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ABSTRACT

The Impact of Family Policies on Maternal Health*

This paper examines the impact of two major family policies on maternal health, using rich claims data from the German Pharmacoepidemiological Research Database (GePaRD). We report a significant short-term impact of childcare on diagnosed respiratory diseases and heterogeneous effects on mental health. Childcare tends to reduce diagnoses of mental disorders and the use of psychotherapy among mothers with a history of mental disorders before childbirth, those with a strong attachment to the labor market and those who live in counties with low childcare provision. Conversely, low-educated mothers exhibit short-term increases in mental disorders and antidepressant use. Parental benefits alter the timing of respiratory diseases and slightly reduce mental disorders and their treatments in the first year after childbirth.

JEL Classification: I12, I18, J13, J18
Keywords: maternal health, family policies, claims data

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1 Introduction

The early years of motherhood are often accompanied by health challenges (Saxbe et al., 2018; Ahammer et al., 2023; Dehos et al., 2024). A key aspect that will likely affect maternal health in this phase is the organization of work and family. In some countries, many mothers stay at home until their youngest child is three years old and then return to work. In other countries, mothers tend to return to work during the first year after childbirth, as children enter early childcare.[1] In West Germany, the return to work has largely shifted from a child's third to their first birthday, supported by expanded public childcare and an amended parental leave system. This transition has a major impact on the daily lives of families with young children. While there is evidence of the effects of childcare and parental leave reforms on child development (e.g., Havnes and Mogstad, 2011b; Cornelissen et al., 2018; Drange and Havnes, 2019; Fort et al., 2020), maternal employment (e.g. Baker et al., 2008; Lalive et al., 2014; Müller and Wrohlich, 2020), and fertility (e.g., Bauernschuster et al., 2016; Raute, 2019), less is known about whether this transition benefits maternal (mental) health or, conversely, introduces new stressors with negative health consequences (e.g., Barschkett and Bosque-Mercader, 2024; Chuard, 2023).[2]

In this paper, we leverage two major policy changes in Germany as a source of quasi-experimental variation. The first policy aimed to improve access to childcare, leading to a remarkable increase in coverage for children under three in West Germany, from 8% in 2006 to 31% in 2020. The scope of the expansion varied across time and space, allowing us to apply a generalized difference-in-differences (DiD) approach that exploits within-county variation in the childcare coverage rate (e.g., Havnes and Mogstad, 2011a; Bauernschuster et al., 2016; Felfe and Lalive, 2018; Müller and Wrohlich, 2020). We use a two-way fixed effects (TWFE) estimator in the main specification and, as a robustness check, a new estimator by De Chaisemartin et al. (2024). To identify the causal effect of childcare, we divide the reduced-form estimate of the main specification by a first-stage estimate obtained from a supplementary dataset. As a second policy, we examine Germany's 2007 parental benefit reform, which substantially increased benefits for high-earning mothers and introduced a fathers' quota. Since eligibility for the new parental benefit system is based on the child's date of birth, we adopt a binary DiD approach (similar to Raute et al., 2022). In the online appendix, we additionally analyze the introduction of cash-for-care benefits for parents who forgo formal childcare. Collischon et al. (2022) has shown that this reform only slightly reduced maternal employment and the use of childcare. Consequently, we find very small health effects.

Our analysis relies on a customized dataset based on the German Pharmacoepidemiological Research Database (GePaRD) for the years 2004 to 2019. Covering information from four major statutory health insurance providers and 17% of the German population, GePaRD includes detailed information on inpatient and outpatient diagnoses, medical procedures, prescriptions, and basic demographics (Haug and Schink, 2021; Scholle et al., 2022). This allows us to accu-

[1] According to the OECD Family Database, the Baltic states, Austria, and some Central European states are examples of the first group, whereas Belgium, Ireland, New Zealand and the United States are examples of the second group (Chart LMF1.2.C and LMF1.2.F.)

[2] Leave extensions in the first few months after birth have been studied more extensively (e.g., Bütikofer et al., 2021).

rately identify pregnancies that end in live births and therefore mothers (Wentzell et al., 2018; Schink et al., 2020). We focus on the first live birth observed in the data. The outcomes of interest include diagnoses of depression and other mental disorders and their primary treatment, referring to antidepressant prescriptions and psychotherapist visits. Recent work on parental health dynamics around childbirth shows that motherhood is associated with a long-term increase in antidepressant use (Ahammer et al., 2023; Dehos et al., 2024). We consider diagnoses of headaches and painkiller prescriptions, as both may be related to stress. We also consider diagnosed respiratory diseases and antibiotic prescriptions, as respiratory diseases account for 20% of all days absent from work among women (Hildebrandt-Heene et al., 2023). Respiratory diseases can spread more easily when the immune system is weakened by physical exhaustion, sleep deprivation, or stress (e.g., Seiler et al., 2020), and often involve bacterial infections that require antibiotics. To understand whether changes in healthcare use affect the likelihood of diagnoses and treatment, we analyze the number of physician visits and diagnoses per quarter.

The reforms' health effects may be mediated through changes in employment decisions or they may be direct results. The childcare expansion increased maternal employment (Müller and Wrohlich, 2020; Huber and Rolvering, 2023; Lim and Duletzki, 2023), while the parental benefit reform led to a lower probability of employment in the first year after birth and a higher one between the child's first and third birthday. It set an anchor point for mothers' return to the labor market at the child's first birthday (e.g., Spiess and Wrohlich, 2008; Kluve and Schmitz, 2018; Bergemann and Riphahn, 2010; Frodermann et al., 2023; Bergemann and Riphahn, 2023; Frodermann et al., 2023; Fitzenberger and Seidlitz, 2024).

Both reforms shift the incentives to resume work from the child's third to their first birthday. An early return to work can adversely affect health, therefore a moderate increase in leave of less than one year has been shown to benefit maternal health (e.g., Chatterji et al., 2013; Bütikofer et al., 2021). Especially when the child is very young, the dual role of work and parenting can be stressful and may reduce time for health-protective behaviors such as sleep. Herbst and Tekin (2014) argue that childcare may worsen low-skilled mothers' mental health if it pushes them into employment. Since these mothers are more likely to have jobs with high external determination and fixed shifts, we argue that they are particularly at risk. Maternal employment however also increases household income, which can have a positive impact on health. In addition, employment is generally associated with social connectedness, financial independence, and higher self-esteem (e.g., Pohlan, 2019). This may be particularly important for women with a strong prenatal work identity or who are committed to their occupation. Ahammer et al. (2023) and Chuard (2023) report negative mental health effects for a reform that extends leave from 1.5 to 2.5 years. They interpret this as a consequence of prolonging the mental health challenges of entering motherhood and the enforcement of women's roles as primary caregivers. It may also be more difficult to return to work after an absence of three years as opposed to one year.

Childcare reduces mothers' overall workload – if it does not affect labor market participation or hours worked. This may relieve stress and health risks by allowing more time for rest, exercise, healthy nutrition, and relationship maintenance. The same is true for shared

parental leave after childbirth, as encouraged by the parental benefit reform. This can increase fathers' involvement in caregiving and their support during the initial postpartum recovery period (Hübener et al., 2024; Persson and Rossin-Slater, 2024). Both channels may be particularly relevant for mothers with pre-existing mental disorders, as they face a higher risk of postpartum depression (Silverman et al., 2017) and rely more heavily on adequate self-care measures to maintain their mental health. The parental benefit reform can further impact health by changing financial constraints. Mothers with relatively high prebirth earnings have higher benefits after the reform, which may have positive health effects.

The expansion of institutional childcare also implies a shift from informal to formal care. As institutional care involves larger groups of children and increased interactions, it leads to more infections in children (Barschkett, 2024) as well as mothers (Barschkett and Bosque-Mercader, 2024). A shift from informal to formal care also requires a more structured daily routine, which can either support mothers' mental health or increase stress linked to a fixed schedule with an infant.[3]

Our results indicate a strong short-term impact of childcare attendance on respiratory diseases, which is likely to affect wellbeing and absence from work. This also reinforces the credibility of our empirical approach, as it is consistent with previous research on the relationship between childcare and health (Barschkett and Bosque-Mercader, 2024; Barschkett, 2024), as well as the transmission of respiratory diseases in families (Daysal et al., 2021). We observe a similar pattern for parental benefits. Given that more mothers return to work exactly one year after giving birth, the reform reduces the demand for childcare before the first birthday and increases it for children aged one to three. This translates into fewer respiratory diseases before the age of one, followed by a significant increase thereafter. To a lesser extent, this is also evident in antibiotic prescriptions, which develop in parallel with respiratory diseases for both reforms.

The overall impact of childcare on diagnoses of depression and other mental disorders and prescriptions of antidepressants is mostly insignificant. There are slight detrimental effects at age one and larger beneficial effects at age three. For every 100 additional childcare slots, 2.6 fewer mothers are diagnosed with a mental health condition – such as an adjustment disorder – when their child is three years old. The IV coefficient for the effect of childcare attendance on mental disorder diagnoses, applying a two-sample, two-stage least squares approach, is of similar magnitude (-2.5 percentage points). The impact of childcare on the probability of visiting psychotherapists is significantly negative across all ages, with the strongest effect at age three (IV coefficient: -2.1 percentage points). The analysis of parental benefits provides coefficients close to zero. We observe a small decrease for psychotherapy in the first year after birth, as well as for painkillers when the child is two years old.

[3]Another stressor, particularly in regions with low childcare use, may be social norms that stigmatize mothers who use early childcare. Labels common in the early 2000s such as "Rabenmutter" (raven mother, for working mothers) or "Fremdbetreuung" (care by a stranger, for daycare centers) illustrate the social norms under which the transition to widespread use of early childcare in West Germany was carried out (e.g., Boelmann et al., 2024).

Subsample analysis reveals four insights: First, for women with low education (but attachment to the labor market), the childcare expansion has significantly adverse effects on mental health, primarily in the short term, leading to increased rates of depression, mental disorders, and antidepressant use. Low levels of education are likely to correlate with rigid work schedules, greater economic dependency, and less identity-forming work. An early return to these jobs has negative mental health consequences for some mothers. The favorable health effects of earned income do not outweigh these negative short-term health effects. For low-educated mothers with a strong attachment to the labor market, the parental benefit reform tends to have a small beneficial mental health effect. Reduced financial stress and the option of taking a year's leave may drive this finding.

Second, medium-educated women and those who live in counties with relatively high childcare coverage (those who would not be prioritized if slots were scarce) tend to be diagnosed with headaches or to be prescribed pain medication more often when they use early childcare. Huber and Rolvering (2023) find that the availability of childcare leads to shorter leave periods and more continuous careers, especially for medium-skilled women. We interpret the effects on headaches and painkillers as suggestive evidence that the early care and work model comes at the cost of stress for medium-skilled mothers, particularly in regions where compliers would not be the first in line to get a place. We do not find any mental health effects of the parental benefit reform for this group.

Third, at age three, childcare has beneficial (mostly significant) mental health effects as measured by diagnoses of depression and other mental disorders, antidepressant prescriptions, and psychotherapy among mothers who live in countries with low childcare coverage (who are therefore first in line) and among those who are strongly attached to the labor market before pregnancy. For highly educated mothers, childcare reduces diagnoses of other mental disorders and psychotherapy. Taken together, we interpret these findings as evidence that women who are eager to return to work – such as those in high-skilled occupations and those with a strong work commitment – experience health benefits from an earlier return to work through better access to childcare. This benefit may reflect a direct effect of shorter leave (see Chuard, 2023 and Ahammer et al., 2023 for a related finding). Given the timing of the effects, we however find it also plausible that this benefit stems from avoiding a potentially difficult re-entry into the labor market after a three-year absence.

Fourth, mothers with a history of mental disorders notably benefit from expanded childcare availability in terms of their mental health. Access to childcare significantly reduces the likelihood of antidepressant prescriptions, depression, other mental disorders, and psychotherapy at all ages. At-risk mothers appear to benefit particularly from relief in care duties and possibly also from a structured schedule and increased social interaction. For the parental benefit reform, the evidence is less conclusive: if anything, the reform tends to have only small beneficial effects for at-risk mothers.

Our paper contributes to the existing literature on the health effects of family policies on several dimensions: First, we study two reforms with one database (a third in the online appendix), capturing important features of a broad social change in the organization of work

and family life in recent decades. This includes previously unexplored health effects of the parental benefit reform.

Second, we look at important heterogeneities to uncover, for example, differential effects between highly educated mothers and those with low or medium levels of education, as well as the beneficial role of childcare for at-risk mothers. We complement this analysis with first-stage estimates and compute two-sample IV coefficients for the effect of childcare use, which most studies on childcare expansion do not do. This allows us to quantify the effect of childcare use on health outcomes. More importantly (despite caveats due to the small sample size in the first-stage data), we gain additional insights on subgroup-specific reduced-form effects to learn whether they are driven by a high take-up or if they are a strong direct effect of childcare use.

Third, compared to closely related projects, we study additional relevant outcomes to provide a more conclusive picture of maternal health. In the childcare analysis, we add outcomes such as prescriptions of antidepressants, painkillers, and antibiotics, as well as psychotherapy use (cf. Barschkett and Bosque-Mercader, 2024). Prescriptions are an important complement to diagnoses, as they indicate a health condition that a physician deems serious enough to recommend or authorize medical intervention. The use of diagnoses as well as prescriptions allows us to examine how they are related.[4] In the parental benefit analysis, we extend the evidence by adding pain-related outcomes and psychotherapy, complementing research by Chuard (2023) and Ahammer et al. (2023) on the extension of parental leave in Austria. The decline in psychotherapy, along with a decrease in diagnoses of mental disorders other than depression, highlights the importance of considering outcomes that may capture women's help-seeking behavior in crises that are triggered by difficult life situations, extending beyond diagnoses of depression and antidepressant prescriptions. In addition, psychotherapy takes time and appears sensitive to mothers' time constraints, which are altered by childcare and formal employment commitments. This dimension has not yet been studied in the broader family policy literature.

Fourth, this study and its companion Dehos et al. (2024) are the first research in the non-medical literature to use GePaRD, a rich database with inpatient and outpatient data that enables precise identification of mothers and pregnancy timing. Different to previous studies, we therefore do not need to rely on the strict use of prenatal care (e.g., Barschkett and Bosque-Mercader, 2024) and can identify the exact end of pregnancy, which is crucial for the DiD design. The data also allows the analysis to start as early as 2005 to cover the years of particularly strong childcare expansion. Finally, to check the robustness of the heterogeneity analysis, we implement a new estimator by De Chaisemartin et al. (2024).

The remainder of the paper is structured as follows: Section 2 provides an overview of key findings in the relevant literature. Section 3 introduces the institutional setting of the childcare

[4]Our results also relate to the literature on childcare and maternal health or wellbeing based on survey data, e.g., Baker et al. (2008), Herbst and Tekin (2014), Krauß and Rott (2024), Kröll and Borck (2013), Lombardo et al. (2018), Brodeur and Connolly (2013), Schober and Schmitt (2017), and Schmitz (2020). Survey data on life satisfaction and self-reported health is often less objective and more prone to reporting or desirability biases that might be particularly relevant in our setting, given the social expectations that come with motherhood. More importantly, survey datasets are too small to study relatively rare illnesses such as depression in the context of a reform.

expansion and the parental benefit reform. Section 4 describes the dataset and Section 5 the empirical strategy. Section 6 presents the results and Section 7 concludes.

2 Related Literature

In this section, we first provide an overview of the literature on maternal health and childcare. Second, we review studies examining the relationship between parental leave and health.

2.1 Childcare and Maternal Health

Evidence on the impact of childcare on maternal health has long been sparse and primarily derived from survey data. In their seminal work, Baker et al. (2008) draw on an extensive childcare expansion in Quebec, Canada, to study its impact on childcare use, labor supply, child development, and family wellbeing using survey data. The authors provide the first evidence of short-term negative effects of childcare on maternal health. A follow-up study by Haeck et al. (2022) shows that the negative mental health effects decrease over time and vanish by the time the child reaches elementary school age. Herbst and Tekin (2014) analyze the impact of childcare subsidies for low-income families in the USA, leveraging the distance to the nearest public social service agency as a source of quasi-exogenous variation. The authors also document a deterioration in maternal mental and physical health. They argue that low-educated mothers' increased employment due to childcare subsidies undermines their health status.

Two recent discussion papers provide additional evidence: Barschkett and Bosque-Mercader (2024) use outpatient diagnoses from all public insurance providers in Germany to estimate the effects of public childcare on maternal health. The authors identify mothers through check-up visits between 2010 and 2018 and follow them up to eight years postpartum. The findings indicate a short-term increase in respiratory diseases, alongside reductions in obesity, hypertension, and back pain. As potential channels for their findings, they discuss increased maternal employment due to childcare availability, leading to higher income and potentially higher bargaining power in the household, which may both improve maternal nutrition and health behavior. In addition, childcare institutions may serve as valuable sources of information on healthy behaviors, both through children's education and through direct engagement with mothers.

Using survey data from the German Socio-Economic Panel (SOEP), Krauß and Rott (2024) report a decline in self-reported maternal health among mothers of children under the age of three due to the public childcare expansion. Their findings indicate that this decline is associated with increased maternal concerns about their children's health, possibly linked to a higher incidence of respiratory diseases.[5] [6]

[5] For the early years of the childcare expansion in West Germany, a working paper by Kröll and Borck (2013) estimates the effect of childcare on mother-child interactions and maternal health. The authors document negative effects of childcare on self-reported physical wellbeing but not on mental health. Their findings are however based on a very small sample of about 800 observations.

[6] There is some evidence from developing countries: Richardson et al. (2018) conduct a randomized controlled trial in rural India and find positive effects on maternal health.

Also related to our work is the literature on parental wellbeing and life satisfaction. Even though mental health problems do not necessarily translate into lower life satisfaction, both concepts are highly correlated (Lombardo et al., 2018). Employing a triple DiD design, Brodeur and Connolly (2013) document an improvement in life satisfaction of low-educated parents and a decline in that of higher-educated parents in Canada following an expansion of childcare subsidies. Similar to our approach, Schober and Schmitt (2017) rely on county-level variation in childcare slots for toddlers in Germany. Using the SOEP, they find that childcare provision tends to increase overall life satisfaction and satisfaction with family life in East Germany but not in West Germany. Using an IV approach, Gambaro et al. (2024) show that childcare improves the integration of Ukrainian refugees in the labor market, leaving maternal wellbeing unaffected. Schmitz (2020) leverages the eligibility regulations for kindergartens for three-year-olds in Germany in the 1990s. Based on the SOEP, she finds positive effects on maternal life satisfaction.

2.2 Parental Leave Systems and Maternal Health

Studies that examine the introduction or extension of short periods of (paid) parental leave find mostly positive effects on maternal health.[7] Six weeks of paid parental leave or three months' unpaid parental leave in the USA (Chatterji and Markowitz, 2012; Bullinger, 2019; Lee et al., 2020), and 18 weeks in Australia (Whitehouse et al., 2013; Hewitt et al., 2017) improve maternal health compared to shorter leave periods. Bütikofer et al. (2021) analyze the long-term effects of introducing four months of paid leave and 12 months of unpaid leave in Norway. They find beneficial effects on a wide range of health outcomes, such as pain, overweight, self-reported mental and general health, as well as health-protective behavior. The effects are strongest for mothers who would have taken only a short period of unpaid leave prior to the reform, including many low-income mothers. Guertzgen and Hank (2018) and Avendano et al. (2015) focus on the long-term effects of being eligible for parental leave. Guertzgen and Hank (2018) estimate the effect of expanded maternity leave from two to six months in 1979 on sickness-related work absences among mothers in Germany. The results suggest that mothers affected by the reform have a higher incidence of absenteeism. The authors argue that selection may drive their findings, as sicker mothers might have become more likely to be employed after the reform. Avendano et al. (2015) study the long-term effects of access to maternal leave right after childbirth in several European countries. The results point to less depressive symptoms more than 25 years after childbirth for mothers who have been exposed to more generous maternity leave policies.

Evidence on extending paid parental leave to between six months and one year is limited, showing only negligible or null effects. Baker and Milligan (2008) study the effects of a parental leave extension from six to 12 months in Canada on breastfeeding and mental health. They report an increase in the length of breastfeeding but no effect on self-reported depression or other post-partum problems due to the reform. Lebihan and Mao Takongmo (2023) analyze the

[7] See Aitken et al. (2015) and Heshmati et al. (2023) for systematic reviews of the existing literature.

effects of a follow-up reform, which increased eligibility, income replacement, and paternal leave in Quebec on similar outcomes. They document prolonged breastfeeding and small beneficial effects on overall maternal health and depressive symptoms.

