The Summer Drop in Mothers' Job Search

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Abstract

Job search depends not only on financial incentives and labor demand, but also on the availability of time, particularly for mothers during school holidays, when caregiving responsibilities disproportionately fall on women. Using survey data from the German Panel Study Labour Market and Social Security (PASS), I study how summer school holidays affect active job search among unemployed mothers relative to comparable fathers. The empirical strategy exploits predetermined variation in holiday timing across German federal states. The results show that mothers' job search participation on the extensive margin declines by about 17 percentage points during summer school holidays relative to comparable to fathers. These results are robust to an alternative within-gender specification comparing mothers to non-mothers and fathers to non-fathers. Consistent with a gendered distribution of childcare responsibilities, the holiday effect is specific to mothers and points to school holidays as a recurring constraint on mothers' labor market re-entry. Finally, I examine childcare as both a mechanism and a potential mitigator, using proxies for childcare participation and local availability to assess whether greater childcare provision attenuates the holiday-related drop in mothers' job search. The findings identify an underexplored temporal barrier to women's employment and point to the potential value of expanding flexible childcare options for school-aged children during school holidays.

Keywords: Job search, gender differences, time constraints, childcare
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1 Introduction

Gender inequalities in labor market outcomes remain persistent, and a central part of these disparities emerges around parenthood. A broad literature documents that women experience enduring earnings losses after childbirth, driven by changes in employment, hours, and wages (e.g. Kleven *et al.*, 2019). While a substantial share of this evidence has focused on labor supply and workplace mechanisms, a growing body of research emphasizes that gender gaps can also arise before employment begins – during the process of job search itself (Cortés *et al.*, 2023; Fluchtmann *et al.*, 2024). Job search is inherently time- and attention-intensive: it requires gathering information, monitoring vacancies, preparing applications, and coordinating interviews, and time-use evidence shows that the unemployed devote substantial time to these activities (Aguiar *et al.*, 2013). If mothers face stronger time constraints or a higher opportunity cost of time due to childcare, these forces can alter not only whether job search occurs but also when it occurs, potentially widening gender gaps in re-employment and longer-run labor market trajectories.

Recent work has made important progress in understanding gender differences in job search behavior (Fluchtmann *et al.*, 2024; Philippe and Skandalis, 2023; Le Barbanchon *et al.*, 2021; Cortés *et al.*, 2023; Mas and Pallais, 2017; Wiswall and Zafar, 2018). Cortés *et al.* (2023) show that systematic gender differences in search strategies can generate earnings gaps even when wage offer distributions are held fixed. At the same time, Philippe and Skandalis (2023) highlight motherhood as a key driver of elevated search frictions: mothers submit fewer applications, target narrower sets of jobs, and experience lower job-finding rates than comparable women without children, whereas fathers look much more similar to non-fathers. A particularly striking finding is that mothers' search activity responds to periods when children are at home: in France, mothers' application rates fall sharply during times after school, while fathers adjust much less, consistent with caregiving constraints creating a gendered barrier to labor market reintegration.

More generally, a large literature shows that access to institutional childcare and schooling plays a central role in shaping maternal labor market behavior (Duchini and Van Effenterre, 2024; Hanzl and Rehm, 2023; Price and Wasserman, 2022; Gelbach, 2002; Wiswall and Zafar, 2018; Cascio, 2009). In particular, Gelbach (2002) demonstrates that public schooling availability increases maternal labor supply, highlighting how school schedules can effectively act as a form of childcare infrastructure.

Despite these advances, we still know relatively little about how larger but temporary withdrawals of childcare affect job search behavior. Moreover, many policy discussions on childcare

focus on early childhood, while constraints for parents of school-aged children, particularly during school holidays, receive much less attention. Yet school holidays represent one of the largest recurring reductions in publicly provided care, with potentially important consequences with respect to parents' time constraints.

I study whether and when school holidays widen gender gaps in job search, and whether access to childcare during holiday periods mitigates these gaps. The paper's starting point is a simple observation: job search does not depend only on financial incentives or labor demand conditions, but also on the availability of time and mental bandwidth (DellaVigna *et al.*, 2022). When school is in session, parents of school-aged children may be able to dedicate a predictable block of time to active search. During school holidays, that time can contract sharply, especially for mothers, given well-documented gender differences in caregiving responsibilities. If job search is costly to perform while simultaneously caring for children, or if it is less productive when shifted to late hours and fragmented time slots, then school holidays may disproportionately reduce mothers' job search activity on the extensive margin (whether they search at all), rather than only on the intensive margin (how much they search conditional on searching). If search must be postponed until after the holiday period, mothers may miss time-sensitive opportunities and accumulate delays at precisely the point when job-finding depends on sustained participation and timely responses. Such extensive-margin drops matter because they can mechanically lower the arrival of interviews and offers, and may extend unemployment spells even when incentives and vacancies are unchanged.

The empirical setting in this paper is Germany, where summer school holidays last roughly six weeks but vary substantially in timing across federal states and years due to a predetermined rotation schedule. I combine this institutional variation with survey microdata from the German Panel Study Labour Market and Social Security (PASS), which measures job search outcomes among unemployed individuals. The analysis exploits the staggered timing of holiday exposure across states in difference-in-differences and event-study designs, comparing parents and non-parents within the same state and year.

The evidence points to a pronounced and highly time-specific motherhood gap on the extensive margin of job search. Mothers become 17 percentage points less likely to report active job search during holiday exposure relative to comparable fathers, and the event-study estimates show that this decline occurs discretely at the onset of the holiday period and is concentrated in the weeks when children are out of school. Marginal effects show that this is driven by mothers searching less during school holidays, whereas fathers' job search does not exhibit a comparable decline. Finally, consistent with a time-constraint mechanism, the reduction of mothers' job search is largely driven

by those that report childcare duties as a reason for not being able to search. The planned next step is to furhter investigate how childcare availability relates to the the holiday-related reduction in mothers' search, using additional data on childcare availablity of school-ages children.

Together, these results contribute to the literature on gender differences in job search (Fluchtmann *et al.*, 2024; Philippe and Skandalis, 2023; Le Barbanchon *et al.*, 2021; Cortés *et al.*, 2023; Mas and Pallais, 2017; Wiswall and Zafar, 2018), by documenting a large, recurring time-constraint shock that affects whether mothers search at all. While Philippe and Skandalis (2023) document that mothers' application behavior and the timing of applications respond to periods when children are out of school using application-level data, this paper complements their evidence in two ways. First, I focus on the extensive margin of search participation among the broader population of unemployed jobseekers, using measures of whether individuals actively searched in the last four weeks. Additionally, this paper contributes to the broader empirical literature on the determinants of job search behavior. A large body of work emphasizes how job search incentives, such as unemployment benefit generosity and related moral hazard, shape search effort and unemployment duration. By contrast, comparatively less attention has been paid to job search costs that arise from time constraints and the organization of daily life. Survey evidence indicates that unemployed workers spend a limited amount of time searching on an average day, often on the order of roughly 30 to 85 minutes, which could be taken to suggest that time constraints are unlikely to bind (e.g. Krueger and Mueller, 2010, 2011, 2012; Faberman *et al.*, 2022; DellaVigna *et al.*, 2022). My results highlight a different dimension of search costs: even if total search time is not dramatically reduced, constraints on when search can occur may matter. In particular, summer school holidays generate a predictable tightening of childcare constraints for mothers, increasing the likelihood that mothers do not search at all in a given period. These findings suggest that search costs, and especially the timing constraints associated with caregiving, are important for understanding heterogeneity in job search behavior and unemployment duration. Second, I exploit predetermined cross-state variation in the timing of summer school holidays in Germany to identify the causal effect of a large, recurring childcare withdrawal, and I study whether this effect is mitigated by proxies for childcare availability for school-aged children. Thereby, I also contribute to the childcare and schooling-as-infrastructure literature (Duchini and Van Effenterre, 2024; Hanzl and Rehm, 2023; Price and Wasserman, 2022; Gelbach, 2002; Wiswall and Zafar, 2018; Cascio, 2009), by highlighting that childcare for older children can shape parents' labor market outcomes through job search during unemployment.

These findings point to a concrete role for childcare policy for school-aged children. Expanding affordable holiday childcare programs and after-school care, and ensuring sufficient capacity during

school breaks, could help prevent predictable childcare gaps from translating into temporary withdrawals from job search among mothers. Targeting access or subsidies toward unemployed jobseekers during holiday periods may be particularly effective in mitigating these constraints.

The paper is organized as follows. I present the institutional context, data and empirical strategy and descriptive statistics in Section 2 and main results in Section 3. Section 4 concludes.

2 Data and Empirical Strategy

2.1 Institutional Context: Summer School Holidays in Germany

In Germany, children usually start compulsory education at the age of six or seven and attend school until at least sixteen. Most children begin in primary school, which typically lasts four years (six in some states). After that, students move on to different types of secondary schools depending on their performance and interests. The school year is divided into two terms and includes several short breaks (for example in autumn, at Christmas, and around Easter), as well as one longer summer holiday, which is the biggest break of the year.

Education in Germany is mainly the responsibility of the federal states, which means that school systems can differ slightly from one state to another – for example in the length of primary school, the types and amount of after-school childcare, and the exact holiday dates.

This state-level responsibility also shapes the structure of school holidays, including the long summer break. The summer holidays last about six weeks, but the exact dates vary by federal state. A working group representing all 16 states proposes a multi-year schedule, which is then adopted by the Standing Conference of the Ministers of Education (*Kultusministerkonferenz*, abbr. KMK). The schedules are fixed and published several years in advance (see Figure 1). Crucially, the KMK assigns early and late slots within a shared summer window on a rotating basis, in order to spread travel congestion and balance demand for holiday destinations. Figure 2 illustrates the variation in the start dates of the summer holidays over the study period. Only Bavaria and Baden-Württemberg typically start their holidays last, due to their different school term structure.

