Handbook of the Economics of the Family*, Elsevier, vol. 1, 151–254.
- DULETZKI, L.-M. AND N. LIM (2025): “Can Early Public Childcare Reduce Child Penalties? – Evidence from Germany,” Working Paper. Posted January 24, 2025. Available at SSRN: <https://ssrn.com/abstract=5109977>.

- DUVANDER, A.-Z., G. B. EYDAL, B. BRANDTH, I. V. GÍSLASON, J. LAMMI-TASKULA, AND T. ROSTGAARD (2019): “Gender Equality: Parental Leave Design and Evaluating Its Effects on Fathers’ Participation,” in *Parental Leave and Beyond*, ed. by P. Moss, A.-Z. Duvander, and A. Koslowski, Policy Press, 187–204.
- ECKHOFF ANDRESEN, M. AND T. HAVNES (2019): “Child Care, Parental Labor Supply and Tax Revenue,” *Labour Economics*, 61, 101762.
- EEROLA, P., J. NÄRVI, AND J. LAMMI-TASKULA (2022): “Can Fathers’ Leave Take-Up Dismantle Gendered Parental Responsibilities? Evidence from Finland,” *Journal of Family Research*, 34, 958–982.
- EKBERG, J., R. ERIKSSON, AND G. FRIEBEL (2013): “Parental Leave — A Policy Evaluation of the Swedish “Daddy-Month” Reform,” *Journal of Public Economics*, 97, 131–143.
- FANELLI, E. AND P. PROFETA (2021): “Fathers’ Involvement in the Family, Fertility, and Maternal Employment: Evidence From Central and Eastern Europe,” *Demography*, 58, 1931–1954.
- FELFE, C. AND R. LALIVE (2018): “Does Early Child Care Affect Children’s Development?” *Journal of Public Economics*, 159, 33–53.
- FELFE, C. AND L. ZIEROW (2018): “From Dawn Till Dusk: Implications of Full-Day Care for Children’s Development,” *Labour Economics*, 55, 259–281.
- FEYRER, J., B. SACERDOTE, AND A. D. STERN (2008): “Will the Stork Return to Europe and Japan? Understanding Fertility Within Developed Nations,” *Journal of Economic Perspectives*, 22, 3–22.
- GATHMANN, C. AND B. SASS (2018): “Taxing Childcare: Effects on Childcare Choices, Family Labor Supply, and Children,” *Journal of Labor Economics*, 36, 665–709.
- GIVORD, P. AND C. MARBOT (2015): “Does the Cost of Child Care Affect Female Labor Market Participation? An Evaluation of a French Reform of Childcare Subsidies,” *Labour Economics*, 36, 99–111.
- GOLDIN, C. (2025): “The Downside of Fertility,” Working Paper 34268, National Bureau of Economic Research.
- GOLDIN, C., S. P. KERR, AND C. OLIVETTI (2024): “The Parental Pay Gap over the Life Cycle: Children, Jobs, and Labor Supply,” *Journal of Economic Dynamics and Control*, 169, 104963.
- GONZÁLEZ, L. AND H. ZOABI (2025): “Does Paternity Leave Promote Gender Equality Within Households?” *Journal of the European Economic Association*, forthcoming.
- GOODMAN-BACON, A. (2021): “Difference-in-Differences with Variation in Treatment Timing,” *Journal of Econometrics*, 225, 254–277.
- HAVNES, T. AND M. MOGSTAD (2011): “Money for Nothing? Universal Child Care and Maternal Employment,” *Journal of Public Economics*, 95, 1455–1465.
- HERMES, H., P. LERGETPORER, F. PETER, AND S. WIEDERHOLD (2025): “Application Barriers and the Socioeconomic Gap in Child Care Enrollment,” *Journal of the European Economic Association*, 23, 1133–1172.

- HUBER, K. AND G. ROLVERING (2023): “Public Child Care and Mothers’ Career Trajectories,” *IZA Discussion Paper*, No. 16433.
- HUEBENER, M., A. PAPE, AND C. K. SPIESS (2020): “Parental Labour Supply Responses to the Abolition of Day Care Fees,” *Journal of Economic Behavior & Organization*, 180, 510–543.
- HUEBENER, M., S. SCHMITZ, C. K. SPIESS, AND L. BINGER (2023): *Frühe Ungleichheiten. Zugang zu Kindertagesbetreuung aus bildungs- und gleichstellungspolitischer Perspektive*, FES diskurs, Bonn: Friedrich-Ebert-Stiftung.
- HØGHOLM JØRGENSEN, T. AND J. EGHOLT SØGAARD (2024): “The Division of Parental Leave: Empirical Evidence and Policy Design,” *Journal of Public Economics*, 238, 105202.
- ICHINO, A. AND M. OLSSON (2023): “Taxes, Childcare, and Gender Identity Norms,” *Journal of Labor Economics*, 41, 1047–1094.
- JESSEN, J., S. SCHMITZ, AND S. WAIGHTS (2020): “Understanding Day Care Enrolment Gaps,” *Journal of Public Economics*, 190, 104252.
- JESSEN, J., S. SCHMITZ, AND F. WEINHARDT (2023): “Immigration, Female Labour Supply and Local Cultural Norms,” *The Economic Journal*, 134, 1146–1172.
- JESSEN, J., S. SCHWEIGHOFER-KODRITSCH, F. WEINHARDT, AND J. BERKES (2024): “Separate Housework Spheres,” IZA Discussion Paper No. 17134, Institute of Labor Economics (IZA).
- JESSEN, J., C. K. SPIESS, AND S. WAIGHTS (2022a): “Centre-Based Care and Parenting Activities,” *Oxford Bulletin of Economics and Statistics*, 84, 1356–1379.
- JESSEN, J., C. K. SPIESS, S. WAIGHTS, AND K. WROHLICH (2022b): “The Gender Division of Unpaid Care Work Throughout the COVID-19 Pandemic in Germany,” *German Economic Review*, 23, 641–667.
- KAN, M. Y., O. SULLIVAN, AND J. GERSHUNY (2011): “Gender Convergence in Domestic Work: Discerning the Effects of Interactional and Institutional Barriers from Large-scale Data,” *Sociology*, 45, 234–251.
- KLEVEN, H., C. LANDAIS, AND G. LEITE-MARIANTE (2025): “The Child Penalty Atlas,” *The Review of Economic Studies*, 92, 3174–3207.
- KLEVEN, H., C. LANDAIS, J. POSCH, A. STEINHAEUER, AND J. ZWEIMÜLLER (2019): “Child Penalties across Countries: Evidence and Explanations,” *AEA Papers and Proceedings*, 109, 122–126.
- (2024): “Do Family Policies Reduce Gender Inequality? Evidence from 60 Years of Policy Experimentation,” *American Economic Journal: Economic Policy*, 16, 110–149.
- KOTSADAM, A. AND H. FINSERAAS (2011): “The State Intervenes in the Battle of the Sexes: Causal Effects of Paternity Leave,” *Social Science Research*, 40, 1611–1622.
- KRUEGER, A. B. (2009): *Measuring the Subjective Well-Being of Nations: National Accounts of Time Use and Well-Being*, University of Chicago Press.
- KUNZE, A. (2022): “Parental Leave and Maternal Labour Supply/Employment,” *IZA World of Labor*, institute of Labor Economics (IZA).