Finally, it has been shown that longer paid leave such as 2.5 instead of 1.5 years in Austria imply adverse mental health effects, as measured in claims data. Chuard (2023) documents a long-term increase in outpatient visits and prescriptions for mental health issues. Mothers with a child of poor health (proxied by low birth weight) however seem to be less affected by the negative mental health effects of extended parental leave. Ahammer et al. (2023) find that mothers induced by the reform to take longer leave have a higher probability of receiving antidepressant prescriptions. They report a small effect during the extended leave period, and a larger, more persistent effect in the years thereafter.

Maternal health may also be affected by reform components that target the partner. Father's leave, for instance, has been shown to reduce maternal sickness absence at work (Ugreninov, 2013; Bratberg and Naz, 2014), even in the long term (Fontenay and Tojerow, 2020). The option for fathers to take joint leave with their partner on a flexible, day-to-day basis has also been investigated by Persson and Rossin-Slater (2024), who find reduced physician visits for post-birth complications and lower antibiotic use in the first month after birth.

3 Institutional Setting

This section describes the policy changes we leverage in our analysis. We start with the childcare expansion and proceed with the parental benefit reform.

3.1 Public Childcare

In Germany, children typically start early childcare or traditional childcare (kindergarten) at the age of three.[8] A few children start earlier, before their first birthday, and some also start at age two. Childcare institutions in Germany usually offer up to nine hours of care on weekdays, but families can book fewer hours. In 2019, the contractually agreed childcare hours for children under the age of three amounted to approximately 38.5 hours per week (Destatis, 2019). Parental fees vary between communities and by household income, with exemptions for low-income households. In 2015, parents paid on average about 100 euro per month for a publicly subsidized childcare slot (Schmitz et al., 2017). Private institutional, non-subsidized, early childcare is virtually non-existent (Felfe and Zierow, 2018).

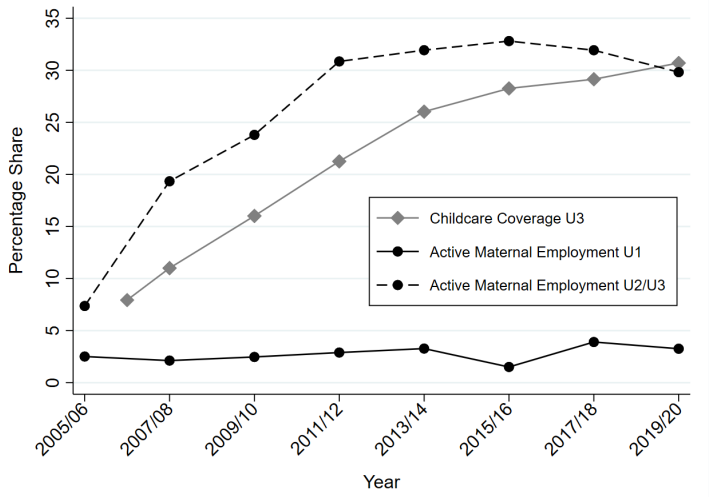
Over the last decades, the German government enacted several laws to increase the availability of childcare, responding to strong excess demand for the few existing places (Deutscher Bundestag, 2004, 2008). Over time, and at varying speeds, these measures have led almost all counties to expand public childcare. Figure 1 depicts the childcare coverage rate in West Germany for children under the age of three and the active employment rate of mothers with

[8] This includes groups for young children within childcare centers or care by childminders.

children in the respective age range for 2005/06 to 2019/20.[9] Between 2006 and 2020, childcare coverage for children below the age of three rose considerably from 8% to 31%, which is an increase of 288%. At the same time, the active employment rate among mothers with a first-born child aged one to two grew almost in parallel, while it remained unchanged for those with a first-born child below the age of one. Since 2014, the expansion of childcare has slowed, and active employment of mothers with a child aged one to two has stagnated at a level of $30-32\%$. Also note that newly available childcare slots remain in high demand and are typically filled immediately, reflecting the ongoing need for childcare. In 2016, for instance, almost 28% of children under the age of three attended childcare in West Germany, while 43% of parents reported a need for a care arrangement (Bock-Famulla et al., 2021).

Part of the correlation between childcare availability and maternal employment has been documented to be causal. Müller and Wrohlich (2020) find that a one percentage point increase in childcare coverage increased maternal employment by 0.2 percentage points. The effect is mainly driven by medium-skilled mothers taking up part-time employment. Huber and Rolvering (2023) confirm the finding of earlier part-time job re-entry and find that women in family-friendly work environments benefit from access to early childcare through career continuity. Lim and Duletzki (2023) find that childcare expansion reduces the so-called child penalty in earnings by facilitating employment in higher-paying firms and occupations.

Figure 1: Childcare coverage and active maternal employment in West Germany



Notes: This figure shows the childcare coverage rate for children under the age of three (U3) in West Germany, along with the share of mothers in active employment whose first-born child is under the age of one (U1) or one and two years old (U2/U3). Childcare data is from the German Statistical Office (2022) and employment information from the SOEP (Socio-Economic Panel), based on own calculations using data from West German federal states.

3.2 Parental Benefits

While most parents in Germany have had the right to take unpaid job-protected parental leave for the first three years after childbirth since the 1990s, the parental benefit system saw a major

[9]By *active employment* we refer to mothers who are gainfully employed or self-employed, excluding marginally employed people and those on maternal or parental leave.

reform in 2007. The goals were to provide financial support to all families, encourage maternal labor force participation, promote fathers' involvement in caregiving, and boost fertility rates (Kluve et al., 2008). Before the reform, parents were eligible for child-rearing benefits (*Bundeserziehungsgeld*).

The former regulation of child-rearing benefits applied to all children born before December 31, 2006, and parents could choose to receive a monthly benefit of 300 euro for two years (*regular amount*) or a monthly benefit of 450 euro for one year (*budget*). Eligibility was conditional on the net household income being less than 30,000 euro (22,086 for the *budget*) in the first six months after childbirth. Additionally, the parent receiving the benefit could not work more than 30 hours per week.[10] In 2006, 77% of all parents made use of the child-rearing benefits, of whom 96.7% were female – 13% opted for the *budget* and 87% for the *regular amount*; 18% received benefits for only six months and 43% for the full two years after childbirth (Kluve et al., 2008).

For children born on January 1, 2007 or later, the new parental benefit system came into effect. Irrespective of the other parent's income, benefits amounted to 67% of the recipient's net income in the previous year, with a maximum of 1,800 euro and a minimum of 300 euro.[11] Benefits were paid for 14 months, which could be divided freely between both parents. Parents were also allowed to receive benefits at the same time. If only one parent claimed parental benefits, (s)he was entitled to only 12 months (Bundestag, 2006; BMFSFJ, 2008). In the first quarter of 2007, almost 100% of parents received parental benefits. In 84% of the cases, only the mother received parental benefits, in 4.5% only the father, and in 11.5% both parents. Among the recipients, 84.2% of mothers received the maximum length of 12 months (or 14 months for single mothers), while 66.2% of fathers received benefits for only two months and 31.6% received the minimum amount of 300 euro.

In sum, the parental benefit reform led to a substantial increase in transfers for medium-earning and high-earning parents who previously received only 300-450 euro or no benefits at all. It also led to a decrease in transfers for individuals with a net monthly income below 500 euro, who now only receive 300 euro for one year instead of 300 euro for two years or 450 euro for one year. The reform increased the share of fathers receiving any benefits from 3.5% to 16%, though only 5.4% received them for more than two months (Kluve et al., 2008).

Compared to parental leave or benefit reforms in other countries, the parental benefit reform in Germany includes unique characteristics. It changed the benefit system in favor of high-income women and comes with a paternal quota that might affect maternal health through fathers taking leave. The reform reduced employment in the first year after birth (Kluve and Schmitz, 2018; Bergemann and Riphahn, 2023; Fitzenberger and Seidlitz, 2024) by setting an anchor point for return to work at the child's first birthday (Kluve and Schmitz, 2018), when benefits tend to expire (Bergemann and Riphahn, 2023). Frodermann et al. (2023) further provide evidence of a longer-term positive earning effect for high-skilled women. Fitzenberger

[10] For single parents, the income threshold was 23,000 euro for the *regular amount* and 19,086 euro for *budget*. In two-parent families, in principle, both parents could decide to reduce working hours and receive the child-rearing benefits (Bundestag, 2004)

[11] For parents with a monthly net income below 1,000 euro, up to 100% of the income was reimbursed.

and Seidlitz (2024) show that these positive effects decrease three years after birth when job protection ends and that the positive employment effect is primarily driven by high-income and previously unemployed women.

4 Data

For our analysis, we use the German Pharmacoepidemiological Research Database (GePaRD) as our main data source. We merge this data with county characteristics based on the mothers' place of residence. With SOEP data, we estimate the relationship between local childcare coverage and individual childcare attendance.

4.1 German Pharmacoepidemiological Research Database (GePaRD)

GePaRD contains process-generated data from four major statutory health insurers of roughly 25 million individuals for 2004-2019 (approx. 17% of the German population per data year) from all regions in Germany. The dataset contains demographic information, details on medication dispensations, as well as inpatient and outpatient diagnoses and services (Haug and Schink, 2021; Scholle et al., 2022). In Section B.2 in the online appendix, we provide additional institutional background on the German healthcare system.

For the analysis, we identify pregnancies ending with a live birth, and therefore mothers, applying the data-specific algorithms by Wentzell et al. (2018) and Schink et al. (2020). The algorithms consider inpatient and outpatient diagnoses, operations and procedures (OPS), and outpatient treatments (EBM).[12] We link each mother's place of residence one year after the estimated birth with the county's childcare information at that time.[13] Since childcare availability was at much higher levels in the early 2000s in East Germany and the corresponding expansion much less pronounced, we restrict the analysis to West Germany (and for reasons of comparability, also for the parental benefit reform). The final sample consists of 1,059,069 women who had their first live birth between 2005 and 2019.

Outcome Variables

To evaluate maternal health, we consider three types of outcomes: diagnoses, prescriptions, and healthcare use. All outcomes were preselected based on their relevance to mental health, stress, and infections. Using ICD-10 diagnosis codes, we first construct binary indicators for specific conditions, as defined in Table A.1 in the appendix. These dummy variables equal one if a mother receives one or more diagnoses associated with a given condition in a specific quarter. This includes both admission and discharge diagnoses from hospital stays, as well as outpatient diagnoses, which physicians must record once per quarter if the patient had at least one consultation (Haug and Schink, 2021).

[12] By identifying mothers based on pregnancies ending with a live birth, the sample includes only biological mothers and not adoptive mothers or non-childbearing mothers in same-sex couples.

[13] In principle, the place of residence in GePaRD corresponds to the actual place of residence; there may, however, be measurement errors stemming from delays in information transmission.

We start with respiratory diseases, as they are the leading cause of sick leave among women and have been shown to become more prevalent with increased childcare attendance (Barschkett, 2024). Next, we focus on stress-related outcomes such as depression and other mental disorders, including anxiety disorder, somatic symptom disorder, and adjustment disorder. We also look at headaches, as they are highly correlated with both respiratory diseases and mental disorders in our sample.[14]

In the second step, we focus on prescriptions related to the chosen diagnosis. GePaRD contains information on all medication prescribed by physicians, dispensed in a pharmacy, and reimbursed by a health insurance provider. We focus on antidepressants (ATC: N06A) as a treatment for mental disorders, as well as antibiotics (J01), and painkillers (N02). Information on medication prescribed in a hospital and over-the-counter (OTC) dispensation is not available. Painkillers therefore include only those prescribed by a physician – typically stronger variants. Note that there is no OTC dispensation of antidepressants and antibiotics in Germany (also see Section B.2 in the online appendix).

Third, we consider the number of outpatient physician visits, determined by the number of distinct treatment cases and a dummy variable indicating whether a mother visited a psychotherapist in the relevant quarter. To obtain a measure of diagnoses per visit, we calculate the number of different inpatient and outpatient diagnoses per quarter and divide it by the number of physician and psychotherapist visits and days spent in hospital.

Table A.2 in the appendix provides summary statistics for the outcome variables. In our sample, 15.4% of all mothers receive a coded diagnosis of respiratory disease on average per quarter during the first four years of motherhood, while 12.7% are prescribed antibiotics. Depression is coded in 4.1% of the mothers, and 6.1% are diagnosed with other mental disorders per quarter. Additionally, 1.9% of mothers receive antidepressant prescriptions and 2.3% visit a psychotherapist at least once in a given quarter. The quarterly prevalence of diagnosed headaches among mothers is 5.2%, while 2.7% receive a prescription for painkillers. On average, we observe 2.2 physician visits per mother per quarter, with 1.5 diagnoses per visit.

Sociodemographic Characteristics

GePaRD also includes information on individual characteristics, which we use as control variables or to stratify the sample for heterogeneity analyses. The relevant variables are mothers' age, nationality, county of residence, insurance status, and occupational code, including the type of employment and education.

In Germany, statutory health insurance providers allow free co-insurance of children, spouses, or registered partners if they earn less than 570 euro per month or are self-employed for fewer than 18 hours per week. If individuals work more, they must have their own insurance coverage (Rieder, 2022). We interpret the insurance status as a proxy for labor market attachment, with

[14] Acute events such as headaches and respiratory diseases are often documented only once in the outpatient setting. We therefore only require a single appearance in either an inpatient or outpatient setting for the dummy variables to turn one. For chronic diseases, we apply tighter conditions to avoid overestimation. Dummies turn one if a diagnosis is documented by a hospital or if outpatient diagnoses are followed by at least one inpatient or outpatient coding in the same or subsequent three quarters.

the caveat that it can include women whose partner is also not working, students above the age of 25, and women on parental leave who have an employment contract but are currently not working. This proxy is therefore more reliable before the birth of the first child. We denote mothers as *strongly attached to the labor market* if they have their own insurance coverage for the full two years prior to the estimated birth. This applies to 80.3% of the mothers in our sample (Appendix Table A.3). In principle, employers are required to submit an occupational code of individually insured employees to the social insurance institutions annually (Asendorf et al., 2022).[15]

For each mother in our dataset, we use the most frequently coded level of education for the analysis. Based on the International Standard Classification of Education (ISCED), we aggregate educational levels into low, middle, and high (International Labour Organization, 2023). As shown in Appendix Table A.3, 4.1% have a low level of education, 44.6% hold a university entrance degree or received vocational training (medium-educated), and 18.9% are classified as highly educated. For 32.4% of the mothers, we do not obtain any information on their level of education. There is only a small proportion of mothers with a low level of education because women without a professional qualification are more likely to be covered by their partners' or parents' insurance. We therefore lack information on education for this group. These women are included in the main analysis, but are not considered in the heterogeneity analysis for education. Overall, 81.7% of the mothers in our sample are German, with an average age of 30.9 years in the quarter of their first live birth. Among them, 7.1% have a preterm birth and 35.9% a cesarean section.

4.1.1 Attrition

If leaving a health insurance provider – and thus our sample – within the first four years of motherhood relates to one of the reforms considered in this paper, this might bias the results. To address this concern, the robustness section compares our main findings with those derived from a fully balanced sample that includes only mothers who remain with the same health insurance in the four years following the birth of their child.

Table B.32 and B.33 in the online appendix show summary statistics of the outcome variables and background characteristics for the balanced sample. Overall, the sample shrinks by 36% to 680,721 mothers. The prevalence of all diagnoses and prescriptions is higher in the balanced sample than in the full sample. Mothers exiting a health insurance provider therefore seem to have a better health status. In terms of their sociodemographic characteristics, exiting mothers are more likely to be non-German, slightly younger at their first childbirth, and slightly more likely to have a low or high level of education rather than a medium one.

4.1.2 Data Representativeness

Dehos et al. (2024) have already documented the representativeness of our data through a comparison of GePaRD with official birth records, focusing on the number of cesarean sections

[15]For 68% of the individuals in our dataset, we observe the occupational code at least once, but even for main-insured individuals, it is missing in relatively many quarters.

and maternal age at birth for all live births between 2004 and 2019. Particularly relevant for the parental benefit reform, we can also closely resemble the year-month distribution of birth dates in GePaRD with official birth records, as illustrated in Figure B.1 in the online appendix.

4.2 Additional Datasets

To estimate the effect of childcare on health, we link a mother's county of residence to the local childcare coverage rate and other county characteristics.

Childcare

The German Statistical Office provides information on the number of publicly funded childcare slots in each county for children aged zero to three since 2006. The annual reporting date of these numbers is March, while population data is published as of December 31. We define the childcare coverage rate in each county as the number of slots in year t divided by the number of children of the respective cohort in year $t-1$. New childcare places are usually filled in August or September. The childcare rate therefore applies from October of year $t-1$ to September of year t.

Regional Control Variables

We add further time-varying county characteristics such as population density, fertility, the share of females of childbearing age, the unemployment rate, the share of foreigners, GDP per capita, and the number of general practitioners (GPs) and psychotherapists per 100,000 inhabitants. The data on GPs and psychotherapists stems from the National Association of Statutory Health Insurance Physicians (*Kassenärztliche Bundesvereinigung – KBV*), while other data is provided by the German Statistical Office.

SOEP

We complement the analysis of the impact of childcare on health with data from the German Socio-Economic Panel (SOEP). The SOEP is an annually conducted representative longitudinal survey of households and their members covering all West German states since 1984 (Wagner et al., 2007). Besides detailed individual, socioeconomic, and household characteristics, the SOEP contains information on childcare attendance. We leverage the SOEP to explore the first-stage relationship between local childcare coverage and individual childcare attendance.[16] Given the GePaRD sample, we include mothers in West Germany whose first child was born between 2006 and 2019.

[16]Socio-Economic Panel, data from 1984 to 2020 (SOEP-Core, v37, Remote Edition) 2022, doi:10.5684/soep.core.v37r.

5 Empirical Strategy

We first outline the generalized DiD approach to estimate the impact of childcare on maternal health. Thereafter we introduce the binary DiD design used to analyze the health effects of parental benefits.

5.1 Generalized Difference-in-Differences Design

Following previous empirical studies, we leverage within-county variation in childcare expansion to estimate its impact on maternal health, using a TWFE approach, as specified in equation (1).[17]

$$Y_{itc} = \delta CC_{ic}^{\tau=4} + Z_{ic}^{\tau=4}\gamma + X_i\beta + \alpha^{\mu} + \alpha^{\tau} + \alpha_t + \alpha_c + \epsilon_{itc} \tag{1}$$

Y_{itc} captures one of the outcome variables described in Section 4 for mother i at calendar time t in county c. $CC_{ic}^{\tau=4}$ is the childcare coverage rate in county c four quarters after the estimated first childbirth, in other words when the child turns one. We focus on the childcare coverage rate at the age of one to estimate its impact on immediate health outcomes and health one or two years later. $Z_{ic}^{\tau=4}$ includes county-specific time-varying controls that mother i is exposed to at the child's first birthday.[18] X_i comprises time-invariant individual controls: Dummy variables, whether the childbirth was a cesarean section or a preterm birth, and nationality. With a full set of dummies, we also control flexibly for the mother's age measured in years (α^{μ}) and the estimated child's age measured in quarters (α^{τ}). Year-by-quarter fixed effects (α_t) account for confounding time shocks and seasonal effects.[19] α_c captures time-invariant county characteristics. Since GePaRD does not include information on individual childcare attendance, we can only estimate the reduced form, namely intention-to-treat effects. In Section 6.1.1, we complement these estimates with first-stage results where we regress individual childcare attendance within the SOEP with the local childcare coverage rate.

Identification of δ as the effect of childcare availability on maternal health relies on quasi-exogenous within-county variation in the childcare coverage over time, conditional on time-varying controls. While all counties have increased the number of available slots, there is substantial variation in the timing of expansion across counties. This variation likely involves important randomness such as the availability of buildings and childcare workers, as well as differences in the effectiveness of local authorities in securing funding and setting up childcare centers quickly. Imprecise population forecasts and lengthy approval processes at different ad-

[17] Bauernschuster et al. (2016), Cornelissen et al. (2018), Felfe and Lalive (2018), Felfe and Zierow (2018), Müller and Wrohlich (2020), Kuehnle and Oberfichtner (2020), Lim and Duletzki (2023), and Sandner et al. (2024) have used a similar strategy to estimate the impact of childcare on fertility, children's development, maltreatment, and maternal employment in Germany.

