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ARTICLE

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COVID-19 and the role of gender, earnings, and telecommuting in parents' employment

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Abstract

Objective: To understand how married mothers' and fathers' earnings and ability to telecommute structured their employment throughout the COVID-19 pandemic.

Background: We weigh two competing explanations—rational choice and gendered resources—to evaluate the association between married parents' financial and workplace resources and sustained employment throughout the pandemic.

Method: We use hierarchical logistic regression models to analyze rotating panel data from the current population survey for respondents in dual-earner, different-sex marriages who are aged 25 to 54 with children 12 years or younger from January 2020 through August 2021. We restrict our analysis to those who were employed prior to the start of the pandemic to isolate pandemic-related exits.

Results: We find that being the primary earner (i.e., earning at least half of the household income) prior to the start of the pandemic did not protect mothers from employment exits during the pandemic. Fathers' primary earner status did help sustain their employment. In contrast, access to telecommuting was an important resource to help sustain mothers' work attachment throughout the pandemic but had little association with fathers' employment.

Conclusion: Rational choice explanations help explain married fathers' but not mothers' employment during the pandemic. Gendered resources better explain mothers' employment. Mothers who were primary earners were still pulled away from employment as caregiving demands grew during the pandemic. Telecommuting supported mothers' employment by offering flexibility in addressing these competing work and family demands, but not by challenging conventional gender divisions of labor among different-sex couples.

KEYWORDS
employment, fathers, gender, mothers, parents, work-family issues

INTRODUCTION

The COVID-19 pandemic has disproportionately impacted mothers in the United States. They have reported steeper employment declines (Collins, Landivar, et al., 2021; Landivar et al., 2020; Landivar & deWolf, 2022) and greater childcare, housework, and home-schooling demands than fathers (Carlson et al., 2022; Petts et al., 2021; Ruppanner et al., 2021; Yavorsky et al., 2021). At the start of the pandemic, telecommuting was a critical resource that buffered many workers from job loss (Dey et al., 2021), but mothers of preschool and young school-aged children still experienced greater employment disruptions (Collins, Landivar, et al., 2021), in part due to extensive childcare and school closures and the widespread transition to remote learning (Collins, Ruppanner, et al., 2021). In January 2021, 10 million U.S. mothers were not actively working, or one third of all mothers living with school-aged children (Heggeness et al., 2021). Fathers' labor force participation rate also dropped between 2019 and 2020 (93.3% to 92.3%, respectively) but remained largely unchanged in 2021 at 92.5% and significantly higher than that of mothers (71.2% in 2021; U.S. Census Bureau, 2021). Fathers reached pre-pandemic employment levels by September 2021, and it took more than a year longer for mothers to reach employment recovery (Landivar, 2023). As of February 2023, mothers with lower educational attainment levels and Black mothers had not yet fully recovered their employment losses (Landivar, 2023), showing employment recovery has been uneven among mothers.

Although it is clear that the pandemic harmed mothers' employment more than fathers', we know less about whether mothers who were primary earners (earning at least half of the household income pre-pandemic) or were able to telecommute were more likely to remain employed in this crisis. This question is important given pre-pandemic research showing that mothers leverage their earnings and organizational resources to maintain employment (Landivar, 2017; Schneider & Hastings, 2017). Throughout the pandemic, economic and employment resources—namely, primary earner status and greater access to telecommuting—may have become more critical for mothers' sustained employment. Alternatively, mothers may have left paid work to meet increased caregiving demands despite contributing more to family finances or having the ability to telecommute.