2.2 Data

I combine a large-scale German household panel administered by the Institute for Employment Research (IAB) with data on summer school holiday schedules and information on childcare provision for school children in Germany.

Survey data. I use data from the Panel Study Labour Market and Social Security (PASS), a large-scale German household panel administered by the Institute for Employment Research (IAB) (Trappmann *et al.*, 2019). PASS is specifically designed to study labor market dynamics and the receipt of unemployment benefits. The survey draws on two components: a representative sample of Germany's resident population and a second sample of welfare benefit recipients, selected from the complete administrative register of benefit claimants. This structure makes PASS particularly well suited for analyzing job search behavior among groups at high risk of unemployment and benefit receipt, while still allowing comparisons to broader household contexts. The survey is conducted in annual waves and collects rich information on respondents' employment status, labor market histories, household composition, income and benefit receipt, as well as subjective measures and constraints. Importantly for this paper, the survey contains detailed measures of job search activity and search methods, including a retrospective question on whether the respondent searched for a job within the last four weeks and items capturing more intensive search behavior such as responses to job advertisements. The availability of interview timing and respondents' state of residence enables linking each interview to the relevant school holiday calendar and constructing an exposure measure.

The empirical analysis focuses on the unemployed individuals 25 and 55 years observed in the PASS, when people are most likely to have children at home. The resulting sample consists of about 33,300 observations split nearly evenly by gender. When restricting the sample to parents, there are about 4,800 men and about 8,600 women cohabiting with at least on child in the household.

Summer school holiday data. For the summer school holiday information, I use official calendars that report the start and end dates of the summer break for each German federal state (KMK, 2026). These dates vary across states and years, which creates meaningful within-country variation in the timing of school holidays. I merge the holiday calendar to the PASS interview date via respondents' state of residence and construct measures that capture whether an individual is exposed to the summer holiday period. This allows me to relate job-search outcomes in PASS to exogenous differences in the holiday timing across states.

Chilcare data. To investigate the influence of childcare on the effect of school holidays and job search, I use data on the availability and usage of after-school childcare and schools offering full-day education and care, which are good proxies for the availability of childcare during school holidays and therefore provides a good picture of the local childcare environment faced by parents (Guglhör-Rudan *et al.*, 2021).

Firstly, I make use of the PASS children survey. I use indicators that report whether or not a child is in after-school care and whether or not the child attends a full-day school.

Secondly, to capture regional differences in childcare availability for school-aged children, I complement the data with administrative indicators from the *Ländermonitor* of Bertelsmann foundation. The Ländermonitor provides state-level measures of after-school childcare provision for primary school children (e.g., attendance and coverage rates in after-school care), reported on a comparable basis across German states and over time. I merge these indicators to the PASS micro data using respondents' state of residence and the corresponding year. This allows the analysis to assess whether the relationship between summer school holidays and job-search behavior differs systematically between states with more extensive versus more limited childcare provision for school children.

2.3 Descriptive Statistics

Table 1 summarizes the characteristics of the unemployed working sample, with the main comparison between mothers and fathers and, for reference, the comparison samples of non-mothers and non-fathers. The sample includes about 33,000 observations overall. Mothers are on average younger than fathers (about 38 vs. 41 years) and are much less likely to be married (0.34 vs. 0.81). Both groups, by definition, live with at least one child under age 18, and around two-thirds live with a child aged 6 to 14. Fathers are also less likely to be German citizens than mothers (0.49 vs. 0.72). In terms of labor market attachment, average unemployment durations are long for both groups, but substantially shorter for fathers than for mothers (about 41 vs. 73 months). At the same time, the share of individuals who report being employable within the next two weeks is very high in all groups, exceeding 98 percent for both mothers and fathers. Mothers are less often obligated to search for work than fathers (0.50 vs. 0.59) and show a much stronger preference for part-time work (0.66 vs. 0.16), whereas fathers predominantly search for full-time jobs (0.85). Importantly for this paper, mothers report substantially lower active job search in the last four weeks than fathers (0.43 vs. 0.57). Among those not searching, mothers are also much more likely to cite care duties as the reason (0.60 vs. 0.21). Overall, the descriptive statistics already suggest that caregiving responsibilities are closely linked to mothers' job search participation. The comparison samples show that mothers also search less than non-mothers (0.43 vs. 0.53), while fathers look broadly similar to non-fathers (0.57 vs. 0.58), reinforcing that caregiving constraints are particularly closely linked to mothers' job search participation.

Figure 3 provides a first, descriptive look at how job search behavior evolves over time for unemployed parents. Plotting the share of individuals who report having actively searched for a

job in the last four weeks, separately for mothers and fathers, the figure reveals a striking seasonal pattern: mothers' job search activity repeatedly drops during the summer months, whereas fathers' search behavior remains comparatively stable and does not display the same pronounced decline (if anything job search spikes for fathers during summer time). Visually, the summer dips for mothers appear in a recurring way over the sample period. In particular, the timing of the decline aligns with the period in which children are out of school and mothers are more likely to shoulder more childcare responsibilities, suggesting that school holidays may temporarily increase the opportunity cost of search and push some mothers to reduce or stop active job search on the extensive margin.

2.4 Empirical Strategy

The motherhood gap over the calendar year. In the first part of the analysis, I estimate the motherhood gap in search activity.

The motherhood gap here captures the persistent difference associated with motherhood vs. fatherhood rather than the differences between parents arrising immediately after the arrival of children (similar to Philippe and Skandalis, 2023). Motherhood and fatherhood are defined as having a child below 18 years old. The objective is to understand specific factors that affect mothers and fathers at the time when they are unemployed, rather than on those that have affected them up to the point of becoming unemployed.

I estimate the following empirical model:

$$Y_{i,t} = \alpha + \beta Mother_i + \sum_{m \neq 5} \gamma_m 1\{Month_t = m\} + \sum_{m \neq 5} \delta_m (Mother_i \times 1\{Month_t = m\}) + X'_{it}\theta + \lambda_y + \mu_s + \epsilon_{it}$$

Where $Y_{i,t}$ is the outcome in month t for individual i. $Mother_{i,t}$ is a dummy equal to one if women i has at least one child below 18 when being interviewed and equal to zero for fathers. $X_{i,t}$ is a set of time-varying and fixed characteristics of individual i at time t. It includes: age, marital status (single or married), education (a dummy for each level), unemployment duration, past cumulated employment duration, count of past unemployment spells, industry of the last employment and migration background (yes or no). I also include year fixed effects and state fixed effects. Standard errors are clustered at state level. I am interested in the β coefficient, which is the overall motherhood and the δ_m coefficients, which reflect the seasonal pattern of the motherhood gap over the year.

The main outcome I consider is *active job search*, which is equal to one if the respondent actively searched for a job in the last four weeks. This allows me to explore the effect of motherhood on job

search activity over the calendar year.

The effect of summer school holidays. To analyze the effect of summer school holidays on parents' job search activity, I use the German-specific institutional setup that makes the exact timing of school holidays plausibly quasi-random with respect to short-run outcomes: the rotation of the start of the holidays is agreed ex ante and is not adjusted in response to contemporaneous, state-specific shocks. Persistent differences (e.g., the systematically later slots of Bavaria and Baden-Württemberg) are absorbed by state fixed effects, while calendar-time fixed effects capture nationwide shocks. The remaining variation compares states that are on break with those not yet on break within the same week or month.

Firstly, I estimate the following event-study style model:

$$Y_{i,t} = \alpha + \beta Mother_i + \sum_{k \neq -1} \gamma_k 1\{k(t) = k\} + \sum_{k \neq -1} \delta_k (Mother_i \times 1\{k(t) = k\}) + X'_{i,t}\theta + \mu_s + \lambda_{m \times y} + \epsilon_{i,t}$$

Where k indicates four-week-windows relative to the summer school holiday start (e.g. $k = -2, -1, -0, 1, 2$), where $k = -1$ is the reference period, β is the motherhood gap at $k = -1$ and the coefficients of interest are δ_k, the event-study path relative to the pre-holiday period. All specifications include individual controls $X_{i,t}$, federal state fixed effects μ_s, and absorb month-by-year fixed effects $\lambda_{m \times y}$, which flexibly account for common shocks and seasonality at the national level. Standard errors are clustered at state level.

Secondly, I estimate a difference-in-differences style model:

$$Y_{i,t} = \alpha + \beta Mother_i + \gamma Holiday_{i,t} + \delta (Holiday_{i,t} \times Mother_i) + X'_{i,t}\theta + \mu_s + \lambda_t + \epsilon_{i,t}$$

Where $Holiday_{i,t}$ is a weekly state-specific indicator that is equal to one, if the corresponding state is in summer school holiday at week t. Again the specifications include state fixed effects μ_s and week fixed effects λ_t. The coefficient of interest is δ, which captures the change in the motherhood gap during holiday weeks relative to non-holiday weeks.

The identidifcation relies on two key assumptions: First, a parallel trends assumption that requires in the absence of the onset of the summer holiday, job search outcomes for mothers and fathers would have evolved similarly over time. Evidence for this assumption provides the event

study analysis before and the inspection of paralell trends in the weeks before the summer holiday start. Second, identification requires no confounding shocks correlated with the holiday timing that differentially affect the two groups at the state-week level. This assumption is plausible because summer holiday schedules are predetermined and vary across states, while week fixed effects absorb common time shocks – so the identifying variation comes from within-week, cross-state differences in holiday exposure rather than from coincident national events.