[18] County-specific time-varying controls cover population density, fertility, the share of females of childbearing age, the unemployment rate, the share of foreigners, GDP per capita, the physician density, and the psychotherapist density.

[19] They are defined as $\alpha_t = \sum_{1/2006}^{4/2019} \lambda_m 1[m = date_t]$, ranging from the first quarter in 2006 to the fourth quarter in 2019.

ministrative levels also lead to variation (e.g., Bauernschuster et al., 2016; Müller and Wrohlich, 2020; Lim and Duletzki, 2023). We assume that – conditional on county fixed effects and time-varying covariates – the expansion is exogenous to unobserved determinants of maternal health.

De Chaisemartin and D'Haultfœuille (2020), Callaway and Sant'Anna (2021), Sun and Abraham (2021), Borusyak et al. (2024), and others have shown that TWFE estimators with staggered treatment may lead to invalid estimates in the presence of treatment effect heterogeneity or dynamic effects. While new estimators have been developed to address these challenges, our setting is not covered by these estimators that are now more frequently applied, as the treatment variable is continuous and there are no "stayers," meaning that childcare coverage rates change from year to year. In addition, coverage rates are non-zero from the beginning. Rather than coarsening the framework to a binary design, which would miss much of the variation and the inherent structure of the reform, we implement and extend a new estimator by De Chaisemartin et al. (2024) on an aggregated dataset, which we refer to as the CHV estimator. It is a continuous treatment estimator, building on De Chaisemartin et al. (2022), that accommodates heterogeneous and non-linear treatment effects. Most importantly, this new estimator allows the treatment to vary across all regions and does not require "stayers." In our setting, the two-step procedure estimates a weighted average of slopes capturing the impact of childcare on county-level health outcomes. These slopes are adjusted by a parameter that accounts for outcome changes driven by initial childcare coverage.

While the CHV estimator fits our setting, it has two limitations: first, there is currently no guidance (and no straightforward method) on how to incorporate time-varying control variables, therefore we show results without them. Second, the original estimator compares only two time periods. We therefore extend the estimator in the following way: First, we do pairwise comparisons between periods that are three years apart.[20] Second, we average over the estimated parameters from the pairwise comparisons while bootstrapping the standard errors.

As a further robustness check related to the heterogeneity of potential effects, we follow the arguments in Wooldridge (2021) and estimate more flexible versions of the TWFE estimator, as well as a Mundlak estimator (Wooldridge, 2021). These specifications allow for effect heterogeneity over important control variables, such as population density or physician density, by interacting them with the treatment variable (childcare coverage). Finally, section B.3.4.1 presents robustness checks concerning attrition in the data.

5.2 Binary Difference-in-Differences Design

To estimate the health effects of parental benefits, we rely on a DiD design similar to Collischon et al. (2022) and Raute et al. (2022).[21] We compare mothers who gave birth right before the parental benefit reform cutoff date of January 1, 2007 to those who gave birth right after it.[22]

[20] Note that shorter intervals, such as one or two years, offer too little variation.

[21] Note that we use the same empirical strategy to examine the impact of childcare allowances. The results are presented in the online appendix.

[22] For childcare allowances, discussed in the online appendix, it is August 1, 2012.

In the main specification, we define the treatment cohort as mothers with an estimated birth within six months around the reform's cutoff date. As control cohorts, we include mothers who gave birth in the same months but in the years before the reform.[23] We then estimate the following regression:

(2)

$$Y_{iq} = \sum_{j=1}^{3} \alpha_j 1[j = cohort_i] + \theta after_i + \delta after_i \times 1[3 = cohort_i] + X_i\beta + \alpha^{\mu} + \alpha^{\tau} + \alpha_q + \epsilon_{iq},$$

where $\sum_{j=1}^{3} \alpha_j 1[j = cohort_i]$ is a set of dummy variables controlling for the cohort mother i belongs to. Cohort $j = 3$ constitutes the treatment group, while pretreatment cohorts $j = 1$ and $j = 2$ serve as control groups. The dummy variable $after_i$ equals one if a birth occurs in the first half of a year, and zero if it occurs in the second half.

The interaction of $after_i$ and cohort dummy $1[3 = cohort_i]$ identifies the DiD coefficient of interest, i.e δ. As in equation (1), we further control for cesarean sections and preterm births, maternal age in years, and the child's estimated age in quarters. α_q controls for seasonal patterns in the annual cycle indicating whether Y_{iq} is observed in the first, second, third, or fourth quarter.

To interpret δ causally, we have to rely on the common trend assumption. For the pretreatment cohorts to be a valid counterfactual of the treatment cohort, we need to assume that – in the absence of treatment – the health status of mothers belonging to the treatment cohort would have evolved parallel to the health status of mothers in the control cohorts. This assumption seems plausible, as no other policy changes occurred at the relevant cutoffs.

In addition, the no-anticipation assumption must hold, meaning that mothers could not manipulate the birth month. Kluve and Schmitz (2018) plausibly argue that the reform's timing and its announcement make it impossible to postpone pregnancies in order to gain eligibility. Raute (2019) indeed shows that fertility only increased persistently after August 2007, nine months after the reform was passed and eight months after the eligibility cutoff we consider.

Using event study regressions, we examine deviations from the pre-cutoff trend as a standard check to support the untestable common trend assumption (further detail in online appendix B.3.1). While we have to reject the common trend for some outcome–age combinations, there appears to be no structural pattern except that these cases occur when the sample size around the cutoff tends to be small.

6 Results

This section's two parts cover the results of the analyses on childcare and parental benefits. In addition to the main results, each subsection provides further insights from heterogeneity analyses by education, prebirth labor market attachment, women's history of mental illness, and childcare levels (for childcare) as well as some robustness checks.

[23] Note that the analysis of childcare allowances permits the inclusion of three pretreatment control cohorts.

6.1 Childcare

6.1.1 First Stage

Before we turn to maternal health outcomes, we investigate the relationship between local childcare coverage and individual childcare attendance based on the SOEP. With approximately 1,500 mothers, the SOEP sample is much smaller than GePaRD, with almost a million observations (Table A.3), resulting in less precise estimates. Table 1 outlines the first-stage relationship for mothers in West Germany. Our instrument is the childcare coverage rate in the county of residence during the quarter when the child turns one. The first stage therefore estimates the effect of childcare coverage at the first birthday on childcare attendance at age one. In all regressions, we include a set of fixed effects controlling for the calendar year, maternal age in years, and the child's age in quarters. We further incorporate state and county fixed effects, as well as regional controls.

Table 1: First stage – impact of childcare coverage on childcare attendance

	(1)	(2)	(3)	(4)
	Childcare attendance of one-year-old			
Childcare coverage	1.357***	1.163***	1.081*	1.026***
	(0.197)	(0.227)	(0.602)	(0.304)
Mean	0.286	0.286	0.286	0.287
1^{st} stage F-statistic	47.3	26.2	3.2	11.4
observations	1538	1538	1538	1336
Baseline characteristics	✓	✓	✓	✓
Federal state fixed effects		✓		✓
County fixed effects			✓	
Regional controls				✓

Notes: This table shows the impact of childcare coverage on individual childcare attendance using SOEP data and administrative statistics from the German Statistical Office for 2006 to 2019. The sample consists of mothers in West Germany one year after their first live birth. Each mother is included once. As baseline characteristics, we complement all regressions with a set of fixed effects controlling for calendar time (in years), maternal age (in years), and the child's age (in quarters). Regional controls include population density, the unemployment rate, the share of foreigners, and GDP per capita. Standard errors clustered at the county level are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Column 1 of Table 1 reveals a positive impact of childcare coverage on actual take-up, with an F-statistic of 47.3, confirming the instrument's relevance. A one percentage point increase in the childcare coverage expands attendance by 1.36 percentage points in our sample of first-time mothers with one-year-old children. A first-stage coefficient above one is plausible, as the childcare coverage rate includes children aged zero to three, among them infants under one year who usually do not attend childcare.

In Column 2, we add state fixed effects to the baseline specification. The coefficient declines slightly but remains statistically significant at the 1% level, with an F-statistic of 26.2. In

Column 3, we replace state fixed effects with county fixed effects. In principle, this would yield our preferred first-stage specification, as county fixed effects are included in the reduced form. The coefficient remains slightly above one but substantially reduces its statistical significance to the 10% level with an F-statistic of 3.2. With more than 280 West German counties and additional baseline controls, the sample of approximately 1,500 observations is too small to identify precise estimates. In a final step, we therefore include federal state fixed effects (instead of county fixed effects) and add regional controls, namely population density, the unemployment rate, the share of foreigners, and GDP per capita. There is a slight decrease in sample size, as regional controls are not provided for every county. Given the limitations, this specification is our preferred one, with a coefficient slightly above one and an F-statistic of 11.4, as outlined in Column 4.

Overall, the first-stage coefficient remains slightly above one across all specifications. Following the idea of the Wald estimator, the IV estimate would therefore be similar in size or slightly smaller than the reduced-form estimate. Due to differences between preferred first-stage and reduced-form specifications, our procedure, however, only approximates the corresponding Wald estimate.

6.1.2 Main Results

We investigate the impact of childcare availability on maternal health using childcare coverage at age one as the explanatory variable and diagnoses (Table 2), prescriptions (Table 3), and healthcare use (Table 4) as outcomes. We present the short-term to medium-term effects when the child is one, two, or three years old. All tables include the mean of the outcome variable for the respective age group. At age one, the effect of the childcare coverage rate reflects the immediate impact of childcare attendance on health. For children aged two and three, the estimate captures the cumulative mid-term effect of entering childcare at age one on subsequent health.

Column 1 of Table 2 shows a significant short-term impact of childcare on diagnosed maternal respiratory diseases. Dividing the reduced form by our preferred first stage (which includes state fixed effects and regional controls, but no county fixed effects, as shown in Table 1), we obtain an IV estimate of 0.0975. This implies that childcare attendance increases the likelihood of maternal respiratory diseases by 9.75 percentage points when the child is one year old. Standard errors calculated by the delta method indicate significance at a 1% level. The IV estimate is therefore very close to the reduced-form estimate. Consistent with the development of resistance to infections, the effect becomes smaller and turns negative in sign for mothers of three-year-old children (Column 3). At this age, children without access to early childcare typically enter regular childcare. The effect therefore captures increased resistance and lower rates of respiratory diseases compared to mothers of children who have just entered childcare. The findings on respiratory diseases align with Barschkett (2024) and Barschkett and Bosque-Mercader (2024), who detect an increased prevalence of respiratory diseases among mothers and children when the child is young, but lower rates when the child grows older. Overall, the results on respiratory diseases lend strong credibility to our approach. Turning to pain-related

Table 2: Childcare results – all mothers: Diagnoses

	(1) one-year-old	(2) two-year-old	(3) three-year-old
Outcome: Depression			
Childcare	0.003	-0.002	-0.019
	(0.008)	(0.011)	(0.014)
Mean	0.039	0.045	0.053
Outcome: Mental disorder (other)			
Childcare	0.012	-0.009	-0.026*
	(0.017)	(0.015)	(0.015)
Mean	0.061	0.069	0.075
Outcome: Respiratory diseases			
Childcare	0.100***	0.058***	-0.013
	(0.019)	(0.016)	(0.021)
Mean	0.167	0.182	0.197
Outcome: Headache			
Childcare	0.024**	0.008	0.003
	(0.010)	(0.011)	(0.013)
Mean	0.053	0.059	0.063
Observations	3663561	3179203	2711372
County fixed effects	✓	✓	✓
Individual controls	✓	✓	✓
Regional controls	✓	✓	✓

Notes: The sample includes observations for mothers with one-year-old, two-year-old, and three-year-old children who lived in West Germany in the fifth quarter after childbirth. In all regressions, we control for calendar time, maternal age, and the child's estimated age in quarters. Individual controls include dummy variables for cesarean sections and preterm births. Regional controls include population density, fertility, the share of females of childbearing age, the unemployment rate, the share of foreigners, GDP per capita, the number of psychotherapists, and the number of general practitioners per 100,000 inhabitants. Standard errors clustered at the county level are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

outcomes, we find a small short-term increase in headaches (Table 2) that might be related to the increase in respiratory diseases at this age or to the stress accompanying job re-entry as a consequence of childcare availability.

Next, we turn to the effects of childcare availability on diagnoses related to mental health (Table 2). The effects of childcare on diagnosed depression and other mental disorders are not statistically significant at conventional levels. They are positive when the child is one year old and zero or negative when the child is two years old. The effect on other mental disorders turns negative in sign and relatively large (-2.6 percentage points, the IV estimator is -2.5 percentage points) and marginally significant when the child is three years old.[24] A possible interpretation of the finding is that those who return to work earlier may avoid mental health problems that some mothers with longer leave and a potentially challenging (or failed) job re-entry experience when the child is three. The finding is also in line with Ahammer et al. (2023) and Chuard (2023), who show that very long leave durations have negative long-term mental health consequences in the Austrian setting.

Table 3 shows the effect of childcare availability on prescriptions. The effect on antidepressants is close to zero. For antibiotics, the pattern partially resembles the effects on respiratory diseases (Table 3): a short-term increase that is not significantly different from zero at conventional levels. At age three (Column 3), mothers have a significantly lower probability of 4.0 percentage points (IV estimate, the reduced-form estimate is 4.1 percentage points) of receiving antibiotics as compared to a situation without expanded childcare, in which most children enter childcare at age three. The effect of childcare on painkillers is positive but not significantly different from zero (Table 3).

Turning to healthcare use, mothers seem to reduce psychotherapy with increasing childcare availability (Table 4), despite the results suggesting little to no effect on diagnoses of depression, other mental disorders, or antidepressant prescriptions – at least when the child is one or two years old. With access to childcare, mothers of a one-year-old child are 1.4 percentage points less likely to visit a psychotherapist in a given quarter, which corresponds to a 63.6% decrease relative to the sample mean. A possible mechanism is a lower use of psychotherapy due to early return to work, conditional on the same mental health status. Mothers may have taken up employment due to improved childcare, which limits their time for psychotherapy.

When the child is three years old, the effect on psychotherapy amounts to -2.2 percentage points, corresponding to a 73.3% decrease (with an IV estimate of -2.1 percentage points, which is statistically significant at conventional levels). This effect is of similar magnitude as the effect on mental disorder diagnoses (Table 2).

Alternatively, mothers could have increased the number of physician visits due to additional time that comes with improved access to childcare if mothers do not take up employment immediately. Table 4 shows the impact of childcare on the number of diagnoses per visit and the absolute number of physician visits. Despite a substantial increase in respiratory diseases, better access to childcare tends to decrease physician visits by 0.17 to 0.23 visits per quarter,

[24] Note that other mental disorders include adjustment disorders, which may be coded when women experience mental health problems due to challenging life events.

Table 3: Childcare results – all mothers: Prescription

	(1) one-year-old	(2) two-year-old	(3) three-year-old
Outcome: Prescription of antidepressants			
Childcare	-0.001	-0.001	-0.007
	(0.005)	(0.007)	(0.009)
Mean	0.019	0.023	0.027
Outcome: Prescription of antibiotics			
Childcare	0.005	0.003	-0.041***
	(0.014)	(0.014)	(0.016)
Mean	0.133	0.141	0.155
Outcome: Prescription of painkillers			
Childcare	0.010	0.004	0.008
	(0.007)	(0.007)	(0.008)
Mean	0.029	0.032	0.035
Observations	3663561	3179203	2711372
County fixed effects	✓	✓	✓
Individual controls	✓	✓	✓
Regional controls	✓	✓	✓

Notes: Table 2.

Table 4: Childcare results – all mothers: Healthcare use

	(1) one-year-old	(2) two-year-old	(3) three-year-old
Outcome: Diagnoses per visit			
Childcare	0.157**	0.121	-0.013
	(0.076)	(0.085)	(0.084)
Mean	1.488	1.527	1.539
Outcome: Physician visits			
Childcare	-0.166*	-0.230**	-0.188
	(0.097)	(0.098)	(0.120)
Mean	2.181	2.285	2.250
Outcome: Psychotherapy			
Childcare	-0.014*	-0.016*	-0.022**
	(0.008)	(0.009)	(0.009)
Mean	0.022	0.026	0.030
Observations	3663561	3179203	2711372
County fixed effects	✓	✓	✓
Individual controls	✓	✓	✓
Regional controls	✓	✓	✓

Notes: Table 2.

corresponding to a reduction of 7.6% to 10.1% at the sample mean when the child is one or two years old. The increases in diagnoses of respiratory diseases and headaches can therefore not be attributed to mothers having more time to see a doctor or seeking sick notes more frequently. On the contrary, the number of diagnoses per visit increases, particularly by 10.6% in the first year (Column 1 of Table 4).

6.1.3 Heterogeneities

For the heterogeneity analysis, we use GePaRD's large sample size and divide mothers into different subsamples based on the average level of childcare in a county, educational attainment, labor market attachment, and prebirth mental health status (online appendix B.3.2). We interpret the resulting reduced-form coefficients as the effect of being exposed to an increase in childcare coverage, the intention-to-treat effect. To gain insight into the magnitude of the actual effect of childcare attendance (the IV estimates), we provide subsample-specific first-stage estimates based on the SOEP (online appendix Table B.1). While these estimates tend to be imprecise and less reliable due to small subsamples, they serve as a benchmark of whether reduced-form coefficients should be scaled upwards or downwards.[25]

Childcare Coverage. The group of compliers – mothers whose children attend public childcare because of the expansion – may differ depending on a county's average level of childcare. In counties with relatively low childcare coverage, available slots are primarily allocated to women with greater need, such as single mothers and those with a strong necessity or willingness to work (Schober and Stahl, 2014). In counties with higher childcare coverage, additional slots are available to mothers with lower need who make minimal effort to enroll their children and are unlikely to work without access to childcare. To analyze whether the childcare expansion affects the groups differently, we split the sample into counties with an average childcare coverage below the 2006-2019 median and those above it.

Columns 1 and 2 in Table B.1 show a larger first stage for mothers in counties with high childcare levels – likely reflecting that our sample consists of first-time mothers – and an insignificant first stage for counties with lower childcare levels, based on the SOEP data. The reduced-form results in Table B.2, B.3, and B.4 indicate that the childcare expansion significantly decreases diagnosed mental disorders (depression and other mental disorders) and prescribed antidepressants for mothers of three-year-old children in counties where childcare supply is relatively low.[26] This suggests that in the long term mothers with a high demand for childcare benefit from better access to childcare in terms of mental health. At younger ages, the coefficients are negative but not significantly different from zero.

[25] Despite small subsamples and large standard errors, first-stage results based on the SOEP are consistent with findings from other studies, showing that families with higher maternal education and stronger maternal attachment to the labor market respond with greater participation in childcare after an expansion (Schober and Stahl, 2014; Jessen et al., 2020; Hermes et al., 2024)

[26] Calculating IV estimates suggests effect sizes of -5 percentage points for the diagnoses of depression and other mental disorders and about -3.9 percentage points for antidepressant prescriptions, but due to the imprecise first stage, the effects are imprecise and insignificant.

There are two plausible explanations for the long-term beneficial effects on mental disorders among mothers in high need of childcare. First, this may be the effect of relief from a stressful situation due to a lack of reliable childcare when the child is one and two years old. Such an effect might become more apparent in the long term. Second, the effect may be driven by mothers who are able and willing to return to the labor market sooner due to earlier access to childcare. This effect becomes particularly visible when mothers without access to early childcare (try to) return to work when their child is three years old, while mothers with access face no changes in their job at this time.

In counties with higher childcare coverage, a relatively large share of women enroll their children in childcare at age one and then resume work. Additional places tend to go to women who are not first in line. We do not observe an impact on mental health for these mothers, except for an increase in painkiller prescriptions when the child is two and three years old; an increase which is not mirrored by corresponding diagnoses of mental disorders, headaches, or respiratory diseases. This might be interpreted as evidence that some women who use childcare, although they were not particularly eager to, experience strain (measured in terms of painkiller use) if they follow the new norm of early childcare and return to work.[27]

Education. Next, we present results by educational attainment for women for whom the relevant information is available. This includes only mothers who were in regular employment at least once during the study period, as this is a prerequisite for educational information in GePaRD. Even then, this information is often missing, and we are more likely to have it the more often a person is in regular employment. This implies that our subsample of low-skilled women is more attached to the labor market than the general population of low-skilled women.[28] The restriction is less relevant for higher educational groups.