Here, we investigate the relationship between different-sex, married parents' economic and telecommuting resources and their sustained employment during the pandemic using data from the current population survey (CPS), selecting a representative panel of U.S. parents spanning January 2020 through August 2021. We restrict our sample to parents in dual-earner, different-sex marriages who were employed prior to the pandemic and are in their prime working years (aged 25 to 54 years). Our contributions are both theoretical and empirical: we evaluate whether married parents' employment during the pandemic was more consistent with rational choice explanations or a gendered resources approach. A rational choice framework posits a gender-neutral hypothesis: that the parent with greater resources reflected in higher earnings or access to telecommuting would be more likely to maintain employment when one parent must quit their job. That is, if married mothers earned more than married fathers or had access to telecommuting, the father would be predicted to reduce employment to provide caregiving. In contrast, a gendered resources approach would argue that mothers' resources are discounted by gendered caregiving and domestic obligations, meaning that mothers' primary earner status and access to telecommuting is less protective against employment exits. Testing these competing perspectives allows us to identify whether gender or workplace resources were more strongly

associated with employment outcomes for married mothers and fathers throughout the pandemic.

THEORIZING PARENTS' EMPLOYMENT IN THE PANDEMIC

Rational choice approaches

The rational choice approach posits that individual decision-making is determined rationally by weighing available resources against possible outcomes to optimize returns (Becker, 1991; Scott, 2000). Some scholars use rational choice frameworks to evaluate and interpret parents' allocations of paid and unpaid work (e.g., see Brines, 1994; Himmelweit et al., 2013). Specifically, the parent with greater skills and earnings potential will devote more time and make greater investments to paid employment (Becker et al., 1990) because the market rewards specialization (Goldin, 2021). In contrast, those with lower earnings potential and stronger domestic skills will invest more heavily in unpaid work (Bielby & Bielby, 1988). From this perspective, adults' division of paid and unpaid labor within the home is theorized to develop rationally, with an eye toward maximizing household production and utility. This approach implies that these decisions should be gender neutral and based exclusively on individuals' resources.

Economic resources are often measured through earnings. Prior studies show that higher earnings are associated with reductions in housework time and increased investments in paid employment (Carlson & Lynch, 2017; Killewald, 2011). Rational choice processes may intensify under times of crisis and economic insecurity to protect the employment of the household's primary earner (Coccia, 2020). If this were the case, we would expect parents making larger contributions to the family budget to maintain their employment regardless of their gender. For example, some mothers who stepped out of employment in response to prolonged school closures in the pandemic (Landivar et al., 2022) may have been married and earned less money than their spouse, so prioritizing their spouse's employment could indicate a rational allocation of couples' labor and resources. Here, we directly test these arguments using data spanning throughout the COVID-19 pandemic. At the start of the pandemic, Qian and Hu (2021) identified an increase in households with men as primary earners in the United States, especially among couples where the man holds more education than the woman, indicating that human capital shaped different-sex couples' work patterns. Of course, women lost jobs at higher rates than men given their clustering in service and hospitality industries (Albanesi & Kim, 2021) and the intensity of caregiving demands (Collins, Landivar, et al., 2021). Despite the massive toll of the pandemic on women, it is possible that human capital played a role in some couples' employment negotiations, especially those in which married mothers earned more than married fathers. Further, we expand the operationalization of resources beyond education to include earnings and one particularly valuable employment resource during the pandemic: the ability to telecommute.

We expect parents with access to telecommuting are better equipped to maintain employment than those without this benefit. This is especially true as other resources—like earnings—may have been devalued during the pandemic. Privileged parents may have spent less on outsourcing domestic work (e.g., meals, caregiving, cleaning services, etc., which are typically more accessible for higher-income workers) given their associated infection risk or lack of access. Further, telecommuting mitigated employees' risk of infection from co-mingling at the workplace, making it uniquely valuable for workforce attachment during the pandemic. Thus, we expect telecommuting to became a critical resource for parents to meet intensified domestic demands and reduce risk of infection, two factors we expect facilitated continued employment in the pandemic. As rational choice theories are purportedly gender neutral, the predicted

association between access to telecommuting and continuous employment should be gender neutral. We present this hypothesis formally below.

Gender-neutral rational choice hypotheses

H1. Parents contributing a larger share of earnings to the family budget will be more likely to maintain employment than parents whose earnings contribute less.

H2. Parents with access to telework will be more likely to maintain employment during the pandemic than parents without access to telework.