3 The Motherhood Gap in Job Search

I start the empirical analysis by estimating the motherhood gap in active search. The objective is to establish basic facts about mother's and father's experience of unemployment during the summer months, especially during the weeks of summer school holidays, before exploring the role of childcare.

3.1 The Motherhood Gap in Active Search

Figure 5 presents the first piece of evidence that the motherhood gap in active job search is time-specific. The estimated marginal effects for active search by motherhood show that mothers are less likely than comparable fathers to be actively searching for a job in every month of the year. From February to June, the gap remains relatively stable at around 10 to 15 percentage point. It then widens susbtantially during the summer months, reaching about 20 percentage points in July and August. By September, the gap narrows again and moves closer to the overall yearly average, although the estimate is less precise. Overall, the figure suggests that the mother-father gap in jon search is present throughout the year but becomes markedly larger in midsummer, especially in July and August.

Figure 6 zooms in to mothers' vs. fathers' job search behavior directly around the start of the summer school holiday period in an event-study framework. The estimates show no indication of a pre-trend in the motherhood gap prior to the holiday start. At the onset of the holiday period (event time zero), the motherhood gap turns clearly negative, with mothers becoming about 18 percentage points less likely to report active job search than comparable fathers. The gap remains negative, yet insignificant, in the period immediately after, reaching roughly 10 percentage points, indicating that the reduction in mothers' search activity persists during the holiday weeks. After the time of summer holidays, in event-time two, the motherhood gap becomes zero again, indicating that mothers start searching again, when school resumes and time constraints ease again.

The event-study marginal effects by gender, presented in Figure A.1, show that this pattern is driven by mothers: mothers' estimated job search drops after holiday start, whereas fathers' job

search remains broadly stable around zero, with no comparable decline.

Figure 7 summarizes the main difference-in-differences estimates of how summer school holidays affect job search on the extensive margin, for mothers and fathers. The reflects the pattern that we already see in the event-study. For mothers, exposure to the summer holiday period leads to a clear reduction in job search participation: mothers become around 17 percentage points less likely to report active job search in the last four weeks compared to fathers. This estimate is sizeable in magnitude and points to a meaningful withdrawal from search activity during weeks when children are out of school. Taken together, the results point to the fact that during school holidays mothers' are heavily affected in their search for a job, while the same is not true for fathers.

The evidence adds to the existing literature of gender differences in job search (Fluchtmann *et al.*, 2024; Philippe and Skandalis, 2023; Le Barbanchon *et al.*, 2021; Mas and Pallais, 2017; Wiswall and Zafar, 2018). In particular, prior research emphasizes that an important driver of gender inequality in the labor market is that women and men may differ in how they trade off wages against non-wage amenities and that parenthood can further widen these differences. Philippe and Skandalis (2023) show that parenthood is also linked to, a substantial gap in the rate at which women and men submit job applications. The evidence in this paper adds to this discussion by providing new evidence on the extensive margin of job search among a broad population of unemployed jobseekers: the motherhood gap in job search in is highly seasonal and concentrated around periods of intensified childcare needs, while fathers' job search remains largely unaffected.

3.2 Heterogeneity

Table 4 explores whether the holiday-related mother-father gap in job search varies with household and regional context.

One potentially important factor in the distribution of childcare responsibilities is the employment status of the partner in two-adult households. Interestingly, the overall difference between job search activity between mothers and fathers in the baseline period is only negative and significant for those whose partner is also unemployed (see columns 1 and 2). In the group of those who partner is also unemployed, summer school holidays reduce mothers' probability of active search by about 14 percentage points relative to comparable fathers. For mothers with an employed partner, the point estimate is also negative and even larger, but imprecisely estimated due to a much smaller sample size.

Second, the estimates point to regional heterogeneity. The holiday-related decline in mothers' search activity appears particularly pronounced in West Germany, where mothers become roughly

21 percentage points less likely than fathers to report active job search during holiday weeks (see column 3). In East Germany, the corresponding estimate is also negative, but smaller and not statistically precise. These results are in line with well-known differences in childcare infrastructure and maternal employment norms across East and West Germany. In particular, the stronger effect in West Germany is consistent with the view that more limited childcare options for school-aged children during school breaks can amplify mothers' time constraints and thereby intensify the temporary withdrawal from job search.

These patterns are broadly consistent with the idea that the impact of school holidays depends on the broader childcare and household context. At the same time, some subgroup estimates are based on relatively small samples, so the heterogeneity results should be interpreted as suggestive.

3.3 The Role of Childcare

A natural explanation for the sharp drop in mothers' job search activity during the summer holiday period is that job search competes directly with childcare for limited time and attention. Searching for work requires sustained blocks of uninterrupted time, for monitoring vacancies, preparing applications, responding to employers, and attending interviews, tasks that are difficult to carry out when children are at home. School holidays therefore act as a temporary withdrawal of publicly provided care, increasing the opportunity cost of search for mothers, in particular if they shoulder a larger share of childcare responsibilities within the household. In this setting, reduced job search need not reflect weaker labor market attachment or lower willingness to work, but rather a short-run constraint that shifts time away from labor market activities and toward caregiving, leading to a temporary decline in job search participation on the extensive margin.

Childcare as a mechanism. Figure 8 decomposes the overall holiday effect for mothers by distinguishing whether the decline in active job search is driven by a rise in *not searching because of childcare duties* or by other reasons for inactivity. The figure shows that the reduction in mothers' job search during the summer holiday period is largely accounted for by time constraints related to childcare. In particular, the estimates indicate that holiday exposure increases the likelihood that mothers report not searching because they have no time due to childcare responsibilities by roughly 14 percentage points, while the contribution from all other reported reasons is smaller, on the order of about four percentage points. This results indicates that school holidays reduce mothers' job search not because they become less attached to the labor market in general, but because the temporary withdrawal of school-based care makes it more difficult to allocate time to job search

activities.

Childcare as a mitigator. *To be done.*

4 Robustness

4.1 Parents and Non-Parents

Parenthood gaps over the calendar year. As a robustness check to the baseline comparison of mothers and fathers, I estimate gender-specific parenthood gaps using the standard within-gender approach. In particular, mothers are compared to non-mothers in the sample of women, and fathers are compared to non-fathers in the sample of men. The analysis uses the same outcome, controls, and fixed effects structure as in the main text.

Figure A.2 shows that the parenthood gap differs markedly by gender. Among women, mothers are less likely than non-mothers to engage in active job search throughout the year, and this gap widens noticeably during the summer months. Among men, by contrast, fathers and non-fathers look much more similar over the calendar year, with no comparably pronounced summer decline. This supports the interpretation that the seasonal pattern is driven mainly by mothers.

Effect of summer school holidays on parents. To examine whether this seasonal pattern is linked to the timing of summer school holidays, I estimate event-study and difference-in-differences specifications separately for women and men, again comparing parents to non-parents within gender.

Figure A.3 reports the event-study estimates. For women, there is no clear indication of differential pre-trends before holiday start, while mothers' job search drops discretely once the holiday period begins and remains lower during the holiday weeks before recovering afterwards. The recovery after summer holiday end could reflect a different holiday timing of parents and non-parents, where many individuals without children have to take vacation days either before or after the school holidays to avoid scheduling conflicts with their colleagues that do have children. For men, there is no comparable negative response around holiday start. This pattern is consistent with summer holidays generating a temporary reduction in mothers' search activity, but not in fathers'.

Figure A.4 summarizes the average holiday effect in the difference-in-differences specification. The estimates confirm that holiday exposure reduces mothers' active job search relative to non-mothers, whereas fathers do not experience a corresponding decline relative to non-fathers and may even show a small increase. Overall, the robustness analysis reinforces the main conclusion that the summer-holiday effect on job search is specific to mothers and is not a general feature of parenthood.

4.2 Additional Robustness Checks

Table 2 shows that the event-study results are robust to alternative sample restrictions. In the baseline specification in column (1), the estimated decline in mothers' active job search at holiday onset is 18.4 percentage points and highly significant, with no evidence of differential pre-trends. Even though the point estimate is also large in period 1 after the school holiday start, it is not significant anymore and there is no remaining in period two after holiday start. Restricting the sample to individuals who report having searched before yields a very similar pattern in column (2): the coefficient at event time zero is slightly larger in magnitude (-0.196 instead of -0.184), the pre-trend remains close to zero, and the effect still fades out after the holiday period. Column (3), which restricts the sample to parents with a child aged 6 to 14, also delivers nearly identical results: the coefficient at holiday onset is -0.187, again very close to the baseline estimate and the point estimate one period after holiday start remains large, though insignificant. Taken together, these alternative event-study specifications confirm that the discrete decline in mothers' search at the beginning of the summer holiday period robust to different sample restrictions and stronger for those parents with school-aged children that need the most care during school holidays.

Table 3 further shows that the main difference-in-differences result is robust across a range of alternative samples. In the baseline specification in column (1), mothers become 17.1 percentage points less likely than comparable fathers to report active job search during summer school holidays. The estimate remains negative and statistically significant when excluding the long-term unemployed (column (2), -0.137) and when restricting the sample to individuals who are not obligated to search (column (5), -0.108). It is also nearly identical to the baseline when focusing on parents with a child aged 6 to 14 (column (6), -0.175). For the newly unemployed in column (3), the point estimate remains negative and economically meaningful (-0.137), but becomes less precise, which is consistent with the substantially smaller sample in this subgroup. Column (4), which restricts the sample to individuals who have ever searched before, also yields a large and precisely estimated coefficient (-0.148). Overall, the estimates in Table 3 show that the main finding is not specific to the baseline sample definition: across all alternative specifications, summer school holidays are associated with a sizeable decline in mothers' active job search relative to fathers.