For low-educated mothers in the SOEP, the first-stage estimate of 0.31 is insignificant at conventional levels (Table B.1), which is consistent with prior evidence that they benefited less from the childcare expansion (Jessen et al., 2020). The reduced form (based on the much larger health data) for low-educated mothers exhibits large, positive, and statistically significant coefficients for depression, other mental disorders, respiratory diseases, and antidepressant prescriptions, particularly in the short term (Table B.5 and B.6). Taking into account the low but insignificant first stage, the treatment effects on women taking up childcare (as captured by IV estimates) would be larger, but insignificant. The negative short-term effects on several health outcomes for low-skilled mothers are consistent with findings by Herbst and Tekin (2014), who suggest that increased access to childcare may boost employment among low-skilled mothers, while harming their self-reported health through new stressors. A potential reason is that many low-skilled jobs are physically demanding, offer little flexibility, and might be less rewarding

[27] Note that larger and more significant reduced-form coefficients in the sample with lower childcare coverage compared to those with higher childcare coverage do not mirror a stronger first stage: the first stage is stronger in the high-coverage subsample. The IV coefficients on depression, other mental disorders, and antidepressants are much smaller for the high-coverage subsample than for the low-coverage one.

[28] We include women without information on education in all other specifications. The overall analysis therefore does not systematically exclude low-skilled women who are less attached to the labor market.

than other jobs. In line with this, most of the low-skilled women in our sample work as helpers in sales, care, or offices.

For medium-skilled mothers in the SOEP, the first stage is smaller than one and significant at conventional levels (Table B.1). Based on GePaRD, we document large and significant detrimental effects of childcare on respiratory diseases and headaches during the child's first and second year, and a smaller effect on painkillers (significant only when the child is two) and antibiotics (significant only when the child is one). Using the first stage to approximate IV estimates, childcare increases the probability of diagnosed respiratory diseases by 17.3 percentage points and that of headaches by 5.8 percentage points when the child is one (both significant at a 5% level). The effect on headaches, along with the smaller and only marginally significant effect on painkiller use, may partly reflect the large increase in respiratory diseases and possibly increased strain. These results also relate to the findings on painkillers in the subsample of counties with high childcare coverage. Among medium-skilled women as well as those with easier access to childcare, there seem to be mothers who experience more headaches or require more painkillers when they use childcare and potentially return to work when their child is one year old.

In contrast, highly educated mothers exhibit a large and significant first stage but rather low and insignificant reduced-form results for most health outcomes when the child is one or two years old. Perhaps surprisingly, the reduced-form effect on diagnosed respiratory disease is also smaller compared to other skills groups,[29] possibly indicating lower levels of strain.

For highly educated mothers, childcare has a significant negative effect on other mental disorders when the child is three years old.[30] Once again, this finding is consistent with the argument that childcare availability allows high-skilled mothers an earlier and smoother return to work, alleviating the negative mental health effects associated with job re-entry after a longer absence when the child is three years old. While the results for headaches are statistically insignificant, they also tend to be negative.

Table B.7 further suggests that the negative reduced-form effect on psychotherapy in the overall sample is primarily driven by high-skilled women, even though the coefficients are not significant in any subgroup. The IV estimates amount to 1.4 and 1.5 percentage points for medium-skilled and high-skilled mothers.

Labor Market Attachment. We further document an improvement in mental health among mothers with a strong labor market attachment who have access to childcare. They exhibit a significant decrease in diagnoses of depression and other mental disorders, antidepressant prescriptions, and psychotherapy when their child is three years old (Table B.8, B.9, and B.10). The corresponding IV estimates amount to 1.8, 2.0, 1.2, and 1.6 percentage points and are all significant at least at the 10% level. We do not find any effect on mental health for mothers who are not attached to the labor market.

[29] The IV estimate for highly educated mothers when the child is one year old is 2 percentage points and not statistically significant.

[30] With an IV estimate of -3 percentage points, significant at a 10% level at a sample mean of 6.3%.

At-Risk Mothers. Based on their mental health history, we divide the sample into at-risk and not-at-risk mothers to estimate the impact of childcare on maternal health for each subgroup (Table B.11, B.12, and B.13). Mothers are classified as at-risk if they were diagnosed with a mental disorder, visited a psychotherapist, or received an antidepressant prescription in the two years before childbirth.

For both at-risk and not-at-risk mothers, childcare increases respiratory diseases in the short term and decreases antibiotic use when the child is three years old. The results differ substantially across groups for outcomes related to mental disorders. Access to childcare significantly reduces the probability of antidepressant prescriptions, diagnoses of depression or other mental disorders, and psychotherapy at any age group for mothers with a history of mental disorders. The reduced-form effect increases over time and amounts to a 10.4 percentage point lower probability of being diagnosed with depression and a 14.1 percentage point lower probability of being diagnosed with other mental disorders when children are three years old. The effect sizes for psychotherapy and antidepressant use are slightly lower.

Since we are unable to identify at-risk mothers in the SOEP, we cannot estimate the first-stage relationship. But even if at-risk mothers are prioritized, meaning that they exhibit a stronger first stage, IV estimates would remain large. The results therefore suggest that the childcare expansion particularly helps prevent at-risk mothers from experiencing another episode of depression or other mental disorders, both in the short term and, even stronger, in the medium term. In the short term, the effect is likely to reflect an immediate reduction of care duties. In the medium term, the effect indicates the accumulated relief from these duties and for working mothers it shows the avoidance of a delayed labor market re-entry, as previously discussed.

6.1.4 Robustness Checks

Homogeneous Treatment Effects. Since the TWFE approach may lead to invalid estimates in the presence of treatment effect heterogeneity, we extend the CHV estimator of De Chaisemartin et al. (2024) as described in Section 5. Tables B.26, B.27, and B.28 in the online appendix report the results. While all coefficients of the main specification fall within the 95% confidence intervals of the CHV estimates, the latter are rarely statistically significant at conventional levels due to their large standard errors. We therefore compare the main specification and the CHV coefficients in terms of magnitude and direction (noting that the latter are estimated without control variables).

First, the TWFE coefficients indicate a substantial positive effect of childcare on respiratory diseases at ages one and two, and a negative effect on antibiotics at age three. This is qualitatively supported by the CHV coefficients, with smaller coefficients for respiratory diseases but larger for antibiotics. Second, the TWFE estimator suggests positive effects on headaches, while the CHV estimator reports a negative coefficient on headaches. Third, the TWFE estimator provides negative, albeit mostly insignificant, effects on depression, other mental disorders, and antidepressants. These findings align with the CHV estimator. Finally, both estimators consistently indicate a negative effect on psychotherapy across all ages. Despite a few deviations and

reduced precision, the CHV estimates overall yield qualitatively similar insights, reinforcing the robustness of the results.

We further relax the assumption of homogeneous treatment effects through the inclusion of interaction terms between county characteristics and childcare coverage rate. Using either a two-way Mundlak or a TWFE estimator (as discussed in Wooldridge, 2021), this approach allows for effect heterogeneity, for example based on population density, GDP, or psychotherapist density. Against its advantage of easy implementation and precise estimation, the approach is less flexible than the CHV estimator, as it does not capture full heterogeneity across counties and time. Tables B.23, B.24, and B.25 in the online appendix show the coefficient estimates. They align quite well with the main specification, although they are slightly smaller.

Attrition. In the main specification, we use an unbalanced sample that includes mothers who may drop out of insurance at some point. In Tables B.34, B.35, and B.36 in the online appendix, we provide results based on a balanced sample, excluding these mothers. While standard errors are slightly larger due to a reduced sample size, the estimated coefficients remain similar in magnitude compared to the main specification.

6.2 Parental Benefits

6.2.1 Main Results

In this section, we examine the health impact of parental benefits using a DiD approach outlined in equation (2). Tables 5, 6, and 7 depict the results, including coefficients, standard errors, outcome means, as well as p-values of an F-statistic to assess the plausibility of the common-trend assumption, as described in online appendix B.3.1. A lower F-statistic can be interpreted as support for the common-trend assumption, while a p-value below 10% indicates a possible violation. Unlike childcare, parental benefits start immediately after childbirth. We therefore also show results for the year after childbirth. As stated in Section 3.2, almost 100% of parents received parental benefits, implying a first stage (the effect of eligibility on take-up) of one. Consequently, we present only reduced-form estimates for the parental benefit reform.

The results point to a slight decrease in respiratory diseases in the first year after childbirth following the parental benefit reform (Column 1 of Table 5). The effect is not significantly different from zero. For mothers of one-year-old children, we observe a significant increase in respiratory diseases of 1 percentage point (Column 2), and a decrease of 1 percentage point for two-year-old children (Column 3).[31] Consistent with the findings on respiratory diseases for childcare and parental benefits, we show that cash-for-care benefits paid to parents who do not use childcare also slightly reduce respiratory diseases among mothers with one-year-old children (Table B.40 in the online appendix).

The results coincide with expected behavioral adjustments in response to the reforms. Since most mothers tend to have an incentive to decrease their labor supply and consequently their

[31] For mothers of three-year-old children, the coefficient on *treat* is also significantly positive for respiratory diseases. The F-statistic is however equal to 3.14, with a p-value of 0.8%, suggesting a violation of the common-trend assumption. We therefore refrain from interpreting this coefficient causally.

Table 5: Parental benefit results – all mothers: Diagnoses

	(1) zero-year-old	(2) one-year-old	(3) two-year-old	(4) three-year-old
Outcome: Depression				
treat	-0.000	0.000	0.000	0.003
	(0.002)	(0.002)	(0.002)	(0.003)
Mean	0.023	0.030	0.037	0.046
F-statistic	0.638	0.655	0.821	0.877
p-value	0.670	0.658	0.534	0.495
Outcome: Mental disorder (other)				
treat	-0.003	0.000	-0.002	-0.001
	(0.002)	(0.002)	(0.003)	(0.003)
Mean	0.039	0.050	0.057	0.065
F-statistic	0.574	1.184	0.926	1.139
p-value	0.720	0.314	0.463	0.337
Outcome: Respiratory diseases				
treat	-0.002	0.010***	-0.010***	0.014***
	(0.003)	(0.003)	(0.003)	(0.004)
Mean	0.129	0.157	0.172	0.194
F-statistic	0.055	0.964	1.074	3.140
p-value	0.998	0.438	0.373	0.008
Outcome: Headache				
treat	-0.002	-0.003	-0.001	0.000
	(0.002)	(0.002)	(0.002)	(0.003)
Mean	0.039	0.048	0.052	0.058
F-statistic	0.317	0.788	0.494	1.780
p-value	0.903	0.558	0.781	0.113
Observations	408946	394001	371482	336610
Individual controls	✓	✓	✓	✓

Notes: The sample includes observations for mothers who lived in West Germany one year after their first live birth and who gave birth between October and March 2004/2005-2006/2007. In all regressions, we control for the quarter of the observation, maternal age, the child's estimated age in quarters, cesarean section, preterm birth, and nationality. The F-statistic and p-values stem from an event study regression to check if the health outcomes of ineligible treatment and control mothers follow the same (pre-) trend.

Standard errors clustered at the individual level are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

demand for institutional childcare in the first year after childbirth, we see fewer respiratory diseases under the parental benefit scheme at this age. When the child turns one, the reform increases the probability of returning to work, particularly for mothers who would have otherwise stayed away from the labor market for two or three years. This increases the demand for childcare, leading to a higher prevalence of respiratory diseases when the child is one year old and a lower prevalence later on.

The effect of parental benefits on respiratory diseases is considerably smaller than the direct effect of childcare, as not all mothers subsequently adjust their childcare use. While parental benefits lead to an increase of 1 percentage point in respiratory diseases among one-year-old children, formal childcare increases respiratory diseases by almost 10 percentage points. Unlike for the childcare reform, the effect on respiratory diseases is not reflected in antibiotic prescriptions, which is plausible considering the limited impact of the parental benefit reform on childcare use (Table 6).[32]

Table 6: Parental benefit results – all mothers: Prescription

	(1) zero-year-old	(2) one-year-old	(3) two-year-old	(4) three-year-old
Outcome: Prescription of antidepressants				
treat	-0.002	-0.003*	0.000	0.001
	(0.001)	(0.001)	(0.002)	(0.002)
Mean	0.010	0.016	0.020	0.025
F-statistic	0.584	1.646	0.332	0.372
p-value	0.712	0.144	0.894	0.868
Outcome: Prescription of antibiotics				
treat	-0.000	-0.000	-0.001	0.008**
	(0.002)	(0.003)	(0.003)	(0.003)
Mean	0.109	0.137	0.148	0.166
F-statistic	0.775	0.720	2.064	1.910
p-value	0.568	0.608	0.067	0.089
Outcome: Prescription of painkillers				
treat	-0.000	-0.000	-0.003*	0.000
	(0.001)	(0.001)	(0.002)	(0.002)
Mean	0.020	0.027	0.030	0.034
F-statistic	0.507	1.822	1.156	0.458
p-value	0.771	0.105	0.328	0.808
Observations	408946	394001	371482	336610
Individual controls	✓	✓	✓	✓

Notes: Table 5.

For mental disorders and respective treatments, we provide suggestive evidence of a small beneficial impact right after childbirth. The results on depression, other mental disorders, antidepressant prescriptions (Table 6), and psychotherapy show a reduced prevalence, but only

[32]Similar to respiratory diseases, we have to reject the common-trend assumption for antibiotic use among mothers with three-year-old children at the 90% level.

Table 7: Parental benefit results – all mothers: Healthcare use

	(1) 0 yr-old	(2) 1 yr-old	(3) 2 yr-old	(4) 3 yr-old
Outcome: Diagnoses per visit				
treat	-0.005	-0.005	0.001	-0.005
	(0.014)	(0.014)	(0.015)	(0.016)
Mean	1.564	1.448	1.457	1.467
F-statistic	1.473	1.946	0.841	2.178
p-value	0.195	0.083	0.520	0.054
Outcome: Physician visits				
treat	-0.034**	0.033*	-0.026	-0.025
	(0.015)	(0.018)	(0.020)	(0.021)
Mean	1.683	1.876	2.014	2.070
F-statistic	0.997	1.653	2.681	0.512
p-value	0.418	0.142	0.020	0.767
Outcome: Psychotherapy				
treat	-0.003*	-0.001	0.002	0.000
	(0.002)	(0.002)	(0.002)	(0.002)
Mean	0.016	0.021	0.024	0.027
F-statistic	0.315	0.789	1.424	1.541
p-value	0.904	0.558	0.212	0.173
Observations	408946	394001	371482	336610
Individual controls	✓	✓	✓	✓

Notes: Table 5.

the effect on psychotherapy is marginally significant (Column 1 of Table 7). These results align with previous evidence (e.g., Bullinger, 2019; Bütikofer et al., 2021) that moderately extended parental leave – particularly for mothers who would have otherwise returned to work in the first year after childbirth – can improve health outcomes. In the German setting, increased financial means in the first year after childbirth may have a direct health effect, in addition to altering the length of leave.

For mothers of one-year-old children, there is some indication of a beneficial effect on antidepressant prescriptions, with the disadvantage of a relatively high F-statistic. We therefore interpret this effect with caution, particularly as the effects on depression and other mental disorders in this age group are close to zero but slightly detrimental.

The effects on headaches and painkiller prescriptions are mostly not statistically significant at conventional levels, with only a marginally significant effect observed for painkillers among mothers of two-year-old children. The latter finding aligns with evidence that childcare allowances increase painkiller use among mothers of three-year-old children (Table B.41 in the online appendix) and with Chuard (2023), who reports a moderate long-term increase in painkillers after extended parental leave.

In summary, apart from the effects on respiratory diseases, we report limited but rather beneficial effects on maternal health after the parental benefit reform and induced changes in maternal employment.[33]

6.2.2 Heterogeneities

Education. Tables B.14, B.15, and B.16 in the online appendix document the impact of the parental benefit reform on maternal health by educational attainment.

Among low-educated mothers – again limited to those regularly employed at least once – we find no effect on respiratory diseases. For most other outcomes, we provide beneficial health effects during the entitlement period (first year after birth), in particular for diagnoses of depression and other mental disorders. The financial effect of the reform may be positive for strongly attached women, even if low-skilled, and seems to benefit these women's health, possibly by alleviating the financial stress that would otherwise come along with or hinder a longer leave period.

Results for medium-educated mothers mirror the overall pattern observed for respiratory diseases, suggesting a return to work and an increased use of public childcare once their child turns one. This timing also tends to be reflected in increased painkiller use (not significant). Beyond that, there is little evidence for health effects on medium-skilled mothers, apart from a modest reduction in psychotherapy during the benefit period and an increase in depression when the child is two years old.

Estimates on highly educated mothers indicate that the parental benefit reform had no discernible effect on respiratory diseases, which is similar to the childcare expansion. Effects on other health outcomes are also close to zero and mostly insignificant.

Labor Market Attachment. The overall shift in respiratory diseases – observed from ages one to two – is mostly driven by mothers with a strong labor market attachment and is less evident among those with a weaker attachment (Tables B.17, B.18, and B.19 in the online appendix).

For mental health outcomes, we observe a decline in other mental disorders in the first year after childbirth among mothers with a strong labor market attachment. In line with the existing literature (e.g., Bütikofer et al., 2021), we interpret this finding as evidence that an extension of a very short leave duration to a moderate leave of around one year can benefit maternal mental health. Mothers with a strong labor market attachment, however, rely slightly more on psychotherapy when their child is two years old.

At-Risk Mothers. While the childcare expansion has strong beneficial health effects for women with a history of mental health challenges, this is less evident for the parental benefit reform. When the child is one year old, the results reveal a counterintuitive pattern: a significant

[33] If anything, the childcare allowances – prolonging leave for a few mothers – increase painkiller use. For a detailed discussion of the findings of the childcare allowance, see Section B.4.2 in the online appendix.

increase in depression among mothers with prebirth mental health issues and a decrease in antidepressant use (Table B.20, B.22, and B.21). For the remaining outcomes, the findings are in line with small but beneficial effects for at-risk mothers. In particular, we observe a favorable effect on headaches, especially when the child is one or two years old.

6.2.3 Robustness Checks

Bandwidth Choice. As a first robustness check, we test if the findings are robust to altering the bandwidth around the cutoff date of the parental benefit reform. Intuitively, this involves a comparison of health outcomes of mothers who gave birth to their first child between June and December 2006 with those who did so between January and June 2007, while using the control group and quarter fixed effects to account for structural differences between births occurring in the first and second half of the year.

The results presented in Table B.29-B.31 of the online appendix confirm our previous findings. Again, we report a decrease in maternal respiratory diseases when the child is under one year old and an increase thereafter. For mental health challenges, the beneficial health effects in the first year after birth turn out to be even larger and significant. Eligibility for parental benefits decreases the likelihood of being diagnosed with depression by 0.2 percentage points, with other mental disorders by 0.4 percentage points, and of receiving antidepressants or undergoing psychotherapy by 0.2 percentage points These effects correspond to a relative decrease ranging from 8.7% (depression) to 20% (antidepressants) compared to the sample mean. Most effects fade out when the child is a year old, with only the reduction in other mental disorders persisting until age two. For other outcomes, such as painkillers and headaches, the effects are close to zero and not statistically significant at conventional levels.

Attrition. The main specification proves robust to the use of a balanced sample, as shown in Tables B.37, B.38, and B.39 in the online appendix. Despite a smaller sample size, the effects are similar in size and significance, which alleviates the concern that the results are confounded by mothers selectively exiting a health insurance provider.

7 Conclusion

In recent decades, the daily lives of families with young children in West Germany and several other countries have changed significantly, with many mothers returning to work when their child is one rather than three years old, and more children attending early childcare. This study investigates the impact on maternal health of two reforms that enhanced this transition: The first policy improved access to childcare, resulting in a significant increase in childcare coverage for children under three in West Germany. The second policy introduced earning-related parental benefits (including a paternal quota), which primarily benefited women with higher prebirth incomes. Using data from the German Pharmacoepidemiological Research Database (GePaRD), we examine the impact of both policies on various health outcomes, including diagnoses, prescriptions, and psychotherapy use.