Gendered power dynamics in different-sex marriages

Scholars have criticized the rational choice perspective for its failure to incorporate gender dynamics in family decision-making processes (Driscoll & Krook, 2012; Friedman & Diem, 1993). Mothers are less likely to have access to economic power and resources than fathers, which puts them at an economic disadvantage (Budig & England, 2001). Even when mothers have similar resources, these assets bring less bargaining power (Correll et al., 2007). This is partly because parents, especially those in different-sex unions, remain constrained by traditional gender norms that emphasize mothers' caregiving and fathers' breadwinning (Katz-Wise et al., 2010).

The context created by the COVID-19 pandemic may strengthen these relationships within different-sex marriages, as some gendered parenting attitudes have shifted toward traditionalism (Mize et al., 2021) by default rather than through active negotiation (Calarco et al., 2021). Research shows that mothers have stepped into the void left by childcare and K-12 school closures, with serious consequences for their paid employment (Collins, Ruppanner et al., 2021; Del Boca et al., 2020; Landivar et al., 2022; Petts et al., 2021). Here, we assess whether these trends vary by married parents' economic and telecommuting resources and, critically, whether mothers who were the primary earners and had access to telecommuting were equally likely to leave employment as those who contributed less to family finances and those without this critical benefit.

We know mothers experience competing devotions to work and family that create conflict and drive employment exits (Blair-Loy, 2003; Collins, 2019; Stone, 2007). We also know that U.S. mothers are more likely to overcome these tensions through (1) outsourcing childcare and housework to the market, and (2) using workplace resources, including schedule flexibility and telecommuting (Landivar, 2017). We expect, however, that childcare outsourcing was difficult to mobilize during the pandemic. With the closures of schools, childcare centers, and home-based providers, working mothers took on a disproportionately amount of caregiving responsibilities (Zhou et al., 2020). Further, familial and intergenerational care resources that are vital supports to working parents in "normal" non-pandemic times (Laughlin, 2013)—and that allowed working mothers to mitigate the impact of previous crises (Meliou, 2020)—became a difficult and risky resource to use under the pandemic's particular health conditions (Zhou et al., 2020).

During the pandemic, mothers may have had fewer in-person and in-home options to outsource childcare and housework, and, as previous research indicates, their earnings are less effective in mobilizing other family members to absorb this labor (Killewald & Gough, 2010). Indeed, pre-pandemic research shows: (1) mothers' earnings buy them out of less housework and childcare than fathers' earnings (Carlson & Lynch, 2017; Schneider, 2011); (2) mothers who work full time do more housework than comparable fathers (Chesley & Flood, 2017); and

(3) mothers' earnings are more often spent on outsourcing domestic work (Craig & Powell, 2013; Schneider & Hastings, 2017). Consequently, compared to fathers, mothers' earnings may not be the primary vehicle through which employment is maintained. Instead, mothers themselves, rather than outsourcing, may have been a critical stopgap for the pandemic-driven instability in childcare and in-person schooling, regardless of their familial financial contributions.

We expand this theorizing to assess whether married mothers' access to telecommuting as a crucial workplace resource during the pandemic was equally valuable to maintaining employment as it was for married fathers. On the one hand, the benefits of this resource may be muted for mothers relative to fathers because mothers may be expected to take primary responsibility for domestic labor regardless of couples' work situations. On the other hand, however, telecommuting may be *more* valuable in sustaining employment for married mothers since married fathers contribute less to housework whether or not they telecommute. Thus, mothers may benefit from the flexibility and time gained from avoiding travel to a workplace in managing competing family and paid work obligations, making telecommuting a particularly valuable pandemic resource, given widespread childcare and school closures that resulted in young children needing more care at home.

Testing whether these gender dynamics moderate the relationship between resources and employment, we weigh whether married mothers making greater economic contributions (measured through relative earnings) and with access to telecommuting as a key employment resource were better equipped to maintain employment throughout the pandemic. We test two additional hypotheses gleaned from the gendered resources perspective:

Gendered resources hypotheses

H3. Primary earning status is a more important resource for married fathers' employment than for married mothers' employment during the pandemic.