5 Conclusion

Do summer school holidays change the way parents search for jobs, and do these effects differ by gender? I study this question using survey data from the German Panel Study Labour Market

and Social Security (PASS), which provides repeated measures of active job search for unemployed individuals. I exploit predetermined variation in the timing of summer school holidays across German federal states and years, which creates plausibly exogenous differences in holiday exposure within the same country.

I provide evidence that school holidays generate a large and temporally concentrated motherhood gap in job search on the extensive margin. Mothers become 17 percentage points less likely to report active job search compared to similiar fathers when their reference period overlaps with the summer holiday weeks. Event-study and difference-in-differences estimates point to a discrete break at the onset of the holiday period and show that the effect is concentrated in the weeks when children are out of school.

I then use variation in childcare availability, measured through proxies for participation and local provision, to shed light on childcare as a mechnism and mitigator. The results suggest that the holiday-related decline in mothers' search is attenuated where alternative childcare options for school-aged children are more accessible, consistent with time constraints as a key channel. Taken together, the findings imply that recurring childcare gaps during school holidays can translate into meaningful interruptions in mothers' job search and may contribute to gender differences in labor market re-entry. They also point to a policy-relevant margin that is often overlooked: childcare provision for older children, especially during school breaks, may help reduce gender gaps in job search and support re-employment of mothers.

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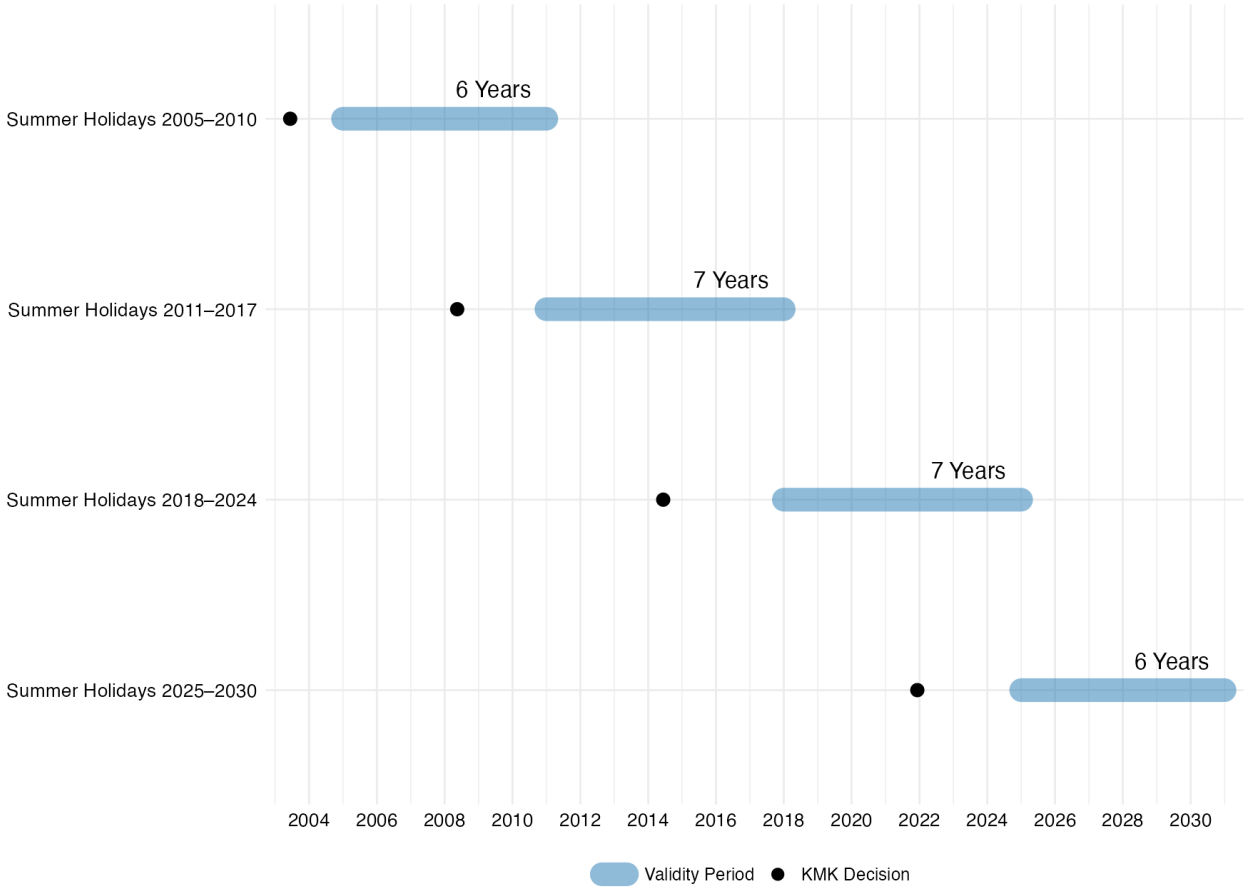
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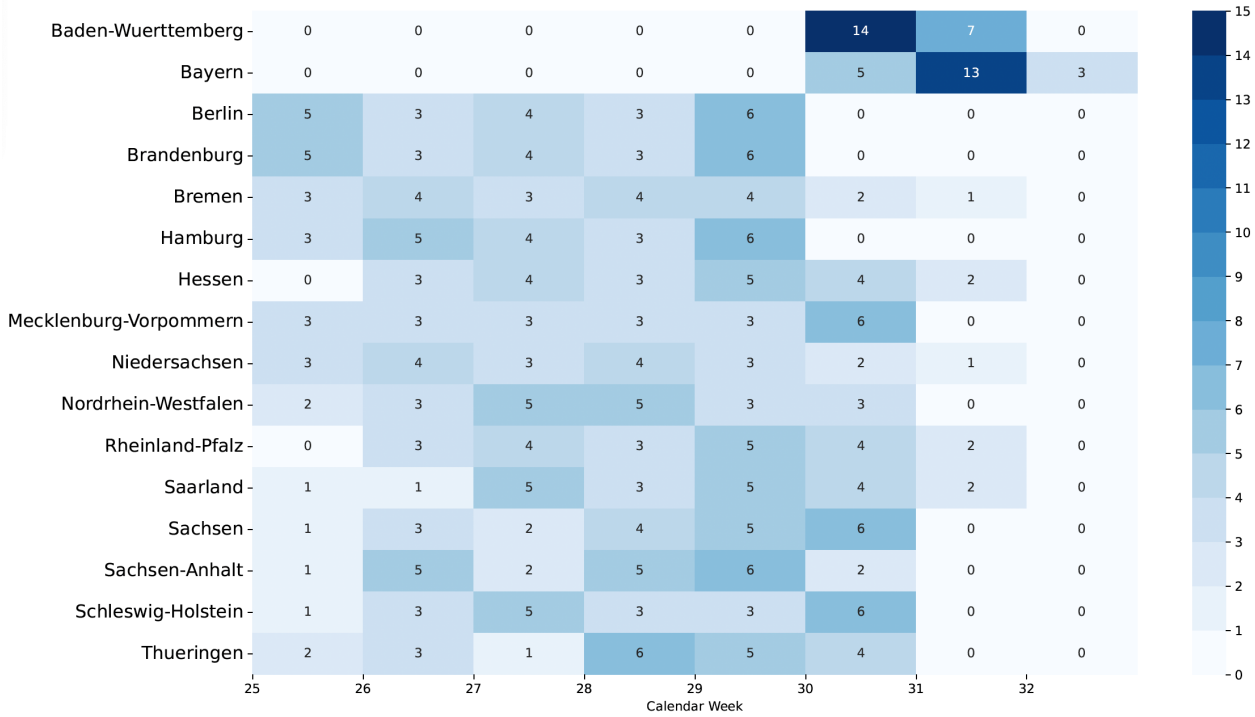
Figures

Figure 1: KMK decisions and validity periods of summer-holiday scheduling cycles in Germany



Notes: This figure illustrates the timing of scheduling cycles for summer school holidays in Germany. Blue horizontal bars indicate the validity period of a given coordination cycle (i.e., the set of years for which summer holiday dates are predetermined under a single agreement), and black dots mark the corresponding decision years by the Standing Conference of the Ministers of Education and Cultural Affairs (Kultusministerkonferenz, KMK). The figure highlights that summer holiday dates are set several years in advance and remain fixed over multi-year periods, supporting the interpretation of holiday timing as predetermined with respect to short-run labor market conditions.