The results show a significant short-term impact of childcare on diagnosed respiratory diseases and heterogeneous effects on mental health. Childcare tends to reduce diagnoses of mental disorders and psychotherapy use among mothers with a history of mental disorders before childbirth, mothers who are highly attached to the labor market, and those who live in counties with low childcare provision. Conversely, low-educated mothers exhibit short-term increases in mental disorders and antidepressant use. Parental benefits alter the timing of respiratory diseases and slightly reduce mental disorders and their treatment in the first year after childbirth.

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Appendix

A.1 Data

Table A.1: List of Outcome Variables and ICD-10 Codes

Outcomes	ICD-10
Depression	F32, F330, F331, F332, F333, F338, F339, F341, F381, F53, O993, R452, R453
Other Mental Disorder	F40, F41, F430, F432, F438, F439, F444, F445, F446, F45, F54, F59, F606, F680, R457, R52
Headache	G43, G440, G441, G442, G443, G448, R51
Respiratory Disease	J00, J01, J02, J03, J06, J09, J10, J11, J12, J13, J14, J15, J16, J18, J20, J300, J31, J32, J40, J41, J42, J44

Notes: The inclusion of ICD codes and their assignment to health outcomes follows Bandelow et al. (2021); Beuchert et al. (2016); Riemann et al. (2017); Rouche et al. (2019); Sandner et al. (2018); Steffen et al. (2020) and Persson and Rossin-Slater (2024).

Table A.2: Summary Statistics – Full Sample

	Mean	SD
Depression	0.041	0.197
Mental Disorder Other	0.061	0.240
Prescription of Antidepressants	0.019	0.137
Psychotherapy	0.023	0.150
Respiratory Diseases	0.154	0.361
Prescription of Antibiotics	0.127	0.333
Headache	0.052	0.222
Prescription of Painkillers	0.027	0.161
Physician Visits	2.237	2.000
Diagnoses per Visit	1.498	1.484
Observations	15,449,543	

Notes: The table shows the mean and the standard deviation for each outcome for quarters 1-16 after the estimated childbirth using GePaRD data. We restrict the sample to mothers residing in West Germany, who are followed for at least one year after estimated childbirth.

Table A.3: Background Characteristics – Full Sample

	Mean	SD
Other Nationality	0.093	0.291
German	0.817	0.386
Nationality Missing	0.090	0.286
Age at Birth	30.874	5.198
Premature Birth	0.071	0.257
Cesarean Section	0.359	0.480
Lower Education	0.041	0.198
Middle Education	0.446	0.497
Higher Education	0.189	0.391
Education Missing	0.324	0.468
Attached to Labor Market	0.803	0.398
Observations	1,059,069	

Notes: The table includes background characteristics of mothers at the time of their first live birth using GePaRD data. We restrict the sample to mothers residing in West Germany, who are followed for at least one year after estimated childbirth.

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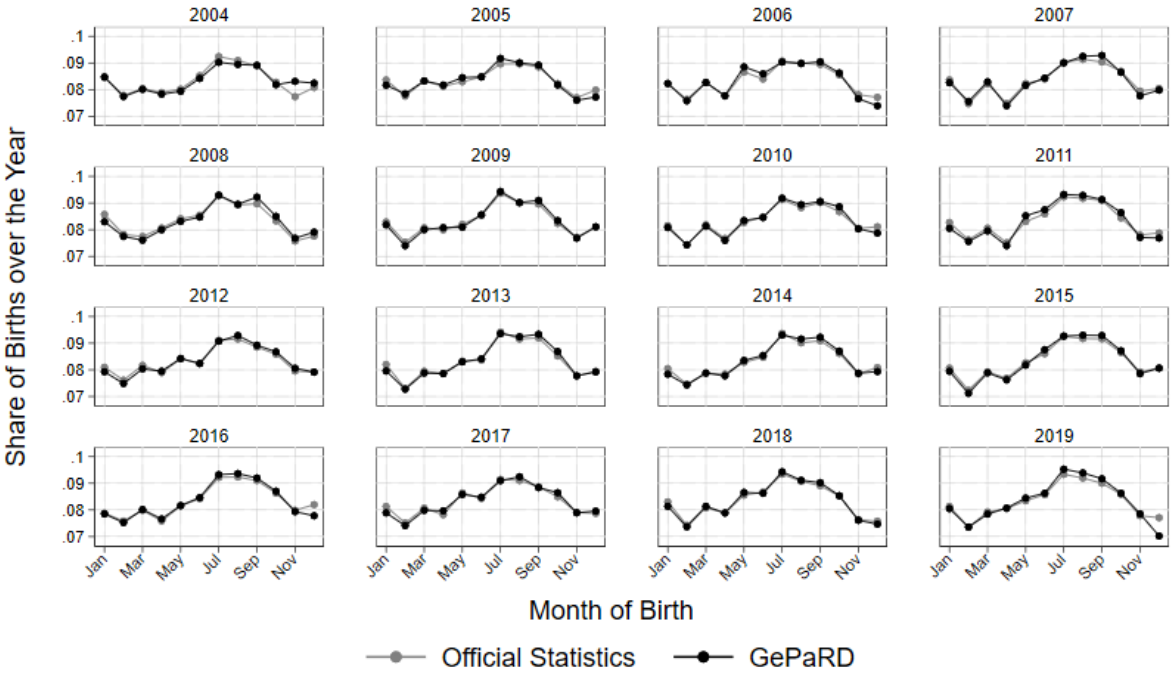
Online Appendix

B.1 Data

Figure B.1: Month of Childbirth



Notes: Own illustration based on GePaRD and destatis (2022). Data for GePaRD include all births of a mother.

B.2 The German Health and Insurance System

The German health insurance system consists of statutory health insurance (SHI) and private health insurance (PHI), with the vast majority of inhabitants (about 89%) enrolled in SHI (see Destatis, 2020). SHI serves as the default and compulsory option, offering comprehensive coverage and a wide range of benefits with relatively low cost-sharing (Blümel et al., 2020). While PHI provides greater flexibility and additional services, it is only available to self-employed individuals, civil servants, and high-income earners above a specified income threshold.

Prescription requirements for medications are regulated by the German Drug Law, but many drugs for minor conditions, like mild pain relievers or cold medicines, are easily accessible over-the-counter (OTC). Stronger medications, such as antibiotics or stronger pain relievers, in contrast, require a prescription, making the German regulation more restrictive compared to other European countries. In general, SHI covers a substantial share of the costs for prescribed medications, with patients making only small co-payments.

Unlike other countries, where GPs act as gatekeepers (Hansen et al., 2020), patients in Germany can freely choose their physicians. Referrals are only required for highly specialized procedures, such as radiology or radiotherapy. In practice, however, many patients prefer to have their GP coordinate their care (Hansen et al., 2020).

Psychotherapeutic therapies in Germany do not require a referral and generally follow a two-step process. During first initial trial sessions, the patient's needs are assessed, the necessity for treatment is discussed, and the compatibility between patient and therapist is evaluated (Möller and Schmidt, 2021). In a second step, patients apply for reimbursement of a subsequent therapy sessions through their SHI provider, which can either cover short-term therapy (up to 25 sessions) or long-term therapy (up to 50 or 160 sessions). Once a therapist is selected and the therapy is approved, the associated costs are covered. However, the demand for therapy slots often exceeds the available supply, leading to extended waiting times (Roth and Zimmermann, 2024; Gaebel et al., 2016).

The care of pregnant mothers is governed by the German Maternity Guidelines, based on WHO quality standards (Göckenjan et al., 2021). These guidelines define the scope and timing of medical check-ups, midwifery support, and documentation in the "maternity passport." Prenatal care includes information, education, personalized consultation, and medical screenings, with check-ups typically every four weeks to monitor the health of the mother and the fetus. While midwifery care is provided during pregnancy, childbirth, and postpartum, women must independently find a midwife. Considering the shortage of midwives (Blum et al., 2021), this poses a considerable challenge. The financial burden of the aforementioned services is, however, minimal. Along with additional treatments related to childbirth and postnatal care, these are fully covered by SHI.

B.3 Additional Results

B.3.1 Parental Benefit and Child Allowance: DiD – Common Trend

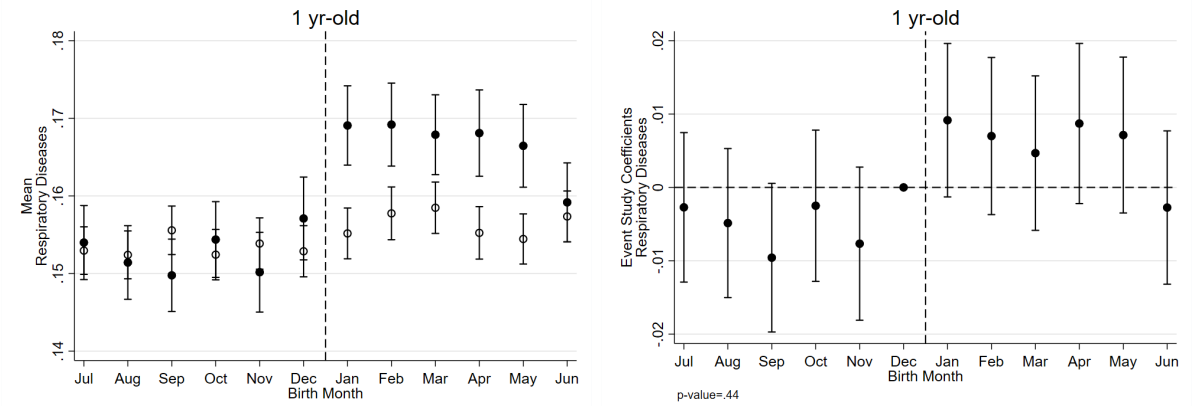
To assess whether treatment and control groups would have evolved similarly in the absence of the parental benefit reform or the childcare allowances, we estimate the following event study regression:

$$Y_{ikq} = \sum_{k=1}^{12} \delta_k 1[k = birth\ month_i] \times treated\ cohort_i + \sum_{j=1}^{3} \alpha_j 1[j = cohort_i] + X_i\beta + \alpha^{\mu} + \alpha^{\tau} + \alpha_q + \epsilon_{ikq}, \tag{3}$$

where $birth\ month_i$ is the month identified as the end of the pregnancy and hence the estimated birth month. To check if the health outcomes of ineligible mothers among treatment and control cohorts follow the same trend, we test if the event study coefficients for ineligible birth months are equal to zero. For the parental benefit reform, this is $\delta_7 = \delta_8 = \delta_9 = \delta_{10} = \delta_{11} = 0$ and for the childcare allowances, this is $\delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0$, with the last months before the cutoff being the baseline category. To illustrate this graphically, consider respiratory diseases for mothers in the second year after birth in Figure B.2 as an example.

Figure B.2: Common Trend – Parental Benefit Respiratory Diseases

(a) Mean Outcome (b) Event Study Coefficients



Notes: The left panel depicts the average prevalence of respiratory diseases in mothers of one-year old children conditional on the month of birth. The untreated group includes births between July 2004 and June 2006, represented by black circles with white filling. The treated cohort covers births between July 2006 and June 2007, represented by solid black circles. Event study coefficients from equation (3) are shown in the right panel.

In the left panel, we depict the probability of being diagnosed with respiratory diseases in any quarter within the second year after birth conditional on the birth month and for untreated cohorts (births between July 2004 and June 2006, represented by black circles with white filling), and the treated cohort (births between July 2006 and June 2007, represented by solid black circles) separately. The right panel shows the δ_k coefficients from equation (3), equaling the difference between treated and control cohorts relative to the difference for births in December, and conditional on additional control variables as shown in equation (3). If the p-value from the F-test $\delta_7 = \delta_8 = \delta_9 = \delta_1 0 = \delta_1 1 = 0$ is larger than 0.10, we fail to reject the null hypothesis of a common pre-trend, which supports the credibility of the untestable common-trend assumption. We perform this common-trend test for each outcome-age-group combination separately.

B.3.2 Heterogeneities – Childcare

B.3.2.1 First Stage Heterogeneity

Table B.1: First Stage – Heterogeneity by Subgroups (1 yr-old, i.e. age in months ≥ 13 and ≤ 24)

	Childcare Levels		Nationality		Education			Labor Market Attachment	
	Low	High	German	Other	Low	Middle	High	No	Yes
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Childcare Coverage	0.770	1.490***	1.297***	0.986**	0.306	0.793***	2.151***	1.009	1.619***
	(0.477)	(0.550)	(0.259)	(0.437)	(0.507)	(0.293)	(0.558)	(0.931)	(0.355)
F-statistic	2.6	7.3	25.1	5.1	0.4	7.3	14.9	1.2	20.8
Observations	823	715	1155	383	302	930	306	134	593
Mean Childcare	0.209	0.375	0.304	0.232	0.123	0.266	0.510	0.216	0.346
Baseline Characteristics	✓	✓	✓	✓	✓	✓	✓	✓	✓
Federal State FE	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: This table shows the impact of childcare coverage on individual childcare attendance for different subgroups using SOEP data and administrative statistics from the German Statistical Office for 2006 to 2019. The sample consists of mothers in West Germany one year after their first live birth. Each mother is included once. All regressions control for federal-state fixed effects and baseline characteristics, including fixed effects for calendar time (in years), maternal age (in years), and the child's age (in quarters). Pre-birth labor market attachment is defined as having been employed at any point prior to childbirth. Standard errors clustered at the county level are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

B.3.2.2 Childcare Levels

Table B.2: Childcare Regression – High vs Low Childcare

	Low Childcare			High Childcare		
	(1)	(2)	(3)	(4)	(5)	(6)
	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Depression						
Childcare	-0.009	-0.017	-0.038*	0.009	0.009	0.004
	(0.015)	(0.016)	(0.019)	(0.011)	(0.015)	(0.021)
Mean	0.037	0.044	0.051	0.040	0.047	0.054
Outcome: Mental Disorder Other						
Childcare	-0.011	-0.023	-0.039*	0.022	-0.008	-0.018
	(0.020)	(0.021)	(0.023)	(0.023)	(0.023)	(0.022)
Mean	0.058	0.066	0.073	0.063	0.072	0.077
Outcome: Respiratory Diseases						
Childcare	0.066***	0.057**	-0.029	0.108***	0.059***	-0.018
	(0.025)	(0.028)	(0.029)	(0.022)	(0.022)	(0.031)
Mean	0.161	0.179	0.198	0.172	0.184	0.197
Outcome: Headache						
Childcare	0.029*	0.019	0.018	0.028**	0.005	0.002
	(0.017)	(0.017)	(0.021)	(0.013)	(0.014)	(0.016)
Mean	0.055	0.060	0.066	0.052	0.057	0.062
Observations	1704348	1481749	1261937	1959213	1697454	1449435
County FE	✓	✓	✓	✓	✓	✓
Individual Controls	✓	✓	✓	✓	✓	✓
Regional Controls	✓	✓	✓	✓	✓	✓

Notes: The sample includes observations for mothers with one-year-old, two-year-old, and three-year-old children who lived in West Germany in the 5th quarter after the estimated childbirth. In all regressions, we control for calendar time, maternal age, and the estimated child's age in quarters. Individual controls include dummy variables for caesarean sections and preterm births. Regional controls include population density, fertility, the share of females of childbearing age, the unemployment rate, the share of foreigners, GDP per capita, the number of psychotherapists, and the number of general practitioners per 100,000 inhabitants. Columns (1)-(3) depict the results for mothers living in a county with a childcare coverage below average, columns (4)-(6) for mothers living in a county with a childcare coverage above average. Standard errors clustered at the county level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.3: Childcare Regression – High vs Low Childcare

	Low Childcare			High Childcare		
	(1)	(2)	(3)	(4)	(5)	(6)
	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Prescription of Antidepressants						
Childcare	-0.008	-0.011	-0.030**	0.002	0.006	0.010
	(0.009)	(0.012)	(0.014)	(0.007)	(0.009)	(0.013)
Mean	0.019	0.023	0.028	0.019	0.022	0.027
Outcome: Prescription of Antibiotics						
Childcare	-0.024	-0.009	-0.095***	0.016	0.030	-0.016
	(0.019)	(0.021)	(0.023)	(0.018)	(0.020)	(0.022)
Mean	0.135	0.145	0.161	0.131	0.137	0.149
Outcome: Prescription of Painkillers						
Childcare	0.001	-0.015	-0.022	0.015	0.017*	0.028***
	(0.010)	(0.010)	(0.014)	(0.009)	(0.010)	(0.010)
Mean	0.031	0.034	0.038	0.027	0.029	0.033
Observations	1704348	1481749	1261937	1959213	1697454	1449435
County FE	✓	✓	✓	✓	✓	✓
Individual Controls	✓	✓	✓	✓	✓	✓
Regional Controls	✓	✓	✓	✓	✓	✓

Notes: See Table B.2.

Table B.4: Childcare Regression – High vs Low Childcare

	Low Childcare			High Childcare		
	(1)	(2)	(3)	(4)	(5)	(6)
	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Diagnoses per Visit						
Childcare	0.278**	0.273**	0.184	0.276***	0.116	0.031
	(0.130)	(0.132)	(0.147)	(0.100)	(0.112)	(0.113)
Mean	1.511	1.550	1.565	1.469	1.507	1.515
Outcome: Physician Visits						
Childcare	-0.254	-0.379**	-0.097	-0.022	-0.228	-0.264
	(0.160)	(0.157)	(0.185)	(0.111)	(0.152)	(0.183)
Mean	2.162	2.261	2.231	2.198	2.307	2.265
Outcome: Psychotherapy						
Childcare	-0.018	-0.012	-0.023	-0.003	-0.012	-0.021
	(0.013)	(0.015)	(0.016)	(0.011)	(0.012)	(0.013)
Mean	0.019	0.023	0.026	0.025	0.029	0.033
Observations	1704348	1481749	1261937	1959213	1697454	1449435
County FE	✓	✓	✓	✓	✓	✓
Individual Controls	✓	✓	✓	✓	✓	✓
Regional Controls	✓	✓	✓	✓	✓	✓

Notes: See Table B.2.