H4. Access to telecommuting is a more important resource for married mothers' employment than for married fathers' employment during the pandemic.

DATA AND METHODS

Data

We use two separate datasets to test our hypotheses related to relative earnings (H1 and H3) and telecommuting (H2 and H4). We describe these below.

Data used for relative earnings

We use data from the 2020 Annual Social and Economic Supplement (ASEC, also known as the March supplement) to analyze the role of relative earnings on respondents' employment during the pandemic. The ASEC is an annual supplement to the CPS that provides additional information on yearly earnings and other detailed indicators of economic, physical, and social wellbeing that are not asked in the basic monthly CPS. ASEC data are ideal for our purposes because the 2020 ASEC collected information on respondents' total earnings in the previous calendar year, allowing us to avoid issues with endogeneity where

employment exits or scaling back during the pandemic led to reduced earnings. The ASEC is conducted from February to April of every year. Respondents in this survey are also enrolled in the CPS rotating panel (known as the basic monthly sample) which collects a smaller number of socio-economic characteristics on a monthly basis. Households in the CPS monthly panel are surveyed for four consecutive months, omitted for 8 months, then surveyed again for four consecutive months. We link ASEC respondents to their cases in the CPS basic monthly surveys spanning January 2020 through May 2021 to track them throughout the pandemic and determine whether their relative earnings, measured in the 2020 ASEC, relate to subsequent employment measured in the basic monthly surveys. We offer further details on the relationship of the ASEC to the CPS basic monthly panel in Appendix A. Although the CPS basic monthly survey includes one item reporting earnings in the last week, it is only asked to respondents in outgoing rotation groups—those in waves four (the last wave before respondents exit the survey for 8 months) and eight (the last wave before respondents exit the survey indefinitely). This means that the most recent income measures for respondents surveyed during the early months of the pandemic come from the ASEC. Furthermore, relying on outgoing rotation group data reduced our sample of person-months considerably and made estimation of the relationship of relative earnings to employment unreliable as the sample size fell below that recommended by the Census Bureau for analysis of earnings. Furthermore, use of an earnings measure during the pandemic increases endogeneity and leaves us unable to determine if pre-pandemic primary earning status was protective of employment exit during the pandemic. Some mothers who had been primary earners prior to the onset of the pandemic were no longer primary earners in subsequent periods during the pandemic. We therefore use data from the 2020 ASEC reporting respondents' total earnings for the prior calendar year of 2019.

Our sample of ASEC respondents includes civilian respondents aged 25 through 54 who are different-sex, married parents with children 12 years or younger and where both the respondent and their spouse report working for pay in the previous calendar year (2019). We omit those who are unemployed but seeking paid work because it is difficult to assess the relationships of interest among those who have not yet secured employment or have recently been laid off (133 respondents). We also exclude respondents who have given birth during the pandemic (200 respondents) and those in same-sex marriages (208 respondents). We use data on pre-tax salary in the previous year (2019). We link respondents surveyed in the ASEC to their files within the basic monthly surveys from January 2020 through May 2021 when the last major set of households in our sample from the 2020 ASEC were re-surveyed. We start our analysis in January 2020 to include baseline data before COVID-19 was widespread in the United States and before the initial wave of employment disruptions. Our results are robust compared to other baseline months. Due to the rotating panel design of the monthly CPS, there were no respondents from the 2020 ASEC who were surveyed in July through November 2020 (see Appendix A). Our final sample examining relative earnings includes 32,366 person-months (7139 respondents). Although the CPS is the largest survey available for our purposes, sample sizes by relative earnings, gender, and month were prohibitively small to produce reliable estimates. We therefore aggregate months into four 3-month periods: January–March 2020, April–June 2020, December 2020–February 2021, and March–May 2021. These divisions roughly correspond to distinct periods leading up to and throughout the pandemic. We report sample sizes by period in Appendix B. Our results are robust to other period divisions and when using detailed monthly estimates.