- KUNZE, A. AND X. LIU (2019): “Universal Childcare for the Youngest and Maternal Employment,” Working Paper 7509, CESifo, also: IZA Discussion Paper No. 12146 and NHH Dept. of Economics Discussion Paper No. 3.
- LEFEBVRE, P. AND P. MERRIGAN (2008): “Child-Care Policy and the Labor Supply of Mothers with Young Children: A Natural Experiment from Canada,” *Journal of Labor Economics*, 26, 519–548.
- LIPPERT, K., K. HÜSKEN, S. HUBERT, C. ALT, AND B. GEDON ET AL. (2020): “DJI-Kinderbetreuungsstudie - KiBS. Längsschnittdatensatz 2012–2017. Version: 1,” *DJI - The German Youth Institute. Dataset*. doi:10.17621/kibs2017.
- LIPPMANN, Q., A. GEORGIEFF, AND C. SENIK (2020): “Undoing Gender with Institutions: Lessons from the German Division and Reunification,” *The Economic Journal*, 130, 1445–1470.
- MÜLLER, K.-U. AND K. WROHLICH (2020): “Does Subsidized Care for Toddlers Increase Maternal Labor Supply? Evidence from a Large-Scale Expansion of Early Childcare,” *Labour Economics*, 62, 101776.
- OECD (2023): “Net Childcare Costs in EU countries, 2022,” Accessed: 2024-10-10.
- OLAFSSON, A. AND H. STEINGRIMSDOTTIR (2020): “How Does Daddy at Home Affect Marital Stability?” *The Economic Journal*, 130, 1471–1500.
- OLIVETTI, C. AND B. PETRONGOLO (2017): “The Economic Consequences of Family Policies: Lessons from a Century of Legislation in High-Income Countries,” *Journal of Economic Perspectives*, 31, 205–230.
- PATNAIK, A. (2019): “Reserving Time for Daddy: The Consequences of Fathers’ Quotas,” *Journal of Labor Economics*, 37, 1009–1059.
- RALEY, S., S. M. BIANCHI, AND W. WANG (2012): “When Do Fathers Care? Mothers’ Economic Contribution and Fathers’ Involvement in Child Care,” *American Journal of Sociology*, 117, 1422–1459.
- RAZ-YUROVICH, L. AND B. S. OKUN (2024): “Are Highly Educated Partners Really More Gender Egalitarian? A Couple-Level Analysis of Social Class Differentials in Attitudes and Behaviors,” *Demographic Research*, 50, 1005–1038.
- REISCHMANN, T., T. KLEIN, AND S. GIEGERICH (2021): “A Deferred Acceptance Mechanism for Decentralized, Fast, and Fair Childcare Assignment,” *Journal of Mechanism and Institution Design* Volume 6, Issue, 6, 59.
- SANDNER, M., S. L. THOMSEN, AND L. GONZÁLEZ (2024): “Preventing Child Maltreatment: Beneficial Side Effects of Public Childcare,” *The Economic Journal*, 135, 321–353.
- STATISTISCHES BUNDESAMT (2020): “Öffentliche Sozialleistungen. Statistik zum Elterngeld. Leistungsbezüge für ab dem 1. Juli 2008-2019 geborene Kinder nach Wohnsitz der Empfänger auf Kreisebene,” Tech. rep., Statistisches Bundesamt.
- (2023): “Amtliche Kinder- und Jugendhilfestatistik: Schwerpunkt Kindertagesbetreuung: Kinder und tätige Personen in Tageseinrichtungen und öffentlich geförderter Kindertagespflege,” *Wiesbaden*.

- (2025): “Fast jede zweite erwerbstätige Frau arbeitet in Teilzeit,” *Pressemitteilung Nr. 175 vom 19. Mai 2025*.
- SUN, L. AND S. ABRAHAM (2021): “Estimating Dynamic Treatment Effects in Event Studies with Heterogeneous Treatment Effects,” *Journal of Econometrics*, 225, 175–199.
- TAMM, M. (2019): “Fathers’ Parental Leave-Taking, Childcare Involvement and Labor Market Participation,” *Labour Economics*, 59, 184–197.
- TOWNSEND, N. (2002): *The Package Deal: Marriage, Work, and Fatherhood in Men’s Lives*, Philadelphia: Temple University Press.
- ZOCH, G. AND S. HEYNE (2023): “The Evolution of Family Policies and Couples’ Housework Division after Childbirth in Germany, 1994–2019,” *Journal of Marriage and Family*, 85, 1067–1086.
- ZOCH, G. AND P. S. SCHOBBER (2018): “Public Child–Care Expansion and Changing Gender Ideologies of Parents in Germany,” *Journal of Marriage and Family*, 80, 1020–1039.

Appendix

Tables

Table A.1: Descriptive statistics: Outcome variables

	Mean	SD	Min	Max	Obs
	(1)	(2)	(3)	(4)	(5)
Panel A: Sample of parents with child 12 – 35 months					
County-level childcare coverage (< 3)	31.24	0.13	6.90	64.80	94,401
<i>Individual childcare attendance</i>					
Attendance	63.84	48.05	0	1	94,194
1 – 25 hours	13.82	34.51	0	1	93,856
26 – 35 hours	20.45	40.33	0	1	93,856
> 35 hours	29.66	45.67	0	1	93,856
<i>Maternal Employment</i>					
Employment	64.28	47.92	0	1	93,130
Full-time	21.31	40.95	0	1	93,130
Part-time long	32.72	46.92	0	1	93,130
Part-time short	10.25	30.33	0	1	93,130
<i>Paternal employment</i>					
Employment	95.52	21.47	0	1	83,152
Full-time	86.72	33.94	0	1	83,152
Part-time long	7.25	25.93	0	1	83,152
Part-time short	1.19	10.83	0	1	83,152
<i>Division of childcare</i>					
Childcare division (1-5)	2.28	0.66	1	5	57,392
Mother cares solely	8.57	27.99	0	1	57,392
Mother cares mainly	57.47	49.44	0	1	57,392
Equal division	31.07	46.28	0	1	57,392
Father cares mainly	2.74	16.33	0	1	57,392
Father cares solely	0.15	3.85	0	1	57,392
Proximity to father's work relevant for Kita	34.07	47.40	0	1	24,955
Panel B: Retrospective outcomes					
<i>Paternal leave-taking</i>					
Father took leave	52.76	49.92	0	1	67,489
Father: Exactly 2 months	36.47	48.14	0	1	67,489
Father: More than 2 months	13.94	34.64	0	1	67,489
Mother: Exactly 12 months	45.17	49.77	0	1	61,182
Mother: More than 12 months	35.34	47.80	0	1	61,182

Notes: Means are presented as percentage shares when no unit is specified.

Source: Own calculations based on data from the KiBS and the Federal Statistical Office.

Table A.2: Descriptive statistics: Control variables (sample with parents of child 12 – 35 months)

	Mean (1)	SD (2)	Min (3)	Max (4)	Obs (5)
Panel A: Individual level controls					
<i>Maternal education: School-leaving certificate</i>					
Basic degree	3.78	19.08	0	1	94,401
Intermediate degree	21.32	40.96	0	1	94,401
University entrance quali. (<i>Abitur</i>)	69.26	46.14	0	1	94,401
No/other degree	1.01	10.00	0	1	94,401
Missing	4.63	21.01	0	1	94,401
<i>Paternal education: School-leaving certificate</i>					
Basic degree	2.72	16.27	0	1	94,401
Intermediate degree	7.53	26.40	0	1	94,401
University entrance quali. (<i>Abitur</i>)	27.58	44.69	0	1	94,401
No/other degree	0.41	6.36	0	1	94,401
Missing	61.75	48.60	0	1	94,401
At least one parent born abroad	17.44	37.95	0	1	94,401
Migration background missing	2.43	15.38	0	1	94,401
Child female	48.65	49.98	0	1	94,401
Maternal age at birth (in years)	32.18	4.78	14	60	94,401
Paternal age at birth (in years)	35.22	5.08	15	79	94,401
Missing paternal age	27.69	44.75	0	1	94,401
Child's age at interview (in months)	22.91	6.84	12	35	94,401
Panel B: County-level controls					
Population density (inhabitants per km ²)	533.16	695.48	35.34	4868.01	94,401
GDP p.c. (in €1,000 per inhabitant)	35.33	15.77	12.74	195.64	94,401
Share of men with <i>Abitur</i>	28.53	09.05	0	68.07	94,401
Share of women with <i>Abitur</i>	36.04	10.26	0	72.17	94,401
Share of immigrants	09.00	05.30	0.66	38.97	94,401
Vote share conservative party (CDU)	42.72	08.58	18.25	63.47	94,401
Share of population below 3 years old	02.61	00.31	1.75	3.60	94,401
Share of population 3 – 5 years old	02.61	00.26	1.76	3.60	94,401
Share of population 6 – 17 years old	10.99	01.24	6.81	16.01	94,401
Share of population 18 – 24 years old	7.60	1.55	3.63	14.18	94,401
Share of population 25 – 29 years old	5.88	1.40	2.17	11.50	94,401
Share of population 30 – 49 years old	25.69	1.98	20.37	33.99	94,401
Share of population 50 – 64 years old	22.75	2.28	16.35	29.16	94,401

Notes: Means are presented as percentage shares when no unit is specified.