Figure 2: Distribution of summer-holiday start weeks across German federal states



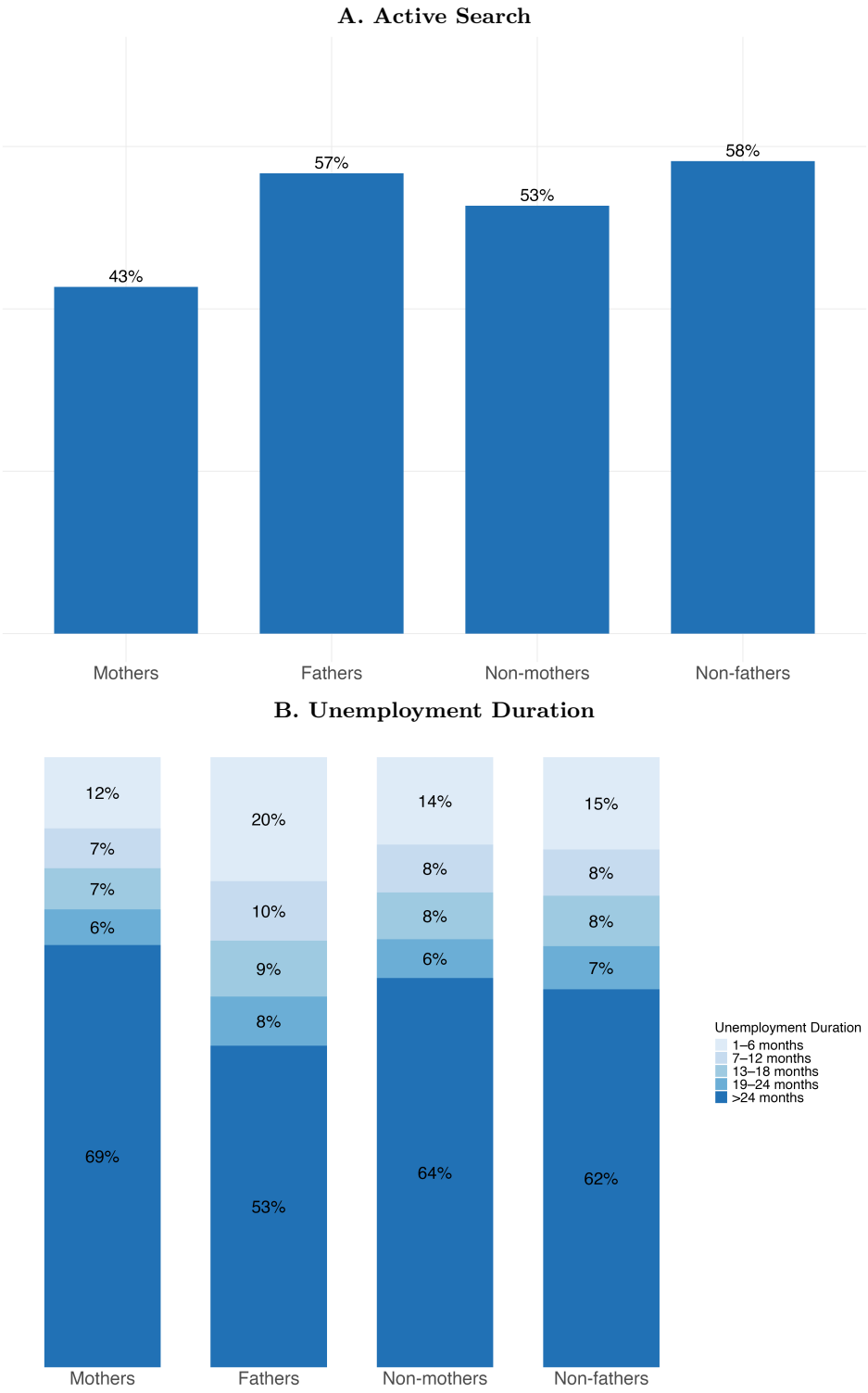
Notes: This figure displays the distribution of summer school holiday start dates across German federal states, aggregated over the years covered in the analysis. Each row corresponds to a federal state and each column to the calendar week in which the summer holiday period begins. Cell entries report the number of years in which the respective state's summer holidays start in the indicated calendar week; darker shading denotes a higher frequency. The figure illustrates substantial variation in the timing of holiday start dates across states and years, consistent with the staggered scheduling system coordinated by the Kultusministerkonferenz (KMK).

Figure 3: Temporal dynamic of active job search of mother and fathers



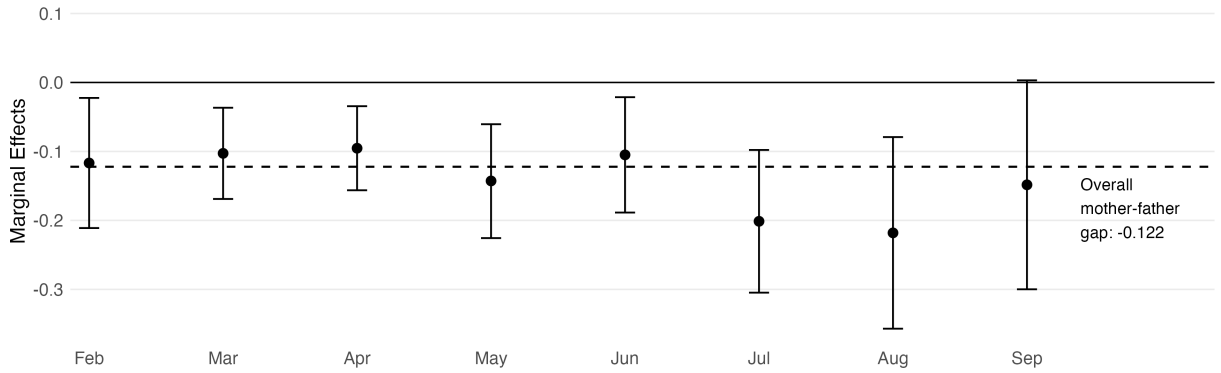
Note: This figure plots the evolution of active job search for unemployed mothers and fathers over time. The outcome is an indicator equal to one if the respondent reports having searched for a job in the last four weeks. Shaded areas indicate the months May through August, corresponding to the period in which summer school holidays typically take place in Germany. Each point represents the mean of the outcome in the corresponding time period, normalized to January 2007.
Source: PASS v18, own calculations.

Figure 4: Distribution of search participation and unenployment duration among different groups



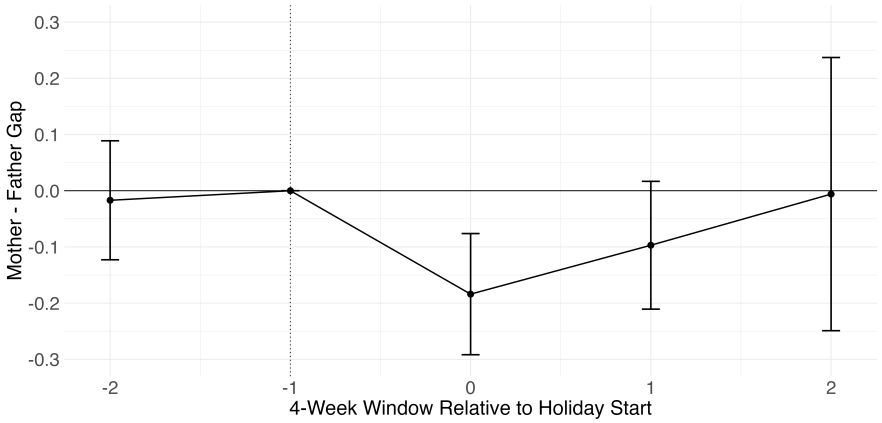
Note: The figure shows the distribution of search participation (Panel A) and unemployment duration (Panel B) of mothers, fathers, non-mother and non-fathers.
Source: PASS v18, own calculations.

Figure 5: The mother-father gap in active search over the calendar year



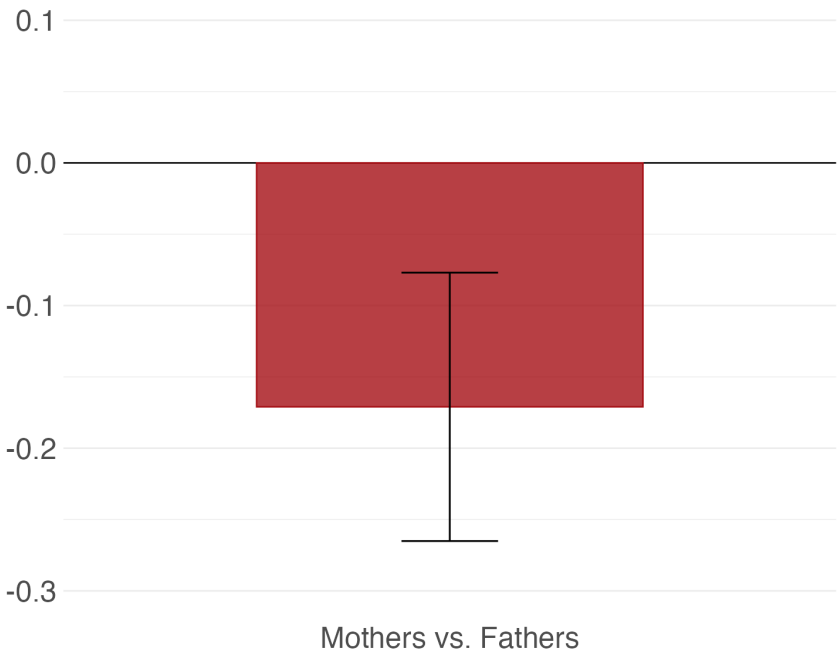
Note: This figure plots month-specific estimates of the gap between mothers and fathers in active job search. Each point reports the marginal effect of being a parent in the corresponding month from a regression that interacts motherhood (vs. fatherhood) with calendar-month indicators and uses May as the omitted reference month. The outcome is an indicator equal to one if the respondent reports having searched for a job in the last four weeks. Vertical bars denote 95 percent confidence intervals based on robust standard errors. The dahed line indicates the overall conditional difference in active search between mothers and fathers. All specifications include the baseline set of controls and fixed effects as described in the main text.
Source: PASS v18, own calculations.