B.3.2.3 Education

Table B.5: Childcare Regression – Education

	Low Education			Middle Education			High Education		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Depression									
Childcare	0.119***	0.076	0.143**	0.002	-0.002	-0.027	-0.016	0.009	0.012
	(0.043)	(0.050)	(0.063)	(0.013)	(0.015)	(0.019)	(0.018)	(0.021)	(0.025)
Mean	0.047	0.055	0.066	0.039	0.045	0.053	0.033	0.037	0.041
Outcome: Mental Disorder Other									
Childcare	0.130**	0.060	0.057	0.009	-0.001	-0.014	0.001	-0.026	-0.064**
	(0.056)	(0.055)	(0.069)	(0.019)	(0.020)	(0.021)	(0.028)	(0.030)	(0.031)
Mean	0.066	0.077	0.086	0.063	0.071	0.077	0.056	0.063	0.063
Outcome: Respiratory Diseases									
Childcare	0.209***	0.223***	0.038	0.137***	0.074***	0.015	0.043	-0.033	-0.047
	(0.062)	(0.072)	(0.086)	(0.019)	(0.025)	(0.026)	(0.036)	(0.036)	(0.034)
Mean	0.168	0.196	0.226	0.178	0.199	0.215	0.185	0.181	0.185
Outcome: Headache									
Childcare	-0.028	-0.030	-0.030	0.046***	0.040***	0.029*	0.003	-0.032	-0.016
	(0.045)	(0.054)	(0.062)	(0.014)	(0.015)	(0.017)	(0.021)	(0.021)	(0.027)
Mean	0.062	0.071	0.080	0.059	0.065	0.070	0.042	0.045	0.047
N	148560	128048	109016	1651039	1462863	1258147	706503	605482	512160
County FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ind. Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reg. Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The sample includes observations for mothers with one-year-old, two-year-old, and three-year-old children who lived in West Germany in the 5th quarter after the estimated childbirth. In all regressions, we control for calendar time, maternal age, and the estimated child's age in quarters. Individual controls include dummy variables for caesarean sections and preterm births. Regional controls include population density, fertility, the share of females of childbearing age, the unemployment rate, the share of foreigners, GDP per capita, the number of psychotherapists, and the number of general practitioners per 100,000 inhabitants. Results are reported separately for low-, middle-, and high-educated mothers, according to the definition in Section 4. Standard errors clustered at the county level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.6: Childcare Regression – Education

	Low Education			Middle Education			High Education		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Prescription of Antidepressants									
Childcare	0.053*	0.057	-0.011	0.001	-0.008	-0.017	-0.009	0.014	0.003
	(0.031)	(0.038)	(0.045)	(0.008)	(0.011)	(0.014)	(0.012)	(0.013)	(0.016)
Mean	0.024	0.030	0.036	0.019	0.022	0.027	0.014	0.016	0.019
Outcome: Prescription of Antibiotics									
Childcare	0.042	0.179***	-0.015	0.031*	0.027	-0.030	-0.015	-0.024	-0.016
	(0.065)	(0.058)	(0.076)	(0.016)	(0.020)	(0.021)	(0.027)	(0.028)	(0.026)
Mean	0.158	0.173	0.196	0.139	0.151	0.165	0.119	0.117	0.124
Outcome: Prescription of Painkillers									
Childcare	0.034	0.041	0.008	0.013	0.017*	0.016	-0.001	-0.016	0.017
	(0.032)	(0.035)	(0.043)	(0.010)	(0.010)	(0.010)	(0.014)	(0.015)	(0.016)
Mean	0.039	0.045	0.051	0.030	0.033	0.037	0.020	0.020	0.023
N	148560	128048	109016	1651039	1462863	1258147	706503	605482	512160
County FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ind. Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reg. Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: See Table B.5

Table B.7: Childcare Regression – Education

	Low Education			Middle Education			High Education		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Diagnoses per Visit									
Childcare	0.457*	0.506*	0.227	0.205**	0.124	0.020	0.055	-0.066	-0.156
	(0.248)	(0.296)	(0.389)	(0.094)	(0.110)	(0.103))	(0.129)	(0.161)	(0.160)
Mean	1.481	1.520	1.593	1.569	1.608	1.622	1.440	1.474	1.439
Outcome: Physician Visits									
Childcare	0.259	0.255	0.116	-0.307**	-0.242*	-0.016	0.014	-0.601***	-0.416*
	(0.399)	(0.458)	(0.473)	(0.124)	(0.126)	(0.152)	(0.195)	(0.211)	(0.222)
Mean	2.094	2.182	2.263	2.235	2.356	2.319	2.324	2.411	2.263
Outcome: Psychotherapy									
Childcare	-0.002	0.008	0.022	-0.012	-0.008	-0.011	0.001	-0.015	-0.032
	(0.028)	(0.029)	(0.038)	(0.010)	(0.012)	(0.013)	(0.019)	(0.021)	(0.024)
Mean	0.016	0.019	0.022	0.022	0.026	0.029	0.028	0.032	0.036
N	148560	128048	109016	1651039	1462863	1258147	706503	605482	512160
County FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ind. Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reg. Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: See Table B.5

B.3.2.4 Labor Market Attachment

Table B.8: Childcare Regression – Labor Market Attachment

	Not Attached			Attached		
	(1)	(2)	(3)	(4)	(5)	(6)
	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Depression						
Childcare	0.021	0.010	0.023	-0.001	-0.005	-0.029*
	(0.020)	(0.024)	(0.030)	(0.009)	(0.011)	(0.015)
Mean	0.037	0.044	0.052	0.039	0.046	0.053
Outcome: Mental Disorder Other						
Childcare	0.024	0.001	0.007	0.009	-0.013	-0.033**
	(0.028)	(0.026)	(0.030)	(0.016)	(0.016)	(0.016)
Mean	0.055	0.064	0.072	0.062	0.071	0.076
Outcome: Respiratory Diseases						
Childcare	0.042	0.101***	0.000	0.107***	0.044**	-0.015
	(0.031)	(0.030)	(0.038)	(0.018)	(0.019)	(0.021)
Mean	0.137	0.151	0.171	0.175	0.189	0.204
Outcome: Headache						
Childcare	0.004	-0.026	0.009	0.029***	0.018	0.002
	(0.019)	(0.025)	(0.030)	(0.010)	(0.011)	(0.013)
Mean	0.048	0.054	0.062	0.054	0.060	0.064
Observations	725542	633859	551379	2938019	2545344	2159993
County FE	✓	✓	✓	✓	✓	✓
Individual Controls	✓	✓	✓	✓	✓	✓
Regional Controls	✓	✓	✓	✓	✓	✓

Notes: The sample includes observations for mothers with one-year-old, two-year-old, and three-year-old children who lived in West Germany in the 5th quarter after the estimated childbirth. In all regressions, we control for calendar time, maternal age, and the estimated child's age in quarters. Individual controls include dummy variables for caesarean sections and preterm births. Regional controls include population density, fertility, the share of females of childbearing age, the unemployment rate, the share of foreigners, GDP per capita, the number of psychotherapists, and the number of general practitioners per 100,000 inhabitants. Columns (1)-(3) depict the results for mothers who are coinsured in at least one quarter before the estimated childbirth. Columns (4)-(6) depict the results for mothers who are main-insured in every quarter before childbirth. Standard errors clustered at the county level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.9: Childcare Regression – Labor Market Attachment

	Not Attached			Attached		
	(1)	(2)	(3)	(4)	(5)	(6)
	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Prescription of Antidepressants						
Childcare	0.015	0.018	0.048**	-0.005	-0.005	-0.019*
	(0.013)	(0.016)	(0.019)	(0.005)	(0.007)	(0.010)
Mean	0.021	0.026	0.031	0.019	0.022	0.027
Outcome: Prescription of Antibiotics						
Childcare	-0.010	0.009	-0.086***	0.006	0.003	-0.028
	(0.025)	(0.028)	(0.031)	(0.014)	(0.016)	(0.017)
Mean	0.133	0.140	0.155	0.132	0.141	0.155
Outcome: Prescription of Painkillers						
Childcare	0.009	-0.008	-0.024	0.010	0.006	0.015*
	(0.013)	(0.017)	(0.017)	(0.008)	(0.007)	(0.009)
Mean	0.031	0.035	0.039	0.028	0.031	0.034
Observations	725542	633859	551379	2938019	2545344	2159993
County FE	✓	✓	✓	✓	✓	✓
Individual Controls	✓	✓	✓	✓	✓	✓
Regional Controls	✓	✓	✓	✓	✓	✓

Notes: See Table B.8.

Table B.10: Childcare Regression – Labor Market Attachment

	Not Attached			Attached		
	(1)	(2)	(3)	(4)	(5)	(6)
	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Diagnoses per Visit						
Childcare	0.154	0.171	0.063	0.143*	0.095	-0.033
	(0.136)	(0.144)	(0.151)	(0.079)	(0.091)	(0.090)
Mean	1.358	1.396	1.436	1.520	1.560	1.565
Outcome: Physician Visits						
Childcare	-0.132	-0.094	-0.241	-0.216**	-0.289**	-0.184
	(0.191)	(0.206)	(0.210)	(0.101)	(0.120)	(0.135)
Mean	1.954	2.036	2.084	2.237	2.348	2.292
Outcome: Psychotherapy						
Childcare	-0.022	-0.024	-0.008	-0.013	-0.014	-0.026**
	(0.015)	(0.016)	(0.018)	(0.009)	(0.010)	(0.011)
Mean	0.017	0.020	0.023	0.024	0.028	0.032
Observations	725542	633859	551379	2938019	2545344	2159993
County FE	✓	✓	✓	✓	✓	✓
Individual Controls	✓	✓	✓	✓	✓	✓
Regional Controls	✓	✓	✓	✓	✓	✓

Notes: See Table B.8.

B.3.2.5 At-Risk Mothers

Table B.11: Childcare Regression – At-Risk Mothers

	Not At-Risk			At-Risk		
	(1)	(2)	(3)	(4)	(5)	(6)
	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Depression						
Childcare	-0.004	-0.017**	-0.023**	-0.061**	-0.051*	-0.104***
	(0.006)	(0.009)	(0.011)	(0.024)	(0.028)	(0.033)
Mean	0.013	0.020	0.026	0.095	0.102	0.111
Outcome: Mental Disorder Other						
Childcare	0.005	-0.007	-0.021	-0.068**	-0.118***	-0.141***
	(0.008)	(0.010)	(0.014)	(0.031)	(0.032)	(0.035)
Mean	0.026	0.035	0.043	0.138	0.144	0.147
Outcome: Respiratory Diseases						
	0.093***	0.053***	-0.035	0.089***	0.034	-0.004
	(0.018)	(0.019)	(0.024)	(0.031)	(0.027)	(0.030)
Mean	0.155	0.169	0.183	0.194	0.211	0.229
Outcome: Headache						
Childcare	0.014	0.000	-0.006	0.018	-0.005	-0.011
	(0.011)	(0.012)	(0.015)	(0.020)	(0.020)	(0.024)
Mean	0.043	0.048	0.053	0.075	0.082	0.087
N	2522183	2192731	1871758	1141378	986472	839614
County FE	✓	✓	✓	✓	✓	✓
Individual Controls	✓	✓	✓	✓	✓	✓
Regional Controls	✓	✓	✓	✓	✓	✓

Notes: The sample includes observations for mothers with one-year-old, two-year-old, and three-year-old children who lived in West Germany in the 5th quarter after the estimated childbirth. In all regressions, we control for calendar time, maternal age, and the estimated child's age in quarters. Individual controls include dummy variables for caesarean sections and preterm births. Regional controls include population density, fertility, the share of females of childbearing age, the unemployment rate, the share of foreigners, GDP per capita, the number of psychotherapists, and the number of general practitioners per 100,000 inhabitants. Columns (1)-(3) depict the results for mothers who did not receive any diagnosis of depression, other mental disorders, prescription of antidepressants, or psychotherapy before the estimated childbirth. Columns (4)-(6) depict the results for the remaining mothers who did receive such diagnoses or treatments in at least one quarter before childbirth. Standard errors clustered at the county level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.12: Childcare Regression – At-Risk Mothers Disorder

	Not At-Risk			At-Risk		
	(1)	(2)	(3)	(4)	(5)	(6)
	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Prescription of Antidepressants						
Childcare	-0.002	-0.003	-0.005	-0.033*	-0.036*	-0.054**
	(0.004)	(0.005)	(0.007)	(0.017)	(0.021)	(0.025)
Mean	0.007	0.010	0.014	0.045	0.050	0.057
Outcome: Prescription of Antibiotics						
Childcare	-0.006	0.000	-0.044**	0.008	-0.020	-0.066**
	(0.014)	(0.017)	(0.019)	(0.025)	(0.023)	(0.029)
Mean	0.123	0.131	0.144	0.154	0.164	0.177
Outcome: Prescription of Painkillers						
Childcare	0.004	0.003	0.002	0.011	-0.011	0.003
	(0.007)	(0.008)	(0.008)	(0.012)	(0.013)	(0.018)
Mean	0.024	0.026	0.030	0.039	0.043	0.047
N	2522183	2192731	1871758	1141378	986472	839614
County FE	✓	✓	✓	✓	✓	✓
Individual Controls	✓	✓	✓	✓	✓	✓
Regional Controls	✓	✓	✓	✓	✓	✓

Notes: See Table B.11.

Table B.13: Childcare Regression – At-Risk Mothers Disorder

	Not At-Risk			At-Risk		
	(1)	(2)	(3)	(4)	(5)	(6)
	1 yr-old	2 yr-old	3 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Diagnoses per Visit						
Childcare	0.112	0.062	-0.069	0.007	-0.015	-0.210
	(0.085)	(0.103)	(0.099)	(0.126)	(0.145)	(0.149)
Mean	1.384	1.428	1.438	1.719	1.748	1.762
Outcome: Physician Visits						
Childcare	-0.186*	-0.336***	-0.322**	-0.558***	-0.439**	-0.387*
	(0.101)	(0.111)	(0.130)	(0.158)	(0.179)	(0.221)
Mean	2.029	2.138	2.096	2.518	2.614	2.591
Outcome: Psychotherapy						
Childcare	-0.006	-0.009	-0.016*	-0.070***	-0.067**	-0.075***
	(0.005)	(0.007)	(0.009)	(0.025)	(0.027)	(0.026)
Mean	0.010	0.014	0.018	0.051	0.053	0.056
N	2522183	2192731	1871758	1141378	986472	839614
County FE	✓	✓	✓	✓	✓	✓
Individual Controls	✓	✓	✓	✓	✓	✓
Regional Controls	✓	✓	✓	✓	✓	✓

Notes: See Table B.11.

B.3.3 Heterogeneities – Parental Benefits

B.3.3.1 Education

Table B.14: Parental Benefits DiD – Education

	Low Education				Middle Education				High Education			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	0 yr-old	1 yr-old	2 yr-old	3 yr-old	0 yr-old	1 yr-old	2 yr-old	3 yr-old	0 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Depression												
treat	-0.019**	-0.006	-0.013	0.002	0.002	0.005	0.006*	0.004	0.001	-0.004	-0.002	0.004
	(0.008)	(0.010)	(0.011)	(0.014)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)	(0.006)	(0.006)	(0.007)
Mean	0.025	0.033	0.038	0.052	0.022	0.029	0.035	0.044	0.018	0.026	0.031	0.040
F-Statistic	0.430	0.845	0.852	0.798	1.032	1.339	1.563	1.078	0.470	0.823	0.883	1.318
p-value	0.828	0.517	0.513	0.551	0.397	0.244	0.167	0.370	0.799	0.533	0.491	0.253
Outcome: Mental Disorder Other												
treat	-0.019*	-0.017	-0.026**	-0.012	-0.003	-0.000	-0.002	-0.000	-0.006	0.005	0.007	0.008
	(0.011)	(0.012)	(0.013)	(0.016)	(0.003)	(0.004)	(0.004)	(0.004)	(0.006)	(0.007)	(0.007)	(0.008)
Mean	0.044	0.052	0.059	0.071	0.038	0.049	0.055	0.064	0.033	0.048	0.051	0.056
F-Statistic	1.716	1.016	2.247	1.212	0.915	1.297	0.762	1.226	1.003	0.202	0.321	1.288
p-value	0.127	0.406	0.047	0.301	0.470	0.262	0.577	0.294	0.414	0.962	0.901	0.266
Outcome: Respiratory Diseases												
treat	-0.006	-0.010	-0.020	0.015	-0.004	0.018***	-0.008*	0.019***	0.004	0.004	-0.002	0.025**
	(0.013)	(0.014)	(0.016)	(0.018)	(0.004)	(0.004)	(0.005)	(0.005)	(0.008)	(0.009)	(0.009)	(0.010)
Mean	0.133	0.157	0.179	0.219	0.132	0.165	0.185	0.211	0.125	0.171	0.174	0.185
F-Statistic	0.767	1.269	0.972	1.464	0.640	1.395	0.747	2.737	1.778	1.061	1.134	2.341
p-value	0.574	0.274	0.434	0.198	0.669	0.222	0.588	0.018	0.114	0.380	0.340	0.039
Outcome: Headache												
treat	-0.004	-0.006	0.006	0.019	-0.003	-0.001	-0.002	0.001	-0.002	-0.009	-0.007	-0.004
	(0.009)	(0.010)	(0.012)	(0.013)	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)	(0.006)	(0.006)	(0.007)
Mean	0.041	0.050	0.054	0.063	0.042	0.051	0.055	0.061	0.029	0.039	0.041	0.044
F-Statistic	0.198	2.037	0.650	0.845	1.506	0.153	0.509	1.196	0.054	1.183	1.299	0.304
p-value	0.963	0.070	0.662	0.517	0.184	0.979	0.770	0.308	0.998	0.315	0.261	0.911
Observations	18254	17410	15848	14073	196262	190300	181602	161899	49307	47791	45823	43113
Ind. Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: See Table B.15

Table B.15: Parental Benefits DiD – Education

	Low Education				Middle Education				High Education			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	0 yr-old	1 yr-old	2 yr-old	3 yr-old	0 yr-old	1 yr-old	2 yr-old	3 yr-old	0 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Prescription of Antidepressants												
treat	-0.009	-0.003	-0.000	0.002	-0.002	-0.002	0.001	0.003	0.002	-0.000	0.002	0.004
	(0.005)	(0.007)	(0.008)	(0.011)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)
Mean	0.012	0.019	0.023	0.031	0.009	0.014	0.018	0.023	0.007	0.011	0.013	0.016
F-Statistic	1.375	2.021	0.998	1.919	1.283	1.309	1.439	0.535	0.357	0.795	0.346	0.580
p-value	0.230	0.072	0.417	0.088	0.268	0.257	0.206	0.750	0.878	0.553	0.885	0.715
Outcome: Prescription of Antibiotics												
treat	0.000	-0.025*	-0.030**	-0.010	-0.002	0.004	0.000	0.007	0.004	-0.005	0.010	0.016*
	(0.012)	(0.014)	(0.015)	(0.017)	(0.003)	(0.004)	(0.004)	(0.005)	(0.006)	(0.007)	(0.008)	(0.008)
Mean	0.125	0.154	0.168	0.195	0.109	0.139	0.154	0.175	0.093	0.128	0.130	0.139
F-Statistic	0.933	1.509	1.031	0.787	1.944	0.819	3.256	0.880	1.916	1.165	0.913	0.195
p-value	0.458	0.183	0.397	0.559	0.084	0.536	0.006	0.494	0.088	0.324	0.471	0.964
Outcome: Prescription of Painkillers												
treat	0.006	-0.007	0.002	-0.002	0.000	0.003	-0.003	0.001	-0.005*	-0.003	-0.003	-0.001
	(0.006)	(0.007)	(0.008)	(0.008)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.004)
Mean	0.028	0.036	0.039	0.041	0.019	0.027	0.029	0.033	0.012	0.018	0.018	0.022
F-Statistic	0.455	0.780	1.406	0.848	0.610	1.686	1.660	0.625	0.915	0.389	1.615	0.767
p-value	0.810	0.564	0.219	0.515	0.692	0.134	0.141	0.681	0.470	0.857	0.152	0.574
Observations	18254	17410	15848	14073	196262	190300	181602	161899	49307	47791	45823	43113
Ind. Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The sample includes observations for mothers who lived in West Germany one year after their first live birth and who gave birth between October and March 2004/2005-2006/2007. In all regressions, we control for the quarter of the observation, maternal age, and the estimated child's age in quarters, caesarean section, preterm birth, and nationality. The F-statistic and p-values stem from an event study regression to check if the health outcomes of ineligible treatment and control mothers follow the same (pre-) trend (see appendix B.3.1 for details). Results are reported separately for low-, middle-, and high-educated mothers, according to the definition in Section 4. Standard errors clustered at the individual level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.16: Parental Benefits DiD – Education

	Low Education				Middle Education				High Education			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	0 yr-old	1 yr-old	2 yr-old	3 yr-old	0 yr-old	1 yr-old	2 yr-old	3 yr-old	0 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Diagnoses per Visit												
treat	-0.117*	0.004	-0.060	-0.009	0.005	0.037*	0.031	0.013	-0.044	-0.095***	-0.018	-0.018
	(0.065)	(0.063)	(0.070)	(0.080)	(0.021)	(0.021)	(0.021)	(0.023)	(0.037)	(0.036)	(0.036)	(0.040)
Mean	1.568	1.450	1.440	1.516	1.636	1.509	1.522	1.536	1.461	1.386	1.391	1.369
F-Statistic	0.534	1.546	1.399	0.110	0.438	1.811	0.976	1.446	3.048	0.624	1.209	2.387
p-value	0.751	0.172	0.221	0.990	0.823	0.107	0.431	0.204	0.009	0.681	0.302	0.036
Outcome: Physician Visits												
treat	-0.071	0.083	-0.023	-0.066	-0.039*	0.054**	-0.026	-0.031	-0.007	-0.035	-0.043	0.011
	(0.072)	(0.082)	(0.096)	(0.103)	(0.022)	(0.025)	(0.028)	(0.030)	(0.043)	(0.050)	(0.055)	(0.057)
Mean	1.674	1.822	1.947	2.067	1.714	1.914	2.085	2.131	1.716	1.996	2.089	2.052
F-Statistic	0.562	0.293	0.202	1.255	0.563	2.250	2.895	0.992	1.247	0.633	1.437	0.663
p-value	0.729	0.917	0.962	0.281	0.728	0.047	0.013	0.421	0.284	0.674	0.207	0.652
Outcome: Psychotherapy												
treat	-0.008	-0.002	-0.003	0.005	-0.004*	-0.002	0.001	0.003	0.003	0.002	0.008	0.004
	(0.005)	(0.006)	(0.008)	(0.009)	(0.002)	(0.002)	(0.003)	(0.003)	(0.005)	(0.006)	(0.006)	(0.006)
Mean	0.011	0.015	0.017	0.018	0.015	0.020	0.023	0.026	0.020	0.026	0.030	0.033
F-Statistic	0.470	0.263	1.763	1.370	0.725	0.789	1.150	1.933	0.453	0.588	0.839	0.133
p-value	0.799	0.933	0.117	0.232	0.605	0.558	0.331	0.085	0.812	0.709	0.522	0.985
Observations	18254	17410	15848	14073	196262	190300	181602	161899	49307	47791	45823	43113
Ind. Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: See Table B.15