Source: Own calculations based on data from the KiBS and INKAR.

Table A.3: Correlations of main outcomes of fathers' involvement with alternative measures of fathers' involvement

	Dependent variables					
	Proximity to dad's workplace matters for childcare choice (dummy) (1)	Satisfaction with childcare division (scale 1 - 6) (2)	Unsatisfied with childcare division (dummy) (3)	Optimal childcare division (scale 1 - 5) (4)	At least equal division is optimal (dummy) (5)	Higher involv. would help reconciliation (dummy) (6)
Division of childcare (scale 1 - 5)	0.1127*** (0.0030)	0.6844*** (0.0137)	-0.1573*** (0.0038)	0.3578*** (0.0051)	0.2875*** (0.0037)	-0.2013*** (0.0057)
Observations	55,026	22,996	22,996	22,869	22,869	12,381
Spearman's ρ	0.1637***	0.3492***	-0.2668***	0.4390***	0.4164***	-0.2989***
Mother is main caregiver	-0.1489*** (0.0042)	-0.9748*** (0.0153)	0.2088*** (0.0042)	-0.4622*** (0.0055)	-0.4090*** (0.0045)	0.2984*** (0.0076)
Spearman's ρ	-0.1567***	-0.3446***	0.2323***	-0.4035***	-0.3919***	0.2908***
Observations	55,026	22,996	22,996	22,869	22,869	12,381

Notes: The table shows how our main outcomes measuring fathers' involvement—namely, the continuous scale of childcare division on a weekday from 1 (mother cares alone) to 5 (father cares alone) and a dummy variable that is 1 if the mother is the main caregiver and 0 otherwise—are correlated with other variables related to childcare division. For each variable pair, OLS regression coefficients, where all models include fixed effects for birth year and individual-level controls (see Appendix Table A.2, Panel A), are provided, with robust standard errors given in parentheses. Additionally, Spearman's ρ is reported. Column 1 shows the correlation to a dummy variable that is 1 when the proximity of the father's workplace was important for the parents' choice of a childcare center and 0 if it was not stated as important. Columns 2 and 3 report the correlation with the mother's satisfaction regarding the division of childcare. In Column 2, satisfaction is measured on a scale from 1 (not at all satisfied) to 6 (completely satisfied), while in Column 3, it is represented as a dummy variable that is 1 if the mother is unsatisfied with the division (indicated by a value between 1 and 3) and 0 if a value higher than 3 is reported. In Columns 3 and 4, outcomes are correlated with a variable providing information on the desired or perceived optimal division of childcare. In Column 4, this is indicated by a scale from 1 (mother cares alone) to 5 (father cares alone), while in Column 5, it is represented as a dummy variable, with 1 indicating that at least an equal division (values 3-5) is desired and 0 if otherwise (values 1 and 2). Finally, Column 6 presents correlations with a dummy variable indicating whether higher involvement of the father would facilitate the mother's reconciliation of work and family (1 for yes, 0 for no). The samples are not restricted to a certain age group. *** p<0.01, ** p<0.05, * p<0.1. *Source:* Own calculations based on data from the KiBS.

Table A.4: Effects of childcare expansion on intensive margin of childcare attendance

	Dependent variables: Childcare attendance (age 12 – 35 months)			
	Attendance (> 0 hours) (1)	Full-time (> 35 hours) (2)	Part-time (ext.) (26 – 35 hours) (3)	Part-time (1 – 25 hours) (4)
Childcare rate under 3 years	0.6434*** (0.1418)	0.4274*** (0.1601)	0.1311 (0.1713)	0.1046 (0.1120)
Observations	93,541	93,205	93,205	93,205
Mean of dep. var	0.6363	0.2945	0.2039	0.1389
SD of dep. var	0.4811	0.4558	0.4029	0.3458

Notes: All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). Robust standard errors clustered at county level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Own calculations based on KiBS, the Federal Statistical Office, and INKAR.

Table A.5: Effects of childcare expansion on childcare attendance

	Dependent variables: Childcare attendance by age			
	Main sample	First three years separately		
	12 – 35 months (1)	0 – 11 months (2)	12 – 23 months (3)	24 – 35 months (4)
Childcare rate under 3 years	0.6434*** (0.1418)	0.0712 (0.1053)	0.8388*** (0.2036)	0.4975*** (0.1422)
Observations	93,541	28,653	51,415	42,126
Mean of dep. var	0.6363	0.0831	0.5246	0.7726
SD of dep. var	0.4811	0.2761	0.4994	0.4192

Notes: All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). Robust standard errors clustered at county level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Own calculations based on data from the KiBS, the Federal Statistical Office, and INKAR.

Table A.6: Effects of childcare expansion on other care arrangements (age 12 – 35 months)

	Dependent variables: Other care arrangements		
	Grandparents normally care (1)	Grandparental care hours (2)	Other care arrangements (3)
Childcare coverage below 3 years	-0.0312 (0.1406)	-1.4951 (2.3776)	-0.1606* (0.0913)
Observations	91,501	51,592	93,750
Mean of dep. var	0.4635	3.3243	0.1446
SD of dep. var	0.4987	6.9805	0.3517

Notes: All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). Robust standard errors clustered at county level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Own calculations based on data from the KiBS, the Federal Statistical Office Germany and the INKAR database.

Table A.7: Effects of an increase in childcare coverage on fathers' involvement (children aged 12 – 35 months)

	Dependent variables		
	Division of childcare on a weekday (continuous, only mother [1] to only father [5]) (1)	Mother is main caregiver (2)	Proximity to father's workplace is important for Kita choice (3)
Childcare coverage below 3 years	0.1367 (0.2303)	-0.1762 (0.1641)	0.0434 (0.2836)
Observations	57,612	57,612	25,052
Mean of dep. var	2.2844	0.6604	0.3406
SD of dep. var	0.6620	0.4736	0.4739

Notes: All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). Robust standard errors clustered at the county level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Own calculations based on data from the KiBS, the Federal Statistical Office, and INKAR.