Figure 6: Event-study relative to the summer holiday start



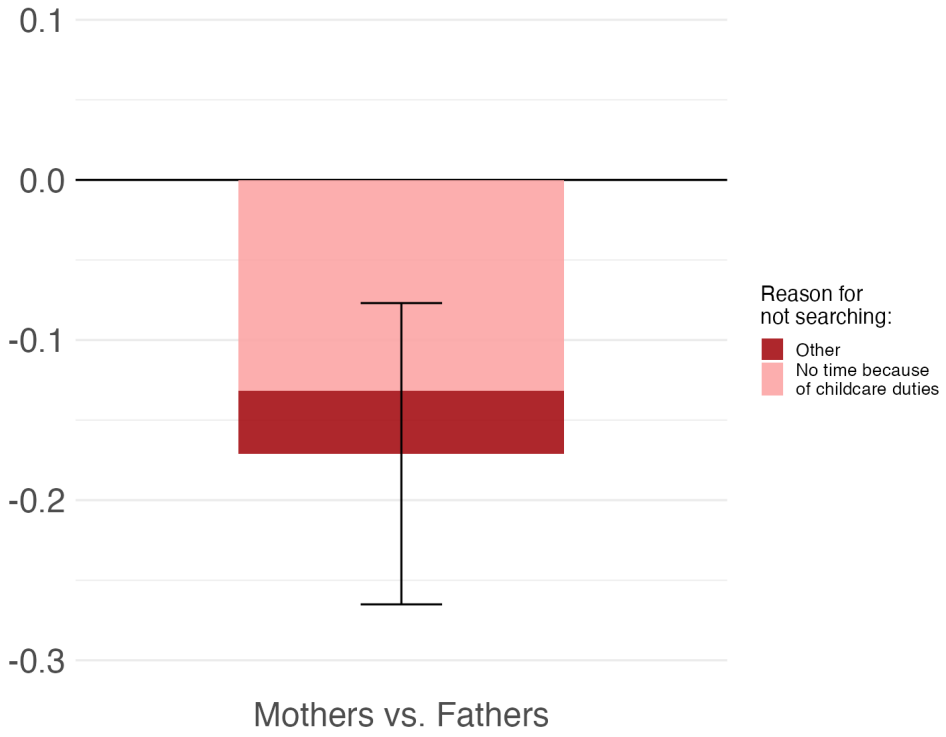
Note: This figure reports event-study estimates of the effect of summer school holidays on active job search for mothers compared to fathers. The outcome is an indicator equal to one if the respondent reports having searched for a job in the last four weeks. Event time is defined as four-week windows relative to the start of the summer school holiday period in the respondent's federal state; event time zero denotes the first period with holiday exposure. Points show estimated differences between mothers and fathers at each event time, normalized to the period immediately before holiday start (event time minus one). Vertical bars denote 95 percent confidence intervals based on robust standard errors. All specifications include the baseline set of controls and fixed effects described in the main text. Results are also reported in Table 2 column 1.
Source: PASS v18, own calculations.

Figure 7: Difference-in-differences relative to the summer holiday start



Note: This figure reports difference-in-differences estimates of the effect of exposure to the summer school holiday period on the probability of active job search for mothers and fathers. The outcome is an indicator equal to one if the respondent reports having searched for a job in the last four weeks. Holiday exposure is defined using the respondent's federal state and interview date, mapped to state-specific summer holiday calendars (as described in the main text). Vertical lines denote 95 percent confidence intervals based on robust standard errors. Point estimates are also reported in column 1 of Table 3.
Source: PASS v18, own calculations.

Figure 8: Decomposing the holiday effect by stated reasons for not searching



Note: This figure decomposes the estimated effect of exposure to the summer school holiday period on mothers' relative to fathers' job search on the extensive margin. The stacked segments allocate this total change to reasons reported by non-searchers: "no time because of childcare duties" versus all other reasons. The vertical line indicates the 95 percent confidence interval for the overall effect. Holiday exposure is constructed from the respondent's interview date and federal state using state-specific summer holiday calendars, as described in the main text.
Source: PASS v18, own calculations.

Tables

Table 1: Descriptive Statistics

	Mothers		Fathers		Non-Mothers		Non-Fathers	
	Mean (1)	SD (2)	Mean (3)	SD (4)	Mean (5)	SD (6)	Mean (7)	SD (8)
Socio-demographics:								
Married	0.337	0.473	0.805	0.397	0.236	0.424	0.124	0.329
Partner	0.433	0.495	0.929	0.257	0.311	0.463	0.175	0.380
Partner employed	0.364	0.481	0.176	0.381	0.367	0.482	0.335	0.472
German	0.717	0.451	0.491	0.500	0.871	0.335	0.836	0.371
Age	37.914	7.430	40.564	7.782	43.849	9.212	41.130	9.560
Child between 6 and 14	0.680	0.467	0.666	0.472				
Child under 18	1.000	0.000	1.000	0.000				
Single parent	0.567	0.495	0.071	0.257				
University degree	0.104	0.305	0.139	0.346	0.114	0.317	0.111	0.314
Higher technical degree	0.026	0.159	0.038	0.192	0.043	0.202	0.040	0.196
Vocational training	0.512	0.500	0.395	0.489	0.559	0.497	0.547	0.498
No. of years of educaction	11.169	2.719	11.106	3.258	11.443	2.659	11.480	2.742
Unemployment history:								
UE benefit type I	0.939	0.239	0.908	0.290	0.921	0.270	0.932	0.252
UE benefit type II	0.873	0.333	0.861	0.346	0.839	0.367	0.869	0.337
UE duration	72.602	73.614	41.179	50.494	70.934	84.258	55.125	62.179
UE duration between								
1 and 6 mths	0.116	0.320	0.202	0.401	0.142	0.349	0.150	0.357
7 and 12 mths	0.065	0.247	0.097	0.295	0.078	0.268	0.075	0.263
13 and 18 mths	0.067	0.250	0.091	0.287	0.076	0.264	0.082	0.274
19 and 24 mths	0.058	0.233	0.080	0.271	0.063	0.243	0.070	0.256
More than 24 mths	0.688	0.463	0.524	0.500	0.633	0.482	0.614	0.487
Job Search:								
Obligated to search	0.495	0.500	0.592	0.491	0.606	0.489	0.638	0.481
Looks for fulltime work	0.344	0.475	0.845	0.362	0.617	0.486	0.818	0.386
Looks for parttime work	0.656	0.475	0.155	0.362	0.383	0.486	0.182	0.386
Employable in next 2 weeks	0.981	0.137	0.991	0.095	0.989	0.102	0.991	0.094
Hours of last employment	34.781	11.036	41.078	13.002	35.372	8.729	39.054	8.989
Searched in last 4 weeks	0.427	0.495	0.567	0.496	0.527	0.499	0.582	0.493
No search because:								
Care duties	0.596	0.491	0.210	0.407	0.089	0.285	0.034	0.180
Already found job	0.097	0.296	0.131	0.338	0.091	0.287	0.115	0.320
No openings	0.241	0.428	0.253	0.435	0.223	0.416	0.233	0.423
ALMP partiticpation	0.179	0.383	0.304	0.460	0.166	0.372	0.205	0.404
Search through:								
Newspaper	0.782	0.413	0.617	0.486	0.772	0.419	0.671	0.470
Agency portal	0.626	0.484	0.581	0.49	0.632	0.482	0.598	0.490
Online	0.667	0.471	0.662	0.473	0.662	0.473	0.660	0.474
Personal network	0.647	0.478	0.706	0.456	0.624	0.484	0.626	0.484
UE agency	0.449	0.497	0.457	0.498	0.481	0.500	0.465	0.499
Private agency	0.141	0.348	0.178	0.3	0.159	0.366	0.174	0.379
Other	0.166	0.372	0.137	0.344	0.174	0.379	0.173	0.378
Own initiative	0.091	0.288	0.076	0.266	0.093	0.291	0.093	0.290
Social network	0.318	0.466	0.380	0.4	0.333	0.471	0.344	0.475
Number of times searched through:								
Newpaper	2.127	1.203	2.179	1.224	2.246	1.255	2.103	1.261
Agency portal	2.044	1.403	2.248	1.381	2.118	1.407	2.018	1.407
Online	2.372	1.388	2.564	1.297	2.445	1.346	2.361	1.350
Personal network	1.129	1.316	1.844	1.388	1.067	1.284	1.268	1.373
Agency portal	0.428	0.889	0.550	0.962	0.336	0.830	0.431	0.910
Private agency	0.763	1.179	1.094	1.284	0.801	1.185	0.891	1.222
Responses to job ads	3.883	6.984	3.974	7.444	4.360	6.958	4.264	7.557
Self-placed ads	0.180	0.917	0.312	1.537	0.198	1.470	0.290	1.898

Asking firms	2.574	5.419	3.097	6.041	2.595	5.819	2.798	5.690
Own initiative	2.105	4.832	2.576	6.067	2.173	4.912	2.442	5.947
Distant applications	0.202	2.094	0.535	2.577	0.485	2.693	0.927	4.267
Number of:								
Searches in last 4 weeks	8.715	13.193	9.883	15.464	9.279	13.654	9.720	14.473
Search channels	3.477	1.426	3.339	1.475	3.506	1.424	3.367	1.433
Job interviews	0.501	1.152	0.730	2.055	0.548	1.401	0.687	1.751
No. of observations	8,669		4,826		7,670		12,159	

Notes: This table reports descriptive statistics for the working sample of unemployed individuals used in the analysis. The sample is restricted to respondents of working age who are unemployed at the time of the interview and for whom the key job-search outcomes and covariates are observed.
Source: PASS v18, own calculation.