B.3.3.2 Labor Market Attachment

Table B.17: Parental Benefits DiD – Labor Market Attachment

	Not Attached				Attached			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	0 yr-old	1 yr-old	2 yr-old	3 yr-old	0 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Depression								
treat	0.002	-0.000	-0.002	0.004	-0.001	0.000	0.001	0.003
	(0.004)	(0.004)	(0.005)	(0.006)	(0.002)	(0.002)	(0.003)	(0.003)
Mean	0.021	0.029	0.035	0.044	0.024	0.031	0.037	0.047
F-Statistic	0.278	0.538	1.450	1.558	1.242	1.126	1.136	1.281
p-value	0.926	0.747	0.203	0.168	0.286	0.344	0.339	0.269
Outcome: Mental Disorder Other								
treat	-0.000	-0.001	-0.001	0.001	-0.004*	0.001	-0.002	-0.001
	(0.004)	(0.005)	(0.006)	(0.006)	(0.002)	(0.003)	(0.003)	(0.004)
Mean	0.039	0.048	0.054	0.063	0.039	0.051	0.057	0.066
F-Statistic	1.081	0.869	1.737	0.583	1.118	1.356	1.485	1.904
p-value	0.369	0.501	0.122	0.713	0.348	0.238	0.191	0.090
Outcome: Respiratory Diseases								
treat	0.004	0.011*	-0.010	0.007	-0.003	0.010***	-0.010**	0.016***
	(0.006)	(0.006)	(0.006)	(0.007)	(0.003)	(0.004)	(0.004)	(0.004)
Mean	0.126	0.139	0.149	0.167	0.130	0.162	0.179	0.202
F-Statistic	0.149	0.493	1.187	0.470	0.196	1.781	1.210	3.883
p-value	0.981	0.782	0.313	0.799	0.964	0.113	0.301	0.002
Outcome: Headache								
treat	0.003	-0.001	0.004	0.006	-0.003	-0.004	-0.003	-0.001
	(0.004)	(0.005)	(0.005)	(0.005)	(0.002)	(0.003)	(0.003)	(0.003)
Mean	0.039	0.047	0.050	0.055	0.039	0.048	0.053	0.058
F-Statistic	1.524	1.193	1.714	3.006	1.025	0.791	0.220	1.369
p-value	0.178	0.310	0.127	0.010	0.401	0.556	0.954	0.232
Observations	91941	88077	82069	76326	317005	305924	289413	260284
Ind. Controls	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The sample includes observations for mothers who lived in West Germany one year after their first live birth, and who gave birth between October and March 2004/2005-2006/2007. In all regressions, we control for the quarter of the observation, maternal age, and the estimated child's age in quarters, caesarean section, preterm birth, and nationality. The F-statistic and p-values stem from an event study regression to check if the health outcomes of ineligible treatment and control mothers follow the same (pre-) trend (see appendix B.3.1 for details). Columns (1)-(4) depict the results for mothers who are coinsured in at least one quarter before the estimated childbirth. Columns (5)-(8) depict the results for mothers who are main-insured in every quarter before childbirth. Standard errors clustered at the individual level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.18: Parental Benefits DiD – Labor Market Attachment

	Not Attached				Attached			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	0 yr-old	1 yr-old	2 yr-old	3 yr-old	0 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Prescription of Antidepressants								
treat	-0.001	-0.005*	-0.000	0.004	-0.002	-0.002	0.001	0.001
	(0.002)	(0.003)	(0.004)	(0.004)	(0.001)	(0.002)	(0.002)	(0.002)
Mean	0.011	0.017	0.022	0.028	0.010	0.015	0.019	0.025
F-Statistic	1.593	3.079	1.732	2.461	0.809	2.058	1.306	0.762
p-value	0.158	0.009	0.124	0.031	0.543	0.067	0.258	0.577
Outcome: Prescription of Antibiotics								
treat	0.010*	0.006	0.003	0.012*	-0.004	-0.002	-0.002	0.007*
	(0.005)	(0.006)	(0.006)	(0.007)	(0.003)	(0.003)	(0.003)	(0.004)
Mean	0.116	0.136	0.144	0.159	0.107	0.137	0.149	0.168
F-Statistic	0.339	0.082	0.818	0.237	0.530	1.081	2.092	1.822
p-value	0.890	0.995	0.536	0.946	0.754	0.368	0.063	0.105
Outcome: Prescription of Painkillers								
treat	0.002	0.002	0.001	0.004	-0.001	-0.001	-0.004**	-0.001
	(0.003)	(0.003)	(0.004)	(0.004)	(0.001)	(0.002)	(0.002)	(0.002)
Mean	0.024	0.029	0.033	0.037	0.019	0.027	0.029	0.033
F-Statistic	0.887	0.896	0.877	0.754	1.210	1.379	1.537	0.666
p-value	0.489	0.483	0.495	0.583	0.301	0.229	0.175	0.649
Observations	91941	88077	82069	76326	317005	305924	289413	260284
Ind. Controls	✓	✓	✓	✓	✓	✓	✓	✓

Notes: See Table B.17.

Table B.19: Parental Benefits DiD – Labor Market Attachment

	Not Attached				Attached			
	(1) 0 yr-old	(2) 1 yr-old	(3) 2 yr-old	(4) 3 yr-old	(5) 0 yr-old	(6) 1 yr-old	(7) 2 yr-old	(8) 3 yr-old
Outcome: Diagnoses per Visit								
treat	0.009	-0.029	0.013	0.027	-0.010	0.001	-0.003	-0.015
	(0.030)	(0.029)	(0.031)	(0.034)	(0.016)	(0.016)	(0.016)	(0.018)
Mean	1.478	1.365	1.370	1.385	1.589	1.472	1.482	1.491
F-Statistic	2.132	0.972	1.398	1.329	1.684	3.256	1.365	2.727
p-value	0.059	0.433	0.221	0.248	0.134	0.006	0.234	0.018
Outcome: Physician Visits								
treat	-0.003	0.016	0.012	0.014	-0.044**	0.037*	-0.039*	-0.038
	(0.032)	(0.037)	(0.041)	(0.045)	(0.018)	(0.020)	(0.023)	(0.024)
Mean	1.618	1.752	1.836	1.946	1.703	1.912	2.065	2.107
F-Statistic	0.750	1.453	1.471	1.574	0.642	1.946	2.640	0.772
p-value	0.586	0.202	0.196	0.164	0.667	0.083	0.022	0.570
Outcome: Psychotherapy								
treat	-0.003	-0.006*	-0.007**	-0.009**	-0.002	0.001	0.004**	0.003
	(0.003)	(0.003)	(0.003)	(0.004)	(0.002)	(0.002)	(0.002)	(0.003)
Mean	0.012	0.016	0.019	0.022	0.017	0.022	0.025	0.029
F-Statistic	0.963	0.934	0.694	0.916	0.772	0.834	1.609	1.940
p-value	0.439	0.457	0.628	0.469	0.570	0.525	0.154	0.084
Observations	91941	88077	82069	76326	317005	305924	289413	260284
Ind. Controls	✓	✓	✓	✓	✓	✓	✓	✓

Notes: See Table B.17.

B.3.3.3 At-Risk Mothers

Table B.20: Parental Benefits DiD – At-Risk Mothers

	Not At-Risk				At-Risk			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	0 yr-old	1 yr-old	2 yr-old	3 yr-old	0 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Depression								
treat	-0.002**	-0.001	-0.001	0.004*	0.009*	0.008	0.008	0.006
	(0.001)	(0.001)	(0.002)	(0.002)	(0.005)	(0.006)	(0.007)	(0.007)
Mean	0.006	0.013	0.019	0.027	0.067	0.075	0.083	0.096
F-Statistic	0.828	0.379	0.478	1.067	1.115	0.979	0.627	1.498
p-value	0.529	0.863	0.793	0.376	0.350	0.429	0.680	0.187
Outcome: Mental Disorder Other								
treat	0.002	0.001	-0.000	0.001	-0.005	0.008	0.004	0.003
	(0.001)	(0.002)	(0.002)	(0.003)	(0.006)	(0.007)	(0.007)	(0.008)
Mean	0.012	0.023	0.032	0.040	0.109	0.118	0.121	0.130
F-Statistic	0.270	0.493	1.173	0.453	0.401	1.362	1.824	2.124
p-value	0.930	0.782	0.320	0.811	0.849	0.235	0.104	0.059
Outcome: Respiratory Diseases								
treat	0.002	0.012***	-0.008**	0.020***	-0.007	0.009	-0.010	0.005
	(0.003)	(0.004)	(0.004)	(0.004)	(0.006)	(0.006)	(0.007)	(0.007)
Mean	0.120	0.147	0.162	0.182	0.151	0.182	0.197	0.226
F-Statistic	0.560	0.827	0.973	2.443	0.918	0.818	1.524	1.042
p-value	0.731	0.530	0.432	0.032	0.468	0.537	0.178	0.391
Outcome: Headache								
treat	-0.001	0.000	0.003	0.003	-0.001	-0.009*	-0.009*	-0.003
	(0.002)	(0.002)	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)	(0.006)
Mean	0.033	0.041	0.045	0.050	0.056	0.065	0.070	0.078
F-Statistic	1.046	0.980	0.499	2.497	0.327	0.872	1.248	0.841
p-value	0.389	0.428	0.777	0.029	0.897	0.499	0.283	0.520
Observations	293887	283282	267084	241770	115059	110719	104398	94840
Ind. Controls	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The sample includes observations for mothers who lived in West Germany one year after their first live birth, and who gave birth between October and March 2004/2005-2006/2007. In all regressions, we control for the quarter of the observation, maternal age, and the estimated child's age in quarters, caesarean section, preterm birth, and nationality. The F-statistic and p-values stem from an event study regression to check if the health outcomes of ineligible treatment and control mothers follow the same (pre-) trend (see appendix B.3.1 for details). Columns (1)-(4) depict the results for mothers who did not receive any diagnosis of depression, other mental disorders, prescription of antidepressants, or psychotherapy before the estimated childbirth. Columns (5)-(8) depict the results for the remaining mothers who did receive such diagnoses or treatments in at least one quarter before childbirth. Standard errors clustered at the individual level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.21: Parental Benefits DiD – At-Risk Mothers

	Not At-Risk				At-Risk			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	0 yr-old	1 yr-old	2 yr-old	3 yr-old	0 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Prescription of Antidepressants								
treat	-0.001**	-0.002**	0.001	0.003	-0.000	-0.002	0.002	0.001
	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)	(0.004)	(0.004)	(0.005)
Mean	0.004	0.007	0.011	0.015	0.027	0.036	0.042	0.052
F-Statistic	0.508	1.657	0.234	0.564	0.797	0.844	0.447	0.558
p-value	0.770	0.141	0.948	0.728	0.552	0.518	0.816	0.732
Outcome: Prescription of Antibiotics								
treat	0.001	0.003	0.000	0.011***	-0.001	-0.005	-0.000	0.004
	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)	(0.005)	(0.006)	(0.006)
Mean	0.103	0.129	0.140	0.157	0.127	0.157	0.170	0.189
F-Statistic	1.614	0.361	2.797	1.747	0.334	0.678	0.631	0.598
p-value	0.153	0.875	0.016	0.120	0.893	0.640	0.676	0.701
Outcome: Prescription of Painkillers								
treat	0.001	0.000	-0.002	-0.000	-0.001	-0.000	-0.003	0.003
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.004)
Mean	0.018	0.024	0.026	0.030	0.026	0.036	0.039	0.044
F-Statistic	0.649	1.233	1.076	0.541	0.541	1.561	2.340	0.487
p-value	0.662	0.291	0.372	0.745	0.745	0.167	0.039	0.786
Observations	293887	283282	267084	241770	115059	110719	104398	94840
Ind. Controls	✓	✓	✓	✓	✓	✓	✓	✓

Notes: See Table B.20.

Table B.22: Parental Benefits DiD – At-Risk Mothers

	Not At-Risk				At-Risk			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	0 yr-old	1 yr-old	2 yr-old	3 yr-old	0 yr-old	1 yr-old	2 yr-old	3 yr-old
Outcome: Diagnoses per Visit								
treat	0.033**	0.018	0.029*	0.031*	-0.062**	-0.034	-0.043	-0.066**
	(0.015)	(0.015)	(0.016)	(0.017)	(0.031)	(0.030)	(0.031)	(0.033)
Mean	1.462	1.359	1.374	1.385	1.825	1.675	1.669	1.678
F-Statistic	0.659	1.905	0.857	1.014	2.294	0.613	0.777	2.075
p-value	0.654	0.090	0.509	0.407	0.043	0.690	0.566	0.065
Outcome: Physician Visits								
treat	-0.016	0.047**	-0.001	-0.009	-0.034	0.027	-0.051	-0.032
	(0.017)	(0.020)	(0.022)	(0.024)	(0.032)	(0.036)	(0.041)	(0.043)
Mean	1.562	1.762	1.897	1.943	1.994	2.169	2.315	2.395
F-Statistic	1.078	1.350	1.457	0.204	0.532	1.027	1.483	0.630
p-value	0.370	0.240	0.200	0.961	0.752	0.399	0.192	0.677
Outcome: Psychotherapy								
treat	0.000	0.001	0.002	0.000	-0.005	-0.001	0.005	0.003
	(0.001)	(0.001)	(0.002)	(0.002)	(0.005)	(0.005)	(0.005)	(0.005)
Mean	0.004	0.010	0.014	0.018	0.046	0.049	0.048	0.051
F-Statistic	1.219	0.734	0.293	1.115	0.241	0.771	1.175	0.587
p-value	0.297	0.598	0.917	0.350	0.944	0.570	0.318	0.710
Observations	293887	283282	267084	241770	115059	110719	104398	94840
Ind. Controls	✓	✓	✓	✓	✓	✓	✓	✓

Notes: See Table B.20.

B.3.4 Robustness Checks

B.3.4.1 Childcare

Table B.23: Childcare Results (TWM) – All Mothers: Diagnoses

	(1)	(2)	(3)
	1 yr-old	2 yr-old	3 yr-old
Outcome: Depression			
Childcare	0.001	0.008	-0.000
	(0.010)	(0.012)	(0.015)
Mean	0.039	0.045	0.053
Outcome: Mental Disorder Other			
Childcare	0.012	0.002	-0.014
	(0.016)	(0.015)	(0.017)
Mean	0.061	0.069	0.075
Outcome: Respiratory Diseases			
Childcare	0.084***	0.054***	-0.005
	(0.018)	(0.021)	(0.023)
Mean	0.167	0.182	0.197
Outcome: Headache			
Childcare	0.018*	0.001	-0.014
	(0.011)	(0.011)	(0.013)
Mean	0.053	0.059	0.063
Observations	3663561	3179203	2711372
County FE	✓	✓	✓
Individual Controls	✓	✓	✓
Regional Controls	✓	✓	✓

Notes: The sample includes observations for mothers with one-year-old, two-year-old, and three-year-old children who lived in West Germany in the 5th quarter after the estimated childbirth. We control for calendar time, maternal age, the estimated child's age in quarters, caesarean section, and preterm birth. Regional controls include population density, fertility, the share of females of childbearing age, the unemployment rate, the share of foreigners, GDP per capita, the number of psychotherapists, and the number of general practitioners per 100,000 inhabitants. The regressions incorporate interaction terms between childcare and each regional control variable and are estimated with a two-way Mundlak estimator (TWM). Standard errors clustered at the county level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.24: Childcare Results (TWM) – All Mothers: Prescription

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Prescription of Antidepressants			
Childcare	-0.005	-0.000	-0.004
	(0.006)	(0.007)	(0.010)
Mean	0.019	0.023	0.027
Outcome: Prescription of Antibiotics			
Childcare	0.013	0.017	-0.039*
	(0.016)	(0.017)	(0.021)
Mean	0.133	0.141	0.155
Outcome: Prescription of Painkillers			
Childcare	0.009	0.002	0.002
	(0.007)	(0.008)	(0.010)
Mean	0.029	0.032	0.035
Observations	3663561	3179203	2711372
County FE	✓	✓	✓
Individual Controls	✓	✓	✓
Regional Controls	✓	✓	✓

Notes: See Table B.23.

Table B.25: Childcare Results (TWM) – All Mothers: Healthcare Utilization

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Diagnoses per Visit			
Childcare	0.125	0.107	0.011
	(0.119)	(0.120)	(0.134)
Mean	1.488	1.527	1.539
Outcome: Physician Visits			
Childcare	-0.245**	-0.324**	-0.218
	(0.114)	(0.134)	(0.153)
Mean	2.181	2.285	2.250
Outcome: Psychotherapy			
Childcare	-0.019**	-0.017*	-0.032***
	(0.008)	(0.010)	(0.010)
Mean	0.022	0.026	0.030
Observations	3663561	3179203	2711372
County FE	✓	✓	✓
Individual Controls	✓	✓	✓
Regional Controls	✓	✓	✓

Notes: See Table B.23.

Table B.26: Childcare Results (CHV) – All Mothers: Diagnoses

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Depression			
Childcare	-0.017	-0.009	-0.026
	(0.028)	(0.032)	(0.043)
Mean	0.038	0.045	0.052
Outcome: Mental Disorder Other			
Childcare	-0.036	-0.035	-0.051
	(0.031)	(0.040)	(0.046)
Mean	0.059	0.067	0.074
Outcome: Respiratory Diseases			
Childcare	0.046	0.039	0.015
	(0.038)	(0.046)	(0.053)
Mean	0.164	0.180	0.198
Outcome: Headache			
Childcare	-0.020	0.003	0.024
	(0.028)	(0.034)	(0.039)
Mean	0.053	0.058	0.063
Observations	3520	3200	2880

Notes: The table shows coefficients from the CHV-estimator (De Chaisemartin et al., 2024) based on an average of pairwise comparisons of observations three years apart. The sample includes aggregated observations by county and year for mothers with one-year-old, two-year-old, and three-year-old children who lived in West Germany in the 5th quarter after the estimated childbirth. Bootstrapped standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.27: Childcare Results (CHV) – All Mothers: Prescription

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Prescription of Antidepressants			
Childcare	-0.012	-0.003	-0.049*
	(0.018)	(0.022)	(0.029)
Mean	0.020	0.024	0.029
Outcome: Prescription of Antibiotics			
Childcare	-0.024	-0.028	-0.100**
	(0.034)	(0.040)	(0.046)
Mean	0.137	0.147	0.164
Outcome: Prescription of Painkillers			
Childcare	0.012	0.015	0.010
	(0.018)	(0.021)	(0.026)
Mean	0.029	0.032	0.036
Observations	3520	3200	2880

Notes: See Table B.26.

Table B.28: Childcare Results (CHV) – All Mothers: Healthcare Utilization

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Diagnoses per Visit			
Childcare	0.028	0.185	0.201
	(0.182)	(0.205)	(0.224)
Mean	1.503	1.537	1.554
Outcome: Physician Visits			
Childcare	-0.212	-0.588**	-0.624*
	(0.232)	(0.270)	(0.328)
Mean	2.121	2.220	2.197
Outcome: Psychotherapy			
Childcare	-0.033	-0.027	-0.014
	(0.021)	(0.027)	(0.032)
Mean	0.019	0.023	0.025
Observations	3520	3200	2880

Notes: See Table B.26.