Table A.8: Long-run effects of childcare expansion on fathers' and mothers' employment

	Dependent variables: Parental Employment			
	Extensive (> 0 hours) (1)	Full-time (> 34 hours) (2)	Part-time (long) (20 – 34 hours) (3)	Part-time (short) (1 – 19 hours) (4)
Panel A: Fathers' employment when child is 3 to 5 years old				
Childcare coverage below 3 years	-0.0536 (0.0668)	-0.0720 (0.1107)	0.0352 (0.0877)	-0.0168 (0.0301)
Observations	59,499	59,499	59,499	59,499
Mean of dep. var	0.9616	0.8788	0.0731	0.0097
SD of dep. var	0.1922	0.3263	0.2603	0.0978
Panel B: Mothers' employment when child is 3 to 5 years old				
Childcare coverage below 3 years	-0.1302 (0.1364)	0.0734 (0.1489)	-0.1117 (0.1760)	-0.0920 (0.1156)
Observations	62,751	62,751	62,751	62,751
Mean of dep. var	0.7714	0.2553	0.4037	0.1124
SD of dep. var	0.4200	0.4360	0.4906	0.3158
Panel C: Fathers' employment when child is 6 to 9 years old				
Childcare coverage below 3 years	-0.0316 (0.0651)	-0.0392 (0.0983)	0.0074 (0.0861)	0.0002 (0.0282)
Observations	62,300	62,300	62,300	62,300
Mean of dep. var	0.9661	0.8909	0.0657	0.0095
SD of dep. var	0.1811	0.3118	0.2477	0.0971
Panel D: Mothers' employment when child is 6 to 9 years old				
Childcare coverage below 3 years	0.0382 (0.0902)	0.2270* (0.1250)	0.0406 (0.1418)	-0.2295** (0.1006)
Observations	67,228	67,228	67,228	67,228
Mean of dep. var	0.8611	0.2783	0.4453	0.1380
SD of dep. var	0.3459	0.4482	0.4970	0.3449

Notes: All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). Robust standard errors clustered at the county level are given in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Source: Own calculations based on data from the KiBS, the Federal Statistical Office, and INKAR.

Table A.9: Sensitivity checks: Effects of childcare expansion on subsequent fertility

	(1)	(2)	(3)	(4)
	Dependent variable:			
	Anchor child aged ... has a younger sibling			
	0-35 months (full sample)	0-11 months	12-23 months	24-35 months
Childcare coverage below 3 years	0.003 (0.088)	0.059 (0.104)	0.048 (0.089)	-0.036 (0.168)
Observations	100290	23391	42155	34744

Notes: All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). Robust standard errors clustered at county level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Own calculations based on data from the KiBS, the Federal Statistical Office Germany and the INKAR database.

Table A.10: Sensitivity checks: Effects on childcare attendance (age 12 – 35 months) for varying birth cohorts

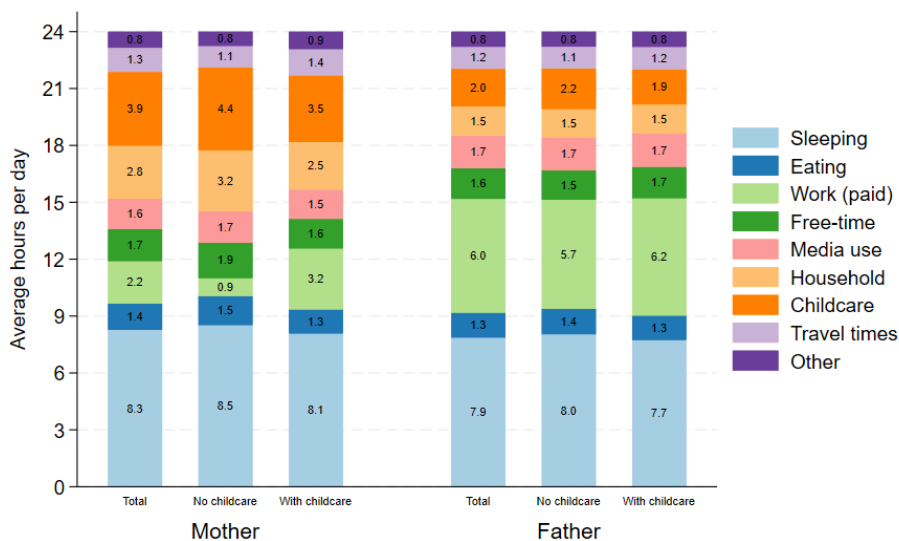
	(1)	(2)	(3)	(4)
	Dependent variable: Childcare attendance (age 12 – 35 months)			
	Samples of different birth cohorts			
	2009-21 (main sample)	2011-21	2010-21	2009-2020
Childcare coverage below 3 years	0.6434*** (0.1418)	0.6188*** (0.1636)	0.6291*** (0.1433)	0.6567*** (0.1404)
Observations	93,541	82,391	90,960	92,204

Notes: All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). Robust standard errors clustered at county level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

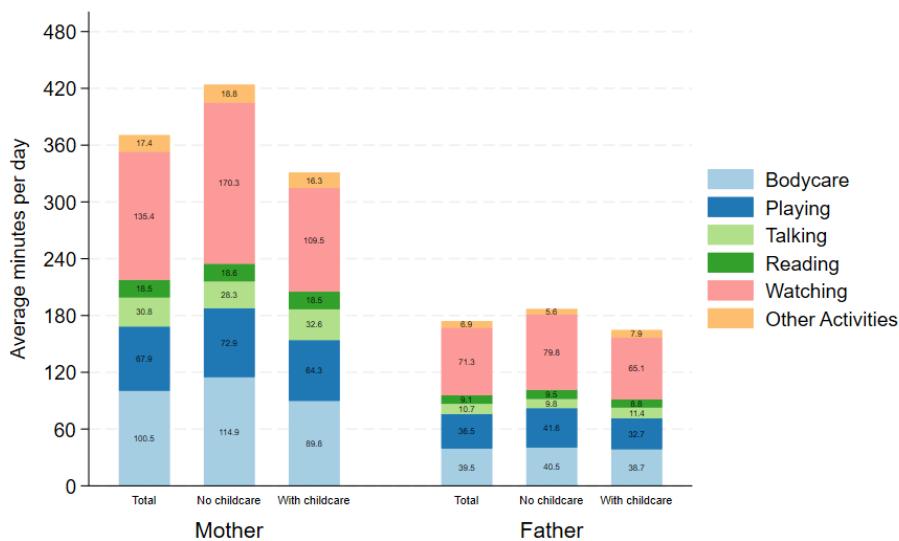
Source: Own calculations based on data from the KiBS, the Federal Statistical Office Germany and the INKAR database.