Table 2: Event-study coefficients

Event Time	Baseline (1)	Ever searched (2)	Not obligated to search (3)	Child between 6 and 14 (4)
-2	-0.017	-0.012	-0.041	-0.035
	(0.054)	(0.068)	(0.059)	(0.055)
-1	Ref.	Ref.	Ref.	Ref.
0	-0.184***	-0.196***	-0.127	-0.187***
	(0.055)	(0.053)	(0.093)	(0.061)
1	-0.097	-0.121*	-0.110	-0.101
	(0.058)	(0.064)	(0.140)	(0.083)
2	-0.006	0.0200	0.001	-0.028
	(0.124)	(0.107)	(0.183)	(0.146)
Controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Year × Month FE	Yes	Yes	Yes	Yes
No. of observations	1,764	1,506	665	1,157

Notes: This table reports event-study estimates of the effect of summer school holidays on active job search for mothers compared to fathers. The outcome is an indicator equal to one, if the respondent reports having searched for a job in the last four weeks. Event-time is defined as four-week windows relative to the start of the summer school period int he respondent's federal state. Event-time zero denotes the first period with the holiday exposure. Point estimates show estimated differences between mothers and comparable fathers. All specifications include the baseline set of controls (sociodemographics and labour market history) and fixed effects. Column 1 presents results of the baseline sample, corresponding to Figure 6, column 2 excludes only individuals that report to have ever searched for a job before, column 3 those that have no search obligation from the unemployment agency and column 4 those that have a child between 6 and 14. All standard errors are robust.
Source: PASS v18, own calculation.

Table 3: Event-study coefficients

	Baseline (1)	No longterm unemployed (2)	Newly unemployed (3)	Ever searched (4)	Not obligated to search (5)	Child between 6 and 14 (6)
Mother	-0.126**	-0.063	-0.117	-0.110**	-0.086**	-0.123**
	(0.043)	(0.054)	(0.066)	(0.042)	(0.040)	(0.048)
In holiday	0.052	0.039	0.004	0.017	0.021	0.086
	(0.073)	(0.078)	(0.129)	(0.074)	(0.092)	(0.067)
In holiday × Mother	-0.171***	-0.137*	-0.137	-0.148***	-0.108*	-0.175***
	(0.048)	(0.069)	(0.141)	(0.048)	(0.070)	(0.054)
Constant	0.555***	0.491***	0.788***	0.554***	0.704***	0.524**
	(0.130)	(0.158)	(0.185)	(0.137)	(0.188)	(0.193)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Week FE	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	1,734	591	297	1,471	1,007	1,118

Notes: This table reports difference-in-differences estimates of the effect of exposure to the summer school holiday period on the probability of active job search for mothers and comparable fathers. The outcome is an indicator equal to one if the respondent reports having searched for a job in the last four weeks. Holiday exposure is defined using the respondent's federal state and interview date, mapped to state-specific summer holiday calendars (as described in the main text). All specifications include the baseline set of controls (sociodemographics and labour market history) and fixed effects. Column 1 reports the baseline results, corresponding to Figure 7, column 2 excludes all respondents that are unemployed for 24 months or longer, column 3 includes individuals that are at most 12 months unemployed, column 4 includes only those who report to have ever searched for a job, column52 includes only those who are not obligated to search by the unemployment agency, and column 6 includes parents with a child between 6 and 14 years. All standard errors are robust.
Source: PASS v18, own calculation.

Table 4: Heterogeneity: Difference-in-differences estimates

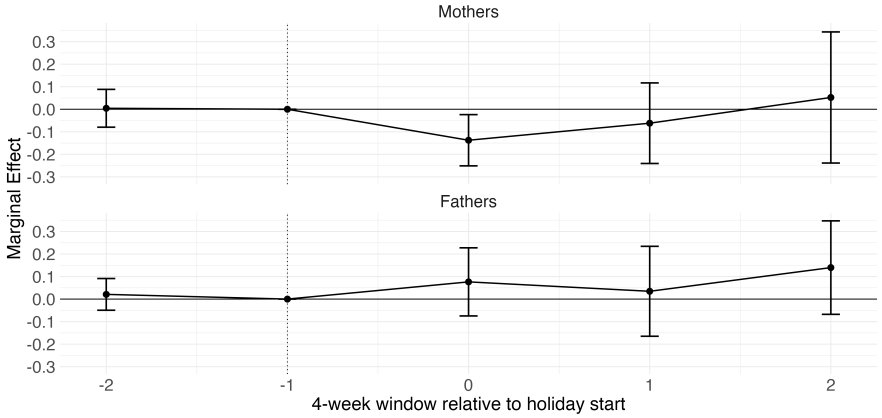
	Partner employed (1)	Partner unemployed (2)	West Germany (3)	East Germany (4)
Mother	-0.021	-0.174***	-0.066	-0.048
	(0.161)	(0.049)	(0.059)	(0.085)
In holiday	-0.209	0.056	0.108	0.022
	(0.268)	(0.091)	(0.077)	(0.186)
In holiday × Mother	-0.177	-0.138**	-0.205***	-0.172
	(0.230)	(0.048)	(0.055)	(0.095)
Constant	1.826**	0.607***	0.232	0.650**
	(0.797)	(0.168)	(0.143)	(0.227)
Controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Week FE	Yes	Yes	Yes	Yes
No. of observations	128	946	1,294	347

Notes: This table reports heterogeneities in the effect of exposure to the summer school holiday period on the probability of active job search for mothers and comparable fathers. Column 1 includes respondents with a partner that is employed, while column 2 includes respondents with a partner that is unemployed. Column 3 reports estimates for individuals residing in West Germany and column 4 for those living in East Germany. *Source*: PASS v18, own calculation.

Appendix

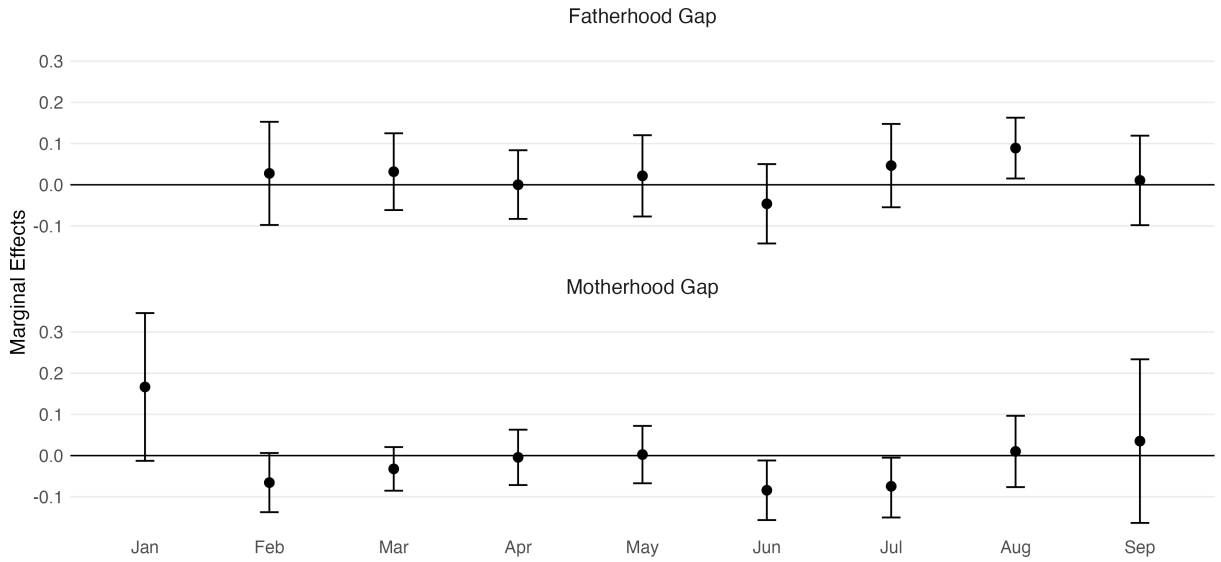
A.1 Additional Figures and Tables

Figure A.1: Marginal effects of mother and fathers relative to the summer holiday start



Note: This figure reports marginal effects of event-study estimates of the effect of summer school holidays on active job search, separately for mothers and fathers. The marginal effects are based on the baseline estimation reported in Table 3 column 1. The outcome is an indicator equal to one if the respondent reports having searched for a job in the last four weeks. Event time is defined as four-week windows relative to the start of the summer school holiday period in the respondent's federal state; event time zero denotes the first period with holiday exposure. Points show estimated differences between parents and non-parents at each event time, normalized to the period immediately before holiday start (event time minus one). Vertical bars denote 95 percent confidence intervals based on robust standard errors. All specifications include the baseline set of controls and fixed effects described in the main text.
Source: PASS v18, own calculations.