B.3.4.2 Parental Benefits

Table B.29: Parental Benefit Results for Six Months Bandwidth – All Mothers: Diagnoses

	(1) 0 yr-old	(2) 1 yr-old	(3) 2 yr-old	(4) 3 yr-old
Outcome: Depression				
treat	-0.002*	-0.001	-0.000	0.000
	(0.001)	(0.001)	(0.002)	(0.002)
Mean	0.023	0.030	0.036	0.046
Outcome: Mental Disorder Other				
treat	-0.004**	-0.001	-0.004*	-0.000
	(0.001)	(0.002)	(0.002)	(0.002)
Mean	0.039	0.049	0.057	0.065
Outcome: Respiratory Diseases				
treat	-0.004**	0.010***	-0.012***	0.005*
	(0.002)	(0.002)	(0.002)	(0.003)
Mean	0.128	0.156	0.170	0.196
Outcome: Headache				
treat	0.000	0.002	-0.001	-0.000
	(0.001)	(0.002)	(0.002)	(0.002)
Mean	0.038	0.047	0.051	0.057
Observations	841046	812913	766362	692602
Individual Controls	✓	✓	✓	✓

Notes: The sample includes observations for mothers who lived in West Germany in the fifth quarter after their estimated life birth and who gave birth between July 2004 and June 2007. In all regressions, we control for the quarter of the observation, maternal age, the estimated child's age in quarters, caesarean section, preterm birth, and nationality. Standard errors clustered at the individual level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.30: Parental Benefit Results for Six Months Bandwidth – All Mothers: Prescription

	(1) 0 yr-old	(2) 1 yr-old	(3) 2 yr-old	(4) 3 yr-old
Outcome: Prescription of Antidepressants				
treat	-0.002**	-0.001	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Mean	0.010	0.015	0.019	0.025
Outcome: Prescription of Antibiotics				
treat	-0.001	0.002	-0.002	0.004*
	(0.002)	(0.002)	(0.002)	(0.002)
Mean	0.108	0.137	0.147	0.167
Outcome: Prescription of Painkillers				
treat	0.001	-0.000	-0.002	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Mean	0.021	0.027	0.030	0.034
Observations	841046	812913	766362	692602
Individual Controls	✓	✓	✓	✓

Notes: See Table B.29.

B.3.5 Analysis of Balanced Sample

Table B.32: Summary Statistics – Balanced

	Mean	SD
Depression	0.042	0.200
Mental Disorder Other	0.064	0.244
Prescription of Antidepressants	0.020	0.139
Psychotherapy	0.023	0.151
Respiratory Diseases	0.162	0.369
Prescription of Antibiotics	0.134	0.340
Headache	0.053	0.223
Prescription of Painkillers	0.028	0.164
Physician Visits	2.233	1.996
Diagnoses per Visit	1.504	1.492
main-insured	0.818	0.386
Observations	11,572,257	

Notes: The table shows the mean and the standard deviation for each outcome for quarters 1-16 after childbirth using GePaRD data. We restrict the sample to the first live births of West German mothers who are observable for four years after childbirth.

Table B.31: Parental Benefit Results for Six Months Bandwidth – All Mothers: Healthcare Utilization

	(1) 0 yr-old	(2) 1 yr-old	(3) 2 yr-old	(4) 3 yr-old
Outcome: Diagnoses per Visit				
treat	0.003	-0.012	0.001	0.020*
	(0.010)	(0.010)	(0.010)	(0.011)
Mean	1.560	1.448	1.453	1.470
Outcome: Physician Visits				
treat	-0.021*	0.031**	-0.044***	-0.041***
	(0.011)	(0.012)	(0.014)	(0.015)
Mean	1.681	1.865	2.010	2.070
Outcome: Psychotherapy				
treat	-0.002*	-0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Mean	0.016	0.020	0.024	0.027
Observations	841046	812913	766362	692602
Individual Controls	✓	✓	✓	✓

Notes: See Table B.29.

Table B.33: Background Characteristics – Balanced Sample

	Mean	SD
Other Nationality	0.077	0.266
German	0.834	0.372
Nationality Missing	0.089	0.284
Age at Birth	31.043	5.225
Premature Birth	0.070	0.256
Cesarean Section	0.359	0.480
Lower Education	0.040	0.195
Middle Education	0.467	0.499
Higher Education	0.182	0.386
Education Missing	0.312	0.463
Attached to Labor Market	0.795	0.404
Observations	680,721	

Notes: The table includes information on the first live birth of each mother using GePaRD data. We restrict the sample to West German mothers who are observable the whole four years after childbirth.

B.3.5.1 Childcare

Table B.34: Childcare Results – Balanced Sample: Diagnoses

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Depression			
Childcare	-0.003	-0.006	-0.018
	(0.011)	(0.012)	(0.014)
Mean	0.039	0.047	0.054
Outcome: Mental Disorder Other			
Childcare	0.022	0.004	-0.025
	(0.017)	(0.015)	(0.016)
Mean	0.062	0.072	0.077
Outcome: Respiratory Diseases			
Childcare	0.089***	0.087***	-0.010
	(0.021)	(0.019)	(0.021)
Mean	0.170	0.185	0.199
Outcome: Headache			
Childcare	0.004	-0.001	0.000
	(0.011)	(0.012)	(0.013)
Mean	0.052	0.058	0.064
Observations	2548332	2548332	2548332
County FE	✓	✓	✓
Individual Controls	✓	✓	✓
Regional Controls	✓	✓	✓

Notes: The sample includes observations for mothers with one-year-old, two-year-old, and three-year-old children who lived in West Germany in the 5th quarter after the estimated childbirth and who are observable for the full four years after birth in our sample. In all regressions, we control for calendar time, maternal age, and the estimated child's age in quarters. Individual controls include dummy variables for caesarean sections and preterm births. Regional controls include population density, fertility, the share of females of childbearing age, the unemployment rate, the share of foreigners, GDP per capita, the number of psychotherapists, and the number of general practitioners per 100,000 inhabitants. Standard errors clustered at the county level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.35: Childcare Results – Balanced Sample: Prescription

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Prescription of Antidepressants			
Childcare	0.001	0.002	-0.001
	(0.007)	(0.008)	(0.010)
Mean	0.019	0.023	0.028
Outcome: Prescription of Antibiotics			
Childcare	0.012	0.020	-0.038**
	(0.015)	(0.015)	(0.016)
Mean	0.139	0.146	0.157
Outcome: Prescription of Painkillers			
Childcare	0.018**	0.008	0.010
	(0.008)	(0.008)	(0.008)
Mean	0.029	0.032	0.036
Observations	2548332	2548332	2548332
County FE	✓	✓	✓
Individual Controls	✓	✓	✓
Regional Controls	✓	✓	✓

Notes: See Table B.34.

Table B.36: Childcare Results – Balanced Sample: Healthcare Utilization

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Diagnoses per Visit			
Childcare	0.108	0.140	-0.028
	(0.093)	(0.090)	(0.087)
Mean	1.491	1.530	1.542
Outcome: Physician Visits			
Childcare	-0.107	-0.168	-0.153
	(0.118)	(0.110)	(0.123)
Mean	2.188	2.296	2.257
Outcome: Psychotherapy			
Childcare	-0.013	-0.016	-0.019**
	(0.009)	(0.010)	(0.010)
Mean	0.022	0.026	0.030
Observations	2548332	2548332	2548332
County FE	✓	✓	✓
Individual Controls	✓	✓	✓
Regional Controls	✓	✓	✓

Notes: See Table B.34.

B.3.5.2 Parental Benefits

Table B.37: Parental Benefit Results – Balanced Sample: Diagnoses

	(1) 0 yr-old	(2) 1 yr-old	(3) 2 yr-old	(4) 3 yr-old
Outcome: Depression				
treat	-0.000	-0.000	0.000	0.003
	(0.002)	(0.002)	(0.003)	(0.003)
Mean	0.024	0.031	0.038	0.047
Outcome: Mental Disorder Other				
treat	-0.003	0.002	-0.002	-0.002
	(0.002)	(0.003)	(0.003)	(0.003)
Mean	0.040	0.052	0.059	0.066
Outcome: Respiratory Diseases				
treat	-0.002	0.012***	-0.012***	0.014***
	(0.003)	(0.003)	(0.004)	(0.004)
Mean	0.128	0.159	0.175	0.195
Outcome: Headache				
treat	-0.003	-0.004	-0.001	0.000
	(0.002)	(0.003)	(0.003)	(0.003)
Mean	0.039	0.048	0.053	0.058
Observations	327904	327904	327904	327904
Individual Controls	✓	✓	✓	✓

Notes: The sample includes observations for mothers who lived in West Germany one year after their first live birth, who gave birth between October and March 2004/2005-2006/2007, and who are observable for the full four years after birth in our sample. In all regressions, we control for the quarter of the observation, maternal age, and the estimated child's age in quarters, caesarean section, preterm birth, and nationality. The F-statistic and the respective p-values stem from an event-study regression and report whether deliveries of the respective years follow the same seasonal trend. Standard errors clustered at the individual level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.38: Parental Benefit Results – Balanced Sample: Prescription

	(1) 0 yr-old	(2) 1 yr-old	(3) 2 yr-old	(4) 3 yr-old
Outcome: Prescription of Antidepressants				
treat	-0.001	-0.003*	0.001	0.001
	(0.001)	(0.002)	(0.002)	(0.002)
Mean	0.010	0.016	0.020	0.026
Outcome: Prescription of Antibiotics				
treat	0.000	-0.000	-0.001	0.007**
	(0.003)	(0.003)	(0.003)	(0.003)
Mean	0.109	0.138	0.150	0.167
Outcome: Prescription of Painkillers				
treat	-0.001	-0.001	-0.003*	0.000
	(0.001)	(0.002)	(0.002)	(0.002)
Mean	0.020	0.028	0.030	0.034
Observations	327904	327904	327904	327904
Individual Controls	✓	✓	✓	✓

Notes: See Table B.37.

Table B.39: Parental Benefit Results – Balanced Sample: Healthcare Utilization

	(1) 0 yr-old	(2) 1 yr-old	(3) 2 yr-old	(4) 3 yr-old
Outcome: Diagnoses per Visit				
treat	-0.018	0.001	-0.002	-0.012
	(0.016)	(0.016)	(0.016)	(0.016)
Mean	1.568	1.460	1.475	1.474
Outcome: Physician Visits				
treat	-0.035**	0.050**	-0.028	-0.039*
	(0.017)	(0.020)	(0.021)	(0.022)
Mean	1.692	1.901	2.044	2.080
Outcome: Psychotherapy				
treat	-0.002	-0.000	0.001	0.000
	(0.002)	(0.002)	(0.002)	(0.002)
Mean	0.016	0.022	0.025	0.028
Observations	327904	327904	327904	327904
Individual Controls	✓	✓	✓	✓

Notes: See Table 5.

B.4 Analysis of Childcare Allowances

B.4.1 Institutional Setting

In 2013, the German Bundestag (2013) introduced a cash-for-care subsidy, also known as childcare allowance (*Betreuungsgeld*). Parents of children born after August 1, 2012, who did not use childcare services, were entitled to a monthly benefit of 100 Euros (150 Euros after August 1, 2014), irrespective of parental employment.[34] The childcare allowance was paid once parental benefits had expired, providing support for up to 22 months thereafter. In July 2015, the constitutional court abolished the childcare allowances. Previously approved applications continued to be paid, but no new ones were approved (BMFSFJ, 2015). According to Collischon et al. (2022), 60% of West German families received the subsidy. The average duration was 20 months.

To evaluate the childcare allowance's effect on maternal health, we apply a difference in differences design similar to equation 2. Again, the identification strategy rests on the common-trend assumption and a no-anticipation assumption. The law regulating childcare allowances was passed in November 2012, while being retroactively effective from August 2012. Therefore any timing of the birth around the cutoff is effectively ruled out.[35]

To the best of our knowledge, no other paper has investigated the effect of childcare allowances on maternal health. Regarding maternal employment and the impact on children, Collischon et al. (2022) provide an extensive evaluation of the German childcare allowance reform. They examine the take-up of the childcare care allowance and its impact on childcare choices, maternal labor supply, and children's development in Germany. Even though 60% of potentially eligible families received benefits for an average of 20 months, thereby abstaining from utilizing childcare, Collischon et al. (2022) document only a minor and at conventional levels insignificant decrease in childcare attendance by 4.2 p.p. Hence, most parents did not alter childcare choices in response to the reform. Employment effects of the childcare allowance are also limited: Low and middle-educated mothers have a 1.4 p.p. lower probability of returning to work within the first three years after childbirth. For high-educated mothers, the employment probability decreases by only 0.8 p.p. and is not significantly different from zero.[36]

[34] Couples (single parents) with an annual income of more than 500,000 Euros (250,000 Euros) did not receive childcare allowances.

[35] Collischon et al. (2022) even argue, that the original proposal of the law mentioned January 2012 as a cutoff. Hence, mothers who gave birth between January and July 2012 became uneligible to their surprise.

[36] The East German state Thuringia introduced a relatively generous childcare allowance already in 2006. Gathmann and Sass (2018) find a negative effect on childcare usage and moderate negative employment effects with more pronounced effects for single and low-income parents. Further research on childcare allowances focuses for instance on Norway, such as Naz (2004) and Schøne (2004). Both find moderate negative effects on maternal labor supply. For much earlier cash transfers between 1911 and 1930 in the USA, Aizer et al. (2024) also report only limited effects on maternal well-being and other outcomes.

B.4.2 Results

The reduced form estimates for the childcare allowances are shown in Table B.40, B.41, and B.42. Overall, the effects are small and rarely significantly different from zero. This is consistent with previous findings that – despite high take-up – behavioral responses in childcare or employment to the reform were limited (Collischon et al., 2022). There seems to be no direct effect of the financial benefits on health, which is unsurprising given the small amount.

We provide suggestive evidence for a marginal decrease in respiratory diseases and antibiotics for mothers of one- and two-year-old children (see Column (1) and (2) of Table B.40 and B.41). However, p-values for the common-trend test of the respective regressions are quite low. We therefore interpret this finding cautiously. The results would, however, be in line with a lower take-up of childcare to claim childcare allowances. The fact that low-educated mothers had a higher take-up rate, and that they are more likely to show a response in the prescription rates of antibiotics to childcare also supports this argument.

For mental disorders and related outcomes, we report a slight increase in depression for mothers with one-year-old children. The effects on other mental disorders, antidepressants, and psychotherapy, however, go in the opposite direction. They are small and insignificant except for a negative effect on mental disorders for three-year-old children (which comes with a low p-value, though). Given the mixed picture and some apparent violations of common pre-trends, we refrain from conclusions on the effect of childcare allowance on mental health.

For painkillers, we observe an increase in mothers of three-year-old children. Taking into account the negative effect of the parental benefit reform on two-year-old children, the slight reduction in maternal labor supply caused by the childcare allowances (Collischon et al., 2022), and our own estimates on the effects of childcare, there is some evidence that a later return to work tends to be more stressful than an earlier return to work. Some mothers might then rely on painkillers as a means to cope with the stress after a longer absence from work.

Table B.40: Childcare Allowance Regression Results – All Mothers Diagnoses

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Depression			
treat	0.004*	0.002	0.001
	(0.002)	(0.002)	(0.003)
Mean	0.038	0.046	0.054
F-Statistic	1.303	1.819	1.324
p-value	0.259	0.105	0.250
Outcome: Mental Disorder Other			
treat	-0.001	0.000	-0.007**
	(0.003)	(0.003)	(0.003)
Mean	0.062	0.072	0.079
F-Statistic	0.660	1.410	1.750
p-value	0.654	0.217	0.120
Outcome: Respiratory Diseases			
treat	-0.002	-0.005*	-0.001
	(0.003)	(0.003)	(0.003)
Mean	0.171	0.190	0.206
F-Statistic	0.605	1.689	0.415
p-value	0.696	0.133	0.839
Outcome: Headache			
treat	0.000	-0.001	-0.001
	(0.002)	(0.002)	(0.003)
Mean	0.051	0.057	0.064
F-Statistic	0.382	1.203	0.569
p-value	0.861	0.305	0.724
Observations	503530	480600	460749
Individual Controls	✓	✓	✓

Notes: The sample includes observations for mothers who lived in West Germany one year after their first live birth and who gave birth between May and Oct in 2009 to 2012. In all regressions, we control for the quarter of the observation, maternal age, and the estimated child's age in quarters, caesarean section, preterm birth, and nationality. The F-statistic and p-values stem from an event study regression to check if the health outcomes of ineligible treatment and control mothers follow the same (pre-) trend (see appendix B.3.1 for details). Standard errors clustered at the individual level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.41: Childcare Allowance Regression Results – All Mothers Prescription

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Prescription of Antidepressants			
treat	-0.001	-0.000	-0.002
	(0.001)	(0.002)	(0.002)
Mean	0.020	0.024	0.028
F-Statistic	1.083	1.491	1.497
p-value	0.367	0.189	0.187
Outcome: Prescription of Antibiotics			
treat	-0.000	-0.005**	0.002
	(0.003)	(0.003)	(0.003)
Mean	0.144	0.151	0.163
F-Statistic	1.941	2.958	0.330
p-value	0.084	0.011	0.895
Outcome: Prescription of Painkillers			
treat	-0.001	-0.000	0.004**
	(0.001)	(0.001)	(0.002)
Mean	0.029	0.032	0.036
F-Statistic	0.496	0.710	0.999
p-value	0.780	0.616	0.416
Observations	503530	480600	460749
Individual Controls	✓	✓	✓

Notes: See Table B.40.

Table B.42: Childcare Allowance Regression Results – All Mothers Healthcare Utilization

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Diagnoses per Visit			
treat	-0.014	-0.010	-0.016
	(0.012)	(0.013)	(0.014)
Mean	1.476	1.533	1.567
F-Statistic	0.632	2.255	2.641
p-value	0.675	0.046	0.022
Outcome: Physician Visits			
treat	0.015	-0.017	-0.005
	(0.018)	(0.019)	(0.020)
Mean	2.235	2.364	2.341
F-Statistic	1.423	1.097	0.449
p-value	0.212	0.360	0.814
Outcome: Psychotherapy			
treat	-0.001	-0.002	-0.002
	(0.002)	(0.002)	(0.002)
Mean	0.021	0.025	0.029
F-Statistic	1.293	1.863	2.692
p-value	0.264	0.097	0.019
Observations	503530	480600	460749
Individual Controls	✓	✓	✓

Notes: See Table B.40.

B.4.3 Analysis of Balanced Sample

Table B.43: Childcare Allowance Regression Results – Balanced Sample: Diagnoses

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Depression			
treat	0.004*	0.002	0.001
	(0.002)	(0.002)	(0.003)
Mean	0.039	0.047	0.054
Outcome: Mental Disorder Other			
treat	-0.001	0.001	-0.007**
	(0.003)	(0.003)	(0.003)
Mean	0.064	0.074	0.080
Outcome: Respiratory Diseases			
treat	-0.002	-0.006*	-0.001
	(0.003)	(0.003)	(0.003)
Mean	0.173	0.192	0.206
Outcome: Headache			
treat	0.000	0.000	-0.000
	(0.002)	(0.002)	(0.003)
Mean	0.052	0.058	0.064
Observations	452268	452268	452268
Individual Controls	✓	✓	✓

Notes: The sample includes observations for mothers who lived in West Germany one year after their first live birth, who gave birth between May and Oct in 2009 to 2012, and who are observable for the full four years after birth in our sample. In all regressions, we control for the quarter of the observation, maternal age, and the estimated child's age in quarters, caesarean section, preterm birth, and nationality. The F-statistic and the respective p-values stem from an event-study regression and report whether deliveries of the respective years follow the same seasonal trend. Standard errors clustered at the individual level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < .01$.

Table B.44: Childcare Allowance Regression Results – Balanced Sample: Prescription

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Prescription of Antidepressants			
treat	-0.000	-0.001	-0.001
	(0.002)	(0.002)	(0.002)
Mean	0.020	0.024	0.028
Outcome: Prescription of Antibiotics			
treat	-0.000	-0.005**	0.002
	(0.003)	(0.003)	(0.003)
Mean	0.145	0.152	0.163
Outcome: Prescription of Painkillers			
treat	-0.000	0.001	0.004**
	(0.001)	(0.002)	(0.002)
Mean	0.029	0.032	0.036
Observations	452268	452268	452268
Individual Controls	✓	✓	✓

Notes: See Table B.43.

Table B.45: Childcare Allowance Regression Results – Balanced Sample: Healthcare Utilization

	(1) 1 yr-old	(2) 2 yr-old	(3) 3 yr-old
Outcome: Diagnoses per Visit			
treat	-0.009	-0.005	-0.017
	(0.013)	(0.013)	(0.014)
Mean	1.488	1.542	1.570
Outcome: Physician Visits			
treat	0.013	-0.018	-0.007
	(0.019)	(0.020)	(0.020)
Mean	2.257	2.380	2.344
Outcome: Psychotherapy			
treat	-0.001	-0.003	-0.002
	(0.002)	(0.002)	(0.002)
Mean	0.021	0.025	0.029
Observations	452268	452268	452268
Individual Controls	✓	✓	✓

Notes: See Table B.43.

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