Figures

Fig. A.1: Parents total time-use and time spend with childcare



A: Parental time-use by childcare attendance

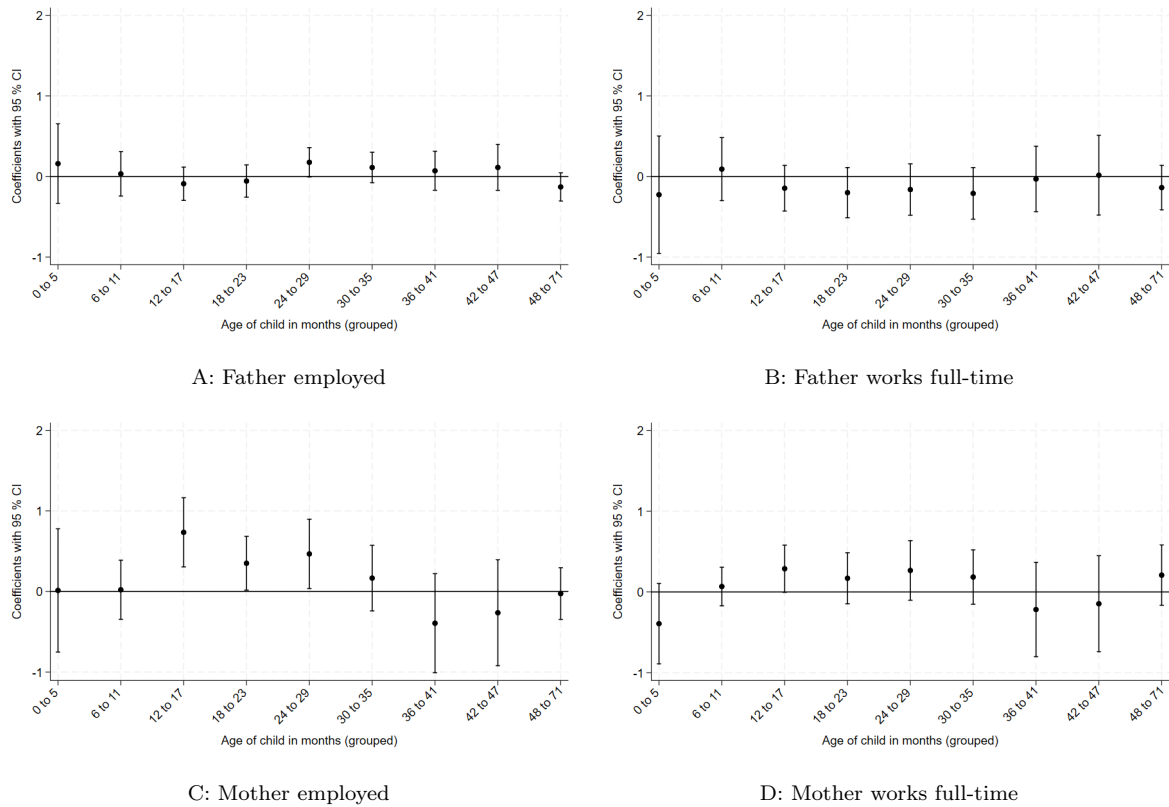


B: Parental childcare activities by childcare attendance

Notes: Based on 2022 time-use survey data, the graphs show how mothers and fathers allocate weekday time, overall and by childcare attendance of the youngest child (aged 1–2). Subfigure A reports only main activities, which sum to 24 hours. Figure B includes both main and secondary childcare activities, resulting in overall childcare time that exceeds that in Subfigure A. Childcare in this figure includes only the activities explicitly stated by parents as their main or secondary activity; it does not account for other activities during which the child is present. Therefore, the time spent together with the child each day would be higher. Means are based on 2,156 observations.

Source: Own illustration based on data from the survey of the time use of the population 2022 of the statistical offices of the Federation and the Länder.

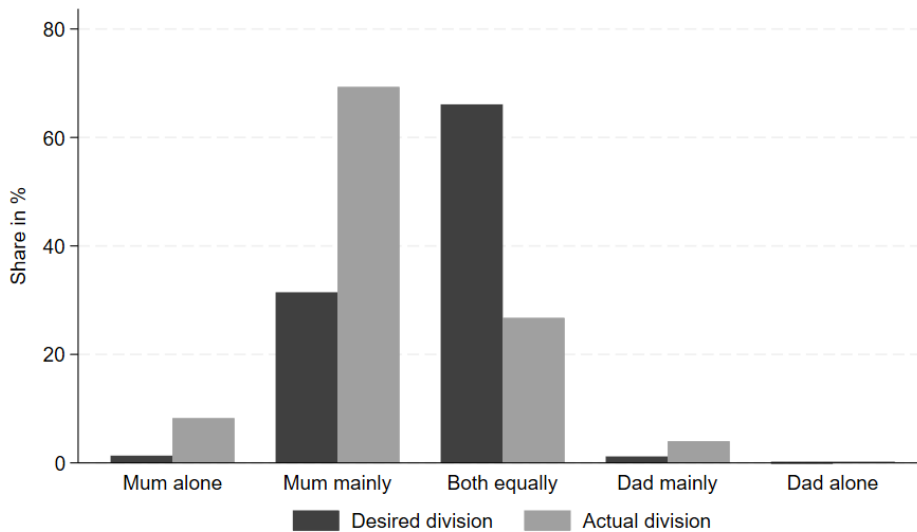
Fig. A.2: Effects of childcare expansion for children under age three on parental employment



Notes: Coefficient estimates with 95% CI of the childcare rate on parental employment (extensive and intensive margin). Estimates stem from separate estimations of eq. 1 by age. All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2).

Source: Own illustration based on data from the KiBS, the Federal Statistical Office, and INKAR.

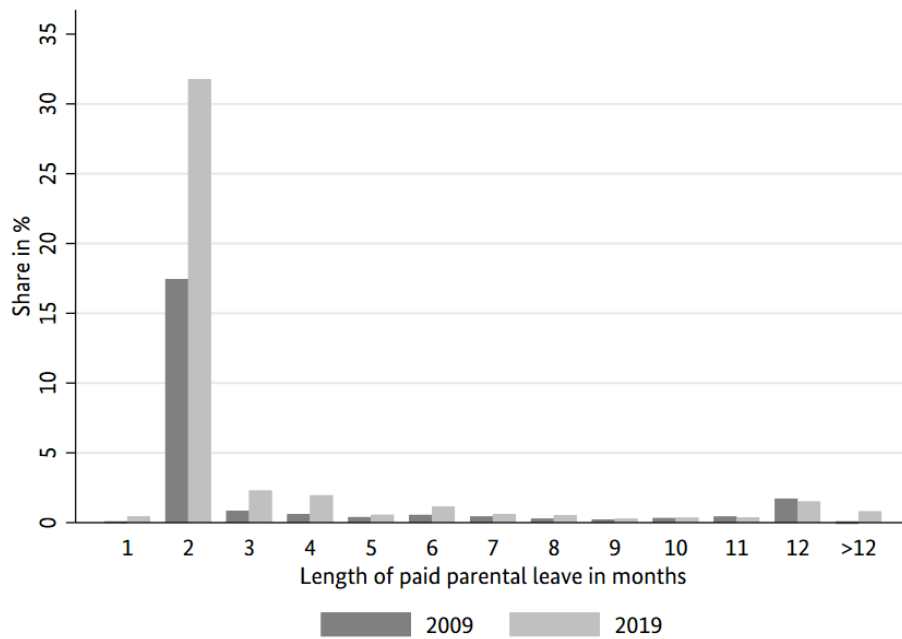
Fig. A.3: Actual and desired division of childcare



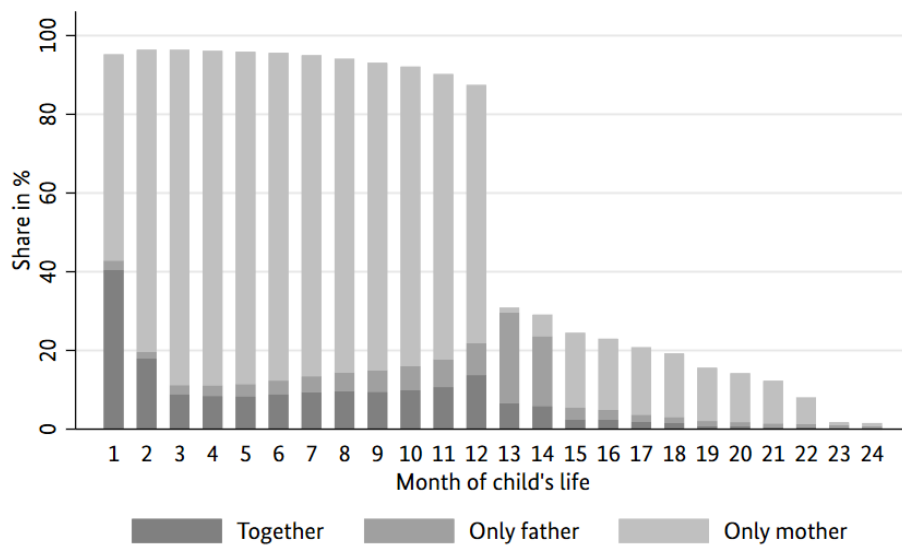
Notes: The figure illustrates the division of childcare that mothers express as their preference, alongside the actual distribution of childcare responsibilities between parents, represented as shares of each category. This information is derived from the 2022 survey.

Source: Own calculation based on KiBS data.