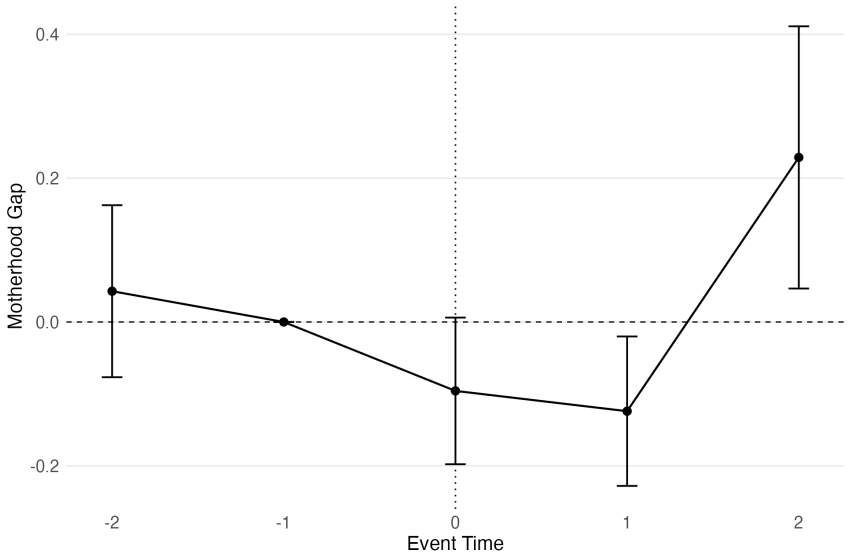
Figure A.2: The Mother-non-mother and father-non-father gaps in active search over the calendar year



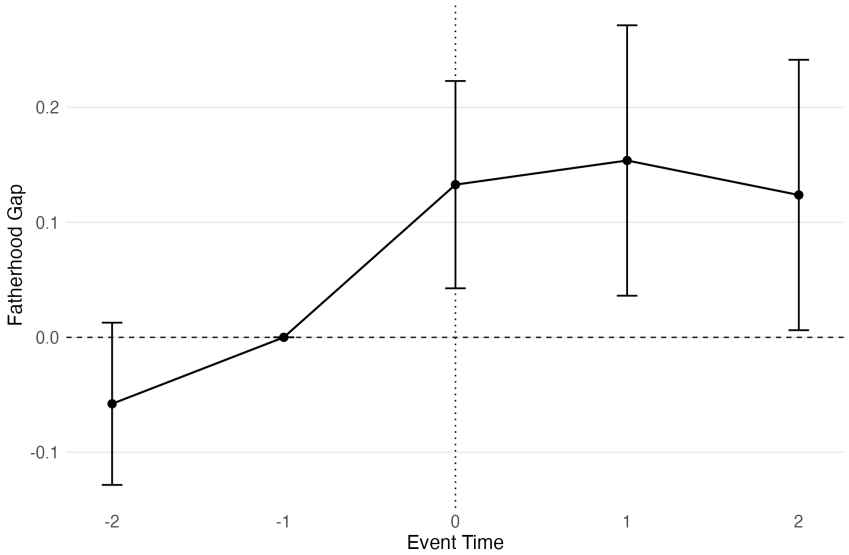
Note: This figure plots month-specific estimates of the parenthood gap in active job search, separately for men (top panel: fathers vs. non-fathers) and women (bottom panel: mothers vs. non-mothers). Each point reports the marginal effect of being a parent in the corresponding month from a regression that interacts parenthood with calendar-month indicators and uses May as the omitted reference month. The outcome is an indicator equal to one if the respondent reports having searched for a job in the last four weeks. Vertical bars denote 95 percent confidence intervals based on robust standard errors. All specifications include the baseline set of controls and fixed effects as described in the main text.
Source: PASS v18, own calculations.

Figure A.3: Mother-non-mother and father-non-fatherd gaps relative to the summer holiday start

A. Mothers vs Non-mothers

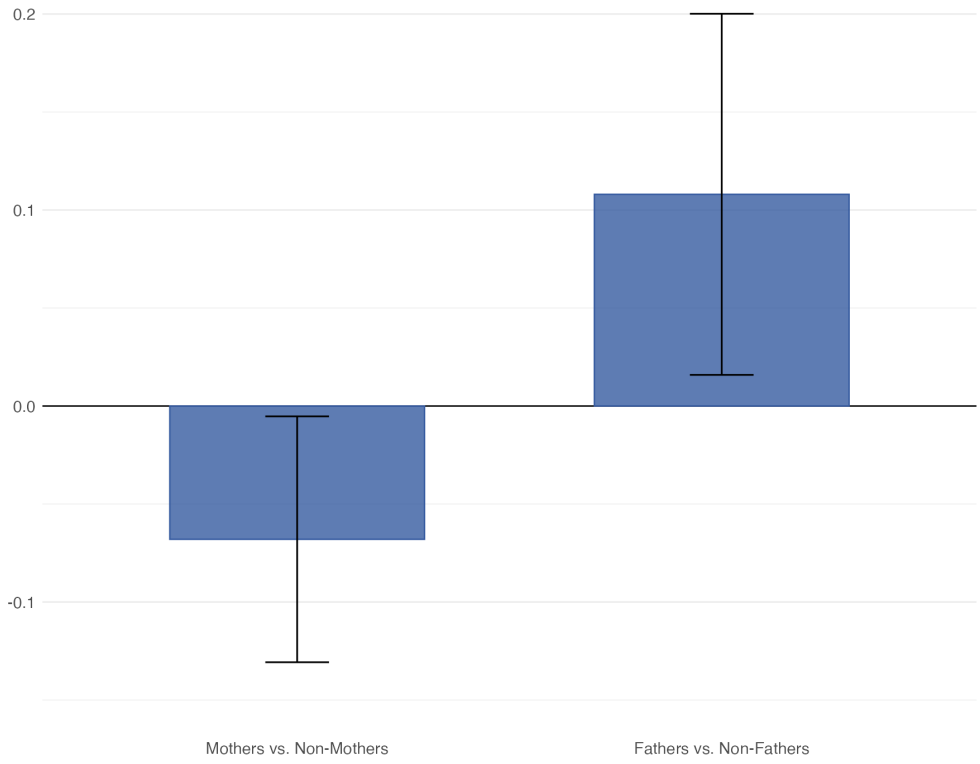


B. Fathers vs Non-fathers



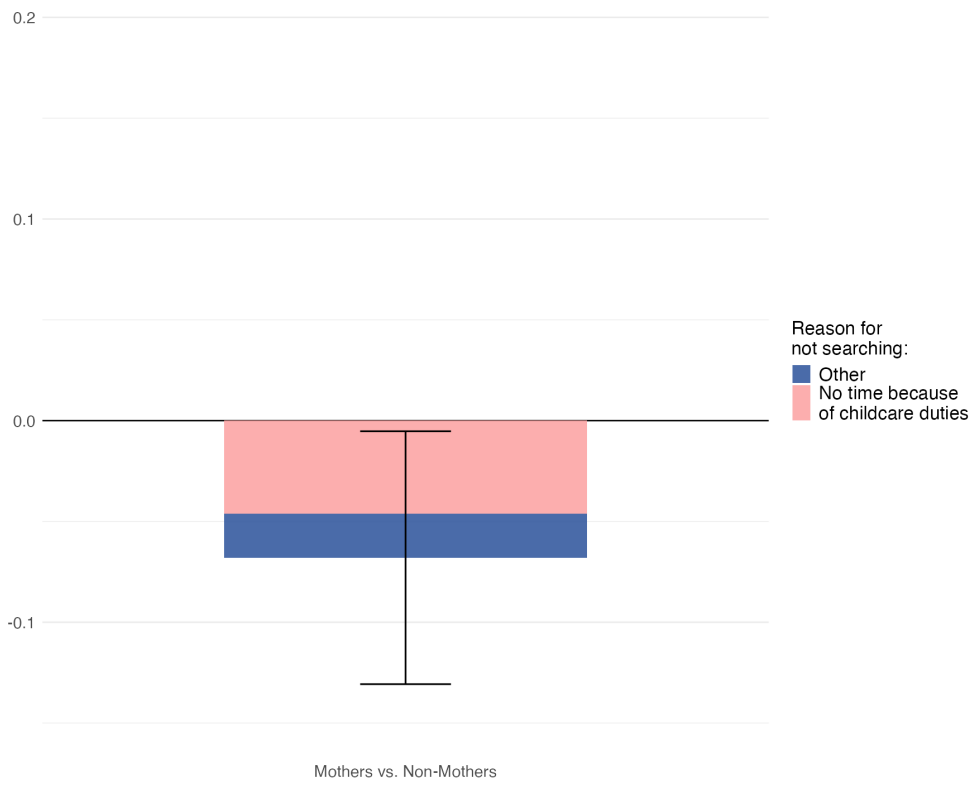
Note: This figure reports event-study estimates of the effect of summer school holidays on active job search, separately for women (Panel A: mothers vs. non-mothers) and men (Panel B: fathers vs. non-fathers). The outcome is an indicator equal to one if the respondent reports having searched for a job in the last four weeks. Event time is defined relative to the start of the summer school holiday period in the respondent's federal state; event time zero denotes the first period with holiday exposure. Points show estimated differences between parents and non-parents at each event time, normalized to the period immediately before holiday start (event time minus one). Vertical bars denote 95 percent confidence intervals based on robust standard errors. All specifications include the baseline set of controls and fixed effects described in the main text.
Source: PASS v18, own calculations.

Figure A.4: Difference-in-differences estimates of the mother-non-mother and father-non-father gaps



Note: This figure reports difference-in-differences estimates of the effect of exposure to the summer school holiday period on the probability of active job search, separately for women and men. The left bar shows the estimated change for mothers relative to non-mothers; the right bar shows the corresponding estimate for fathers relative to non-fathers. The outcome is an indicator equal to one if the respondent reports having searched for a job in the last four weeks. Holiday exposure is defined using the respondent's federal state and interview date, mapped to state-specific summer holiday calendars (as described in the main text). Vertical lines denote 95 percent confidence intervals based on robust standard errors.
Source: PASS v18, own calculations.

Figure A.5: Decomposing the holiday effect for mothers and non-mother by stated reasons for not searching



Note: This figure decomposes the estimated effect of exposure to the summer school holiday period on mothers' job search on the extensive margin. The bar reports the difference-in-differences estimate for mothers relative to non-mothers, expressed as the change in the probability of actively searching for a job in the last four weeks (negative values indicate reduced search). The stacked segments allocate this total change to reasons reported by non-searchers: "no time because of childcare duties" versus all other reasons. The vertical line indicates the 95 percent confidence interval for the overall effect. Holiday exposure is constructed from the respondent's interview date and federal state using state-specific summer holiday calendars, as described in the main text.
Source: PASS v18, own calculations.