Fig. A.4: Paternity leave in Germany



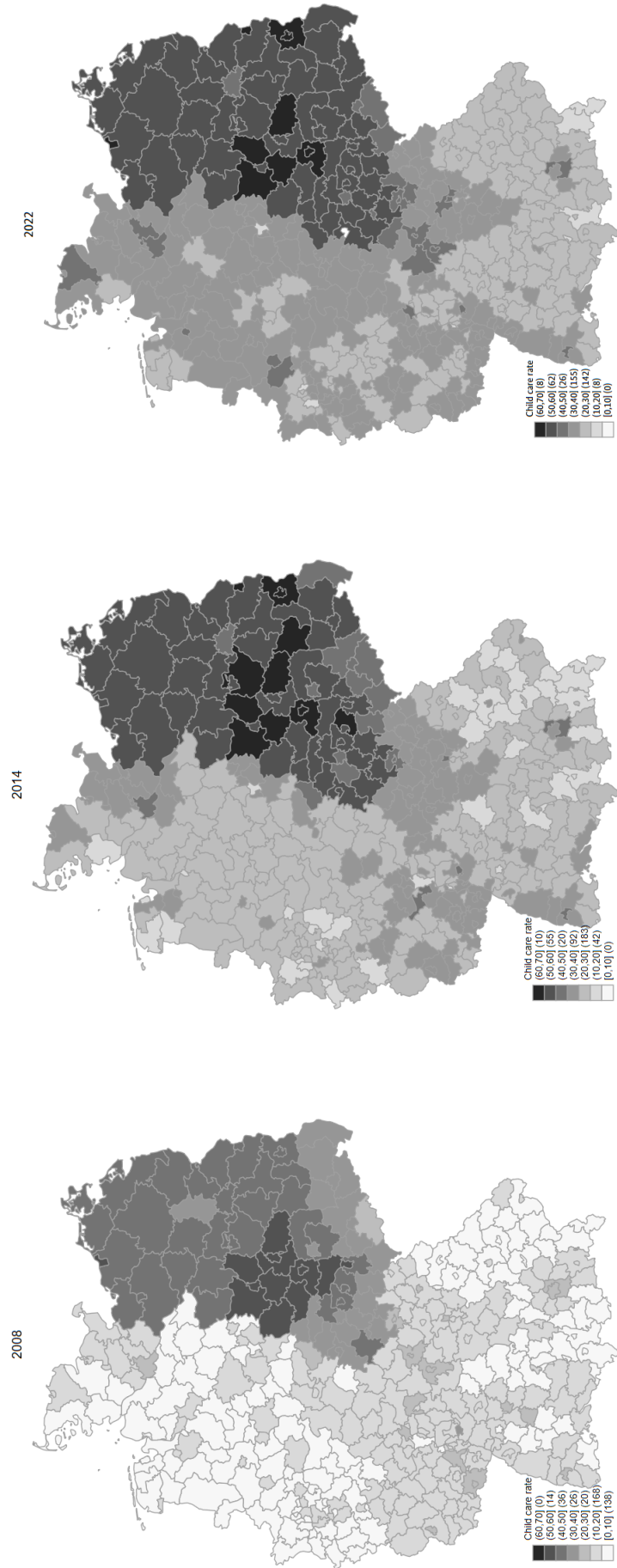
A: Duration of paternity leave benefits for children born 2009 and 2019



B: Allocation of parental leave by child age in 2019

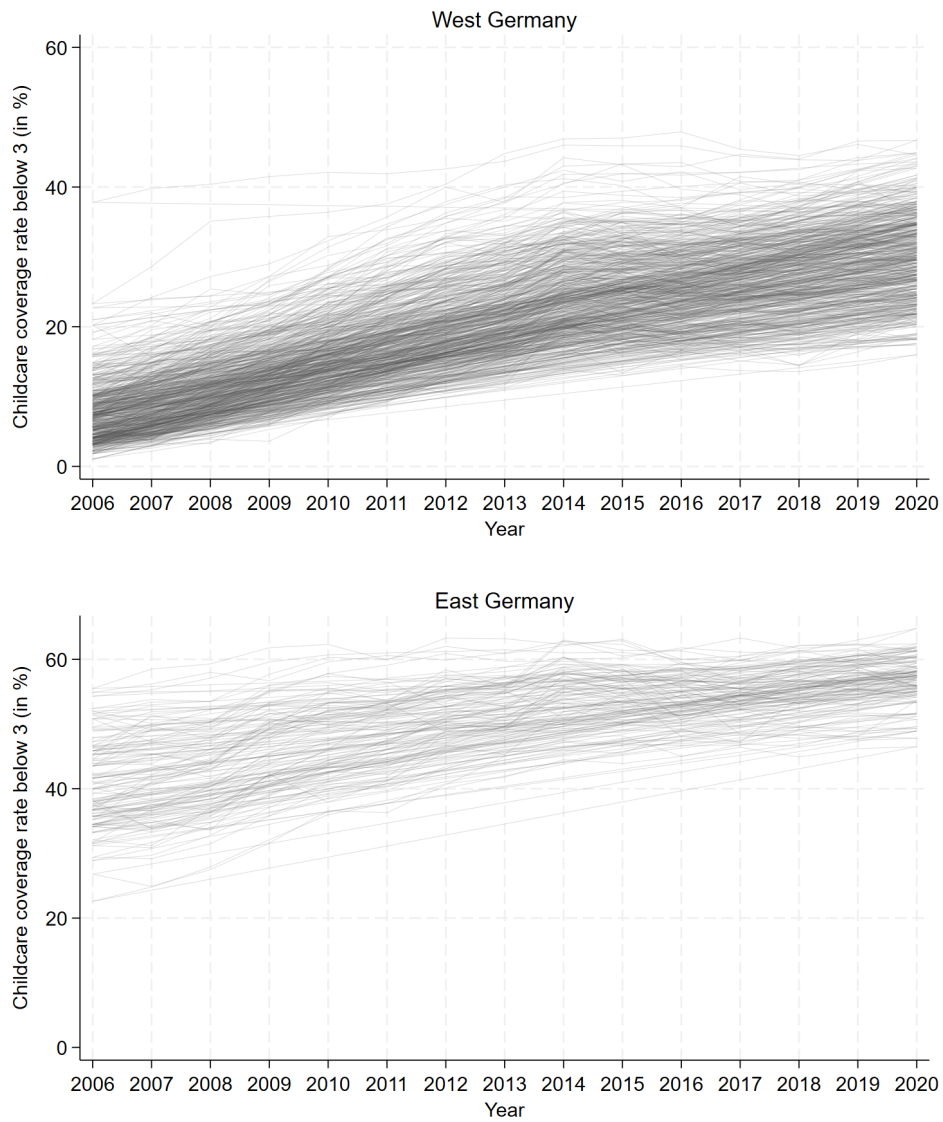
Source: Customized statistics on parental leave benefit receipts from the Federal Statistical Office retrieved from Brehm et al. (2022).

Fig. A.5: Childcare coverage rates for children under the age of three over time by county



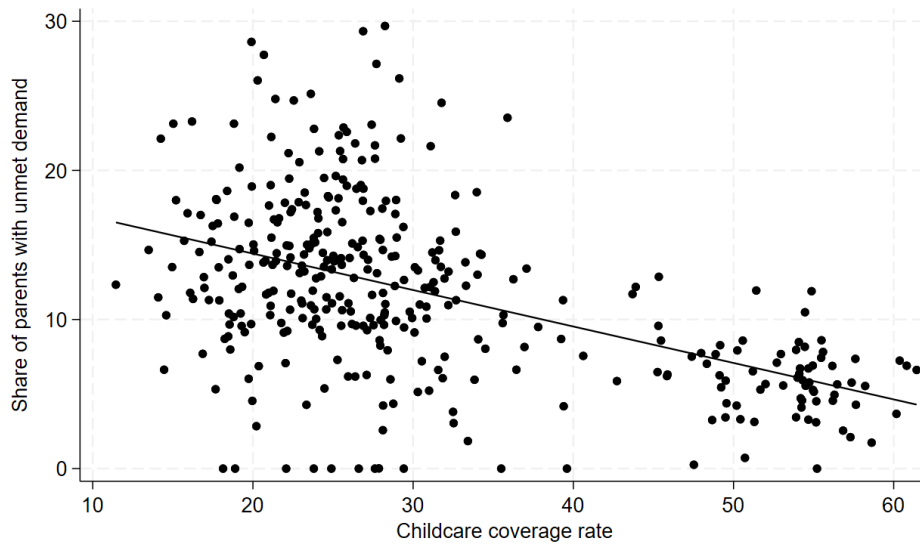
Source: Own illustration using data from the Federal Statistical Office.

Fig. A.6: Childcare coverage rates for children under the age of three over time by county



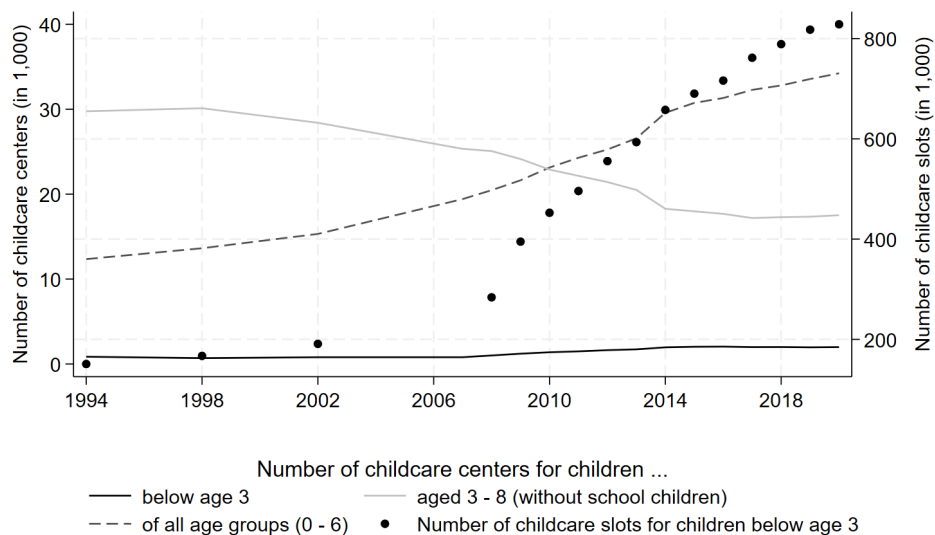
Source: Own illustration using data from “*Kinder und tätige Personen in Tageseinrichtungen und in öffentlich geförderter Kindertagespflege*” for the years 2006 to 2020 of the Federal Statistical Office.

Fig. A.7: Excess demand and childcare coverage rate on county level



Notes: The figure shows the share of parents with unmet demand (parents indicate demand for childcare but child is not attending childcare) and the share of children attending childcare on a county-level collapsed across the years 2012 to 2022.
Source: Own calculation based on KiBS data.

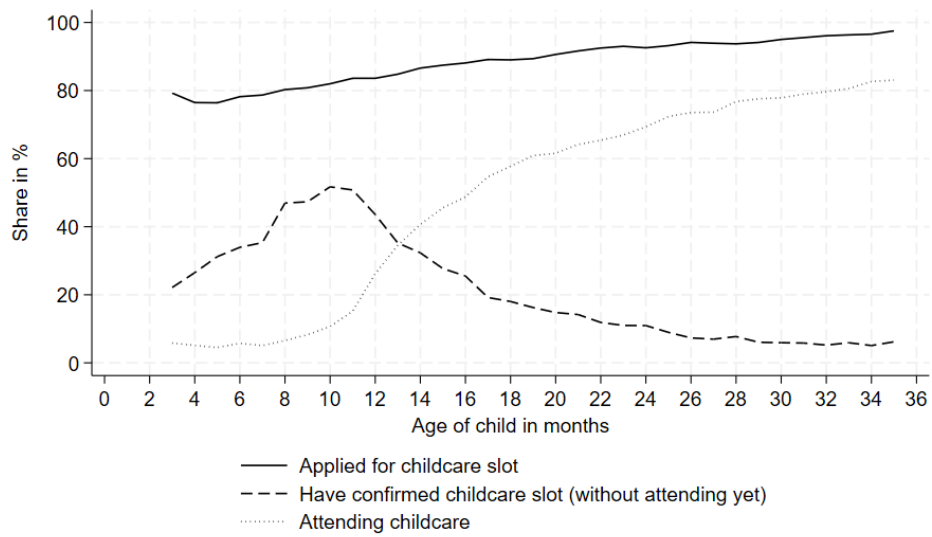
Fig. A.8: Number of childcare centers and slots over time



Notes: The figure shows the the number of childcare centers for different age groups and the number of slots for children below age three. Childcare centers for all age groups include both groups for children under three and groups for older children.

Source: Statistisches Bundesamt (1994 - 2020).

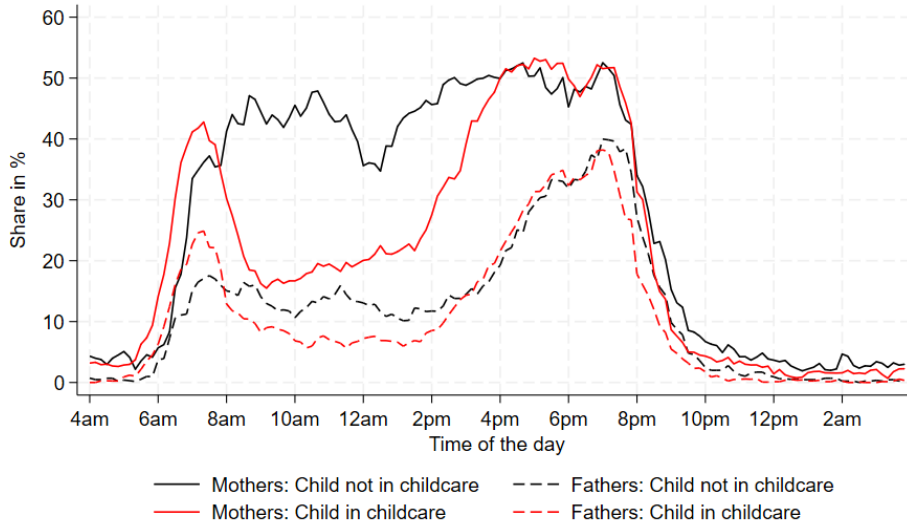
Fig. A.9: Timing of application for children and attendance in Germany



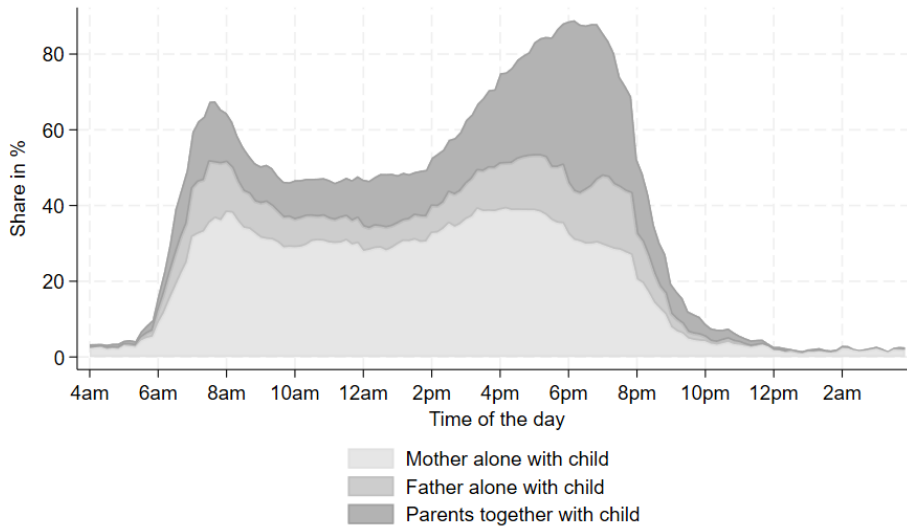
Notes: The figure shows the share of parents who have submitted at least one application for a childcare slot, the share who have secured a confirmed slot (though the child has not yet started attending), and the share whose child is already attending childcare, by the child's age in months.

Source: Own calculation based on KiBS data.

Fig. A.10: Daily time use patterns by childcare attendance



A: Parental childcare by childcare attendance

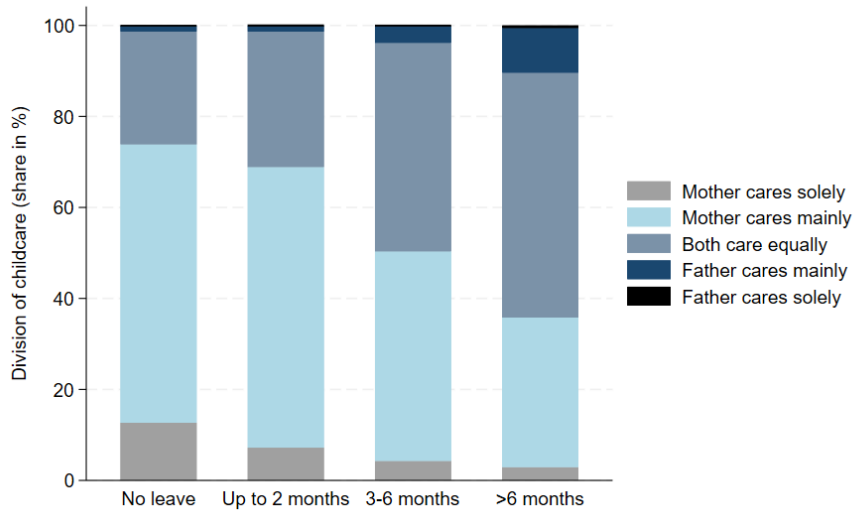


B: Time spent with child

Notes: Subfigure A shows the share of parents reporting a childcare activity (either as a main or secondary activity) throughout the day. The shares of mothers and fathers are presented, grouped by whether the youngest child attends childcare. Subfigure B displays the share of parents who reported having a child present during their activities over the day. It illustrates both the shares of mothers and fathers who stated they were alone with the child, as well as the share where both the child and the partner were present during the activity. Both figures are based on 2022 time-use survey data, considering parents with the youngest child aged one to two years old, surveyed on a weekday, resulting in 2,156 observations.

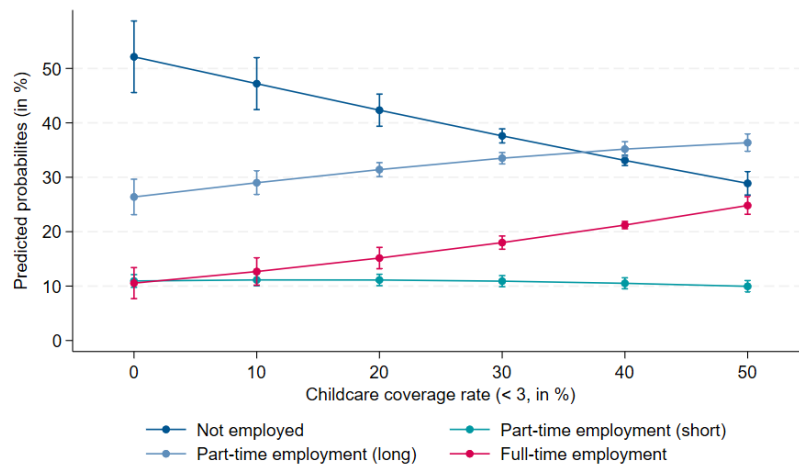
Source: Own illustration based on data from the survey of the time use of the population 2022 of the statistical offices of the Federation and the Länder.

Fig. A.11: Division of childcare by fathers' parental leave length

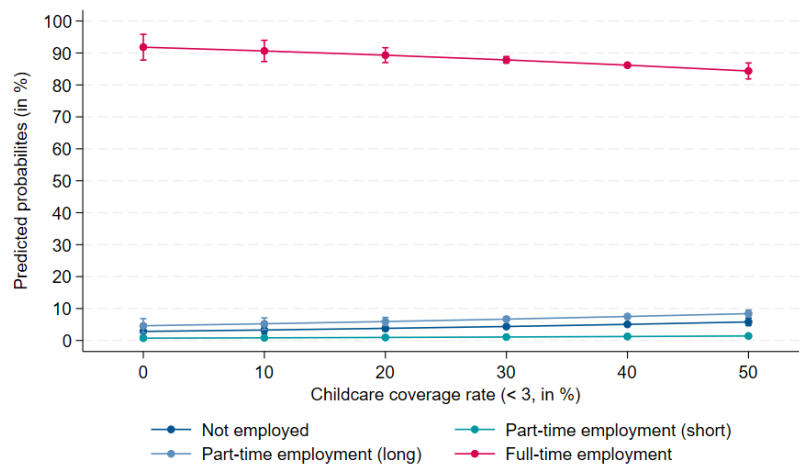


Notes: The figure shows the average division of parental childcare when the child is between 12 and 35 months old by the take-up and duration of fathers' parental leave.
Source: Own calculations based on KiBS data.

Fig. A.12: Predicted probability of parental employment when child is 12 to 35 months old conditional on childcare coverage rate for children below 3 years



A: Maternal employment

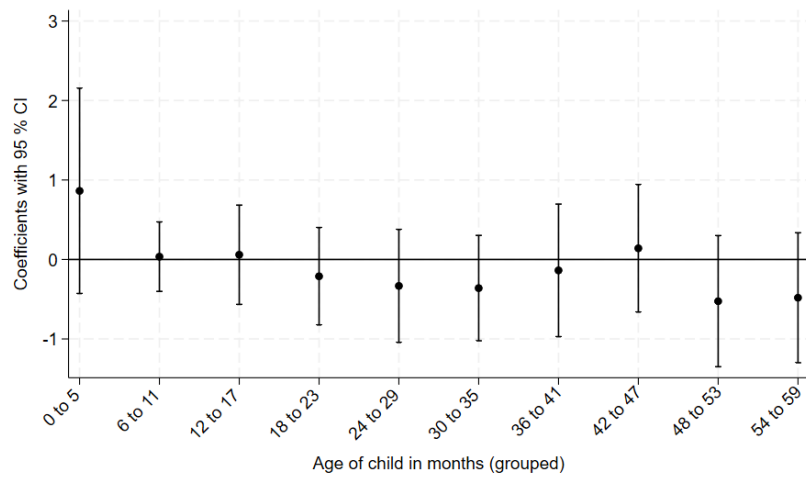


B: Paternal employment

Notes: Coefficient estimates with 95% CI of the childcare rate on parental employment categories conditional on different childcare coverage rates. Estimates stem from separate estimations of eq. 1 using ordered logit models. All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2). The scale of the y-axes differs between subfigures A and B.

Source: Own illustration based on data from the KiBS, the Federal Statistical Office, and INKAR.

Fig. A.13: Effects of childcare expansion for children under age three on mothers' role as main caregiver



Notes: Coefficient estimates with 95% CI of the childcare rate on an indicator of mothers being the main or sole caregiver on a weekday. Estimates stem from separate estimations of eq. 1 by age. All models include county and birth year fixed effects, as well as individual-level and county-level controls (see Appendix Table A.2).

Source: Own illustration based on data from the KiBS, the Federal Statistical Office, and INKAR.