We measure relative earnings in two ways with data on annual wages from the 2020 ASEC. First, we use a dichotomous measure indicating whether respondents earned 50% or more of couples' total household earnings. Second, we use a three-category measure indicating whether

respondents earned (1) less than 40% of couples' earnings, (2) 40%–60% of couples' earnings, or (3) more than 60% of couples' earnings.

Data for analysis of telecommuting

Starting in May 2020, the basic monthly CPS added a series of questions focusing on the pandemic. One asked, "At any time in the last 4 weeks, did you telework or work at home for pay because of the coronavirus pandemic?" We use this item to capture respondents' telecommuting status. This is the only available item that directly measures telecommuting status for this time period. However, it may underestimate telecommuting by including only those who worked remotely due to the coronavirus pandemic and not those who are regular remote workers. An alternative approach to measuring telecommuting status is to identify those in occupations found previously to have a high percentage of remote workers (see Alon et al., 2020; Collins, Landivar, et al., 2021). We conducted analyses with both types of measurements and results were similar (see Appendix C). We therefore measure telecommuting status with the item directly asking respondents about their remote work status. Respondents were coded as either working on-site or telecommuting in the prior month. In supplementary analyses (see Appendix D), we examined combinations of couples' relative telecommuting status (e.g., if both partners telecommuted or if the respondent telecommuted and their spouse did not). These results did not add further insight. We therefore use a dichotomous measure indicating whether respondents telecommuted compared to those who worked on-site.

Telecommuting status was only recorded for respondents who were currently employed. We therefore lag this variable by 1 month to examine its relationship to parents' employment. This short time interval meant that the majority of those responding to this question were still employed in the following month. Under these conditions, restricting our data to respondents in the 2020 ASEC created a too small sample for reliable estimation. Instead, we expand our universe of respondents to all those fitting the inclusion criteria and included in CPS basic monthly surveys from May 2020 (the first month telecommuting was recorded) through August 2021. As discussed above, the basic monthly CPS is a rotating panel survey, allowing us to follow respondents to determine how prior telecommuting predicts employment throughout the pandemic. We restrict our sample to different-sex, married, dual-earner parents aged 25 through 54 with children aged 12 years or younger who responded to the telecommuting question in the prior month. We exclude respondents who have given birth during the pandemic (874 respondents), those in same-sex marriages (286 respondents), and those who are seeking paid work but have yet to obtain it (2235 respondents). We dropped May 2020 from our analysis because this was the first month telecommuting was recorded and therefore respondents in this month had no lagged observations. Our final sample for the analysis of telecommuting includes 71,280 person-months (27,897 respondents). Although this is the largest data source available for our purposes, sample sizes by month were often prohibitively small. We therefore focused on five 3-month time periods to examine longitudinal shifts: June–August 2020, September–November 2020, December 2020–February 2021, March–May 2021, and June–August 2021. We report sample sizes by period in Appendix B. Despite the reduction in sample size, the results are also robust when using detailed month to examine longitudinal shifts.

Analytic plan

The rotating panel design of the CPS means that individual households are present in multiple waves of data. Two methods are commonly used in these types of panel data: fixed effects and hierarchical models. A major advantage of fixed effects is that they control for unobserved

stable effects of stable respondent characteristics (Allison, 2009). Correspondingly, fixed effects models predict relationships of concurrent change between predictors and outcomes. Although these features are desirable, fixed effects are not well suited for our purposes for three reasons. First, earnings in the previous calendar year are measured with the 2020 ASEC and modeled as a stable characteristic. Therefore, fixed effects models are unable to estimate the relationship between these stable predictors and employment because there is no change within respondents in these baseline characteristics across waves of data. Second, it is impossible to model concurrent change between employment and telecommuting because telecommuting status was only asked to those who were currently employed. We therefore lag telecommuting status by 1 month in the analysis below. Third, fixed effects logistic regression models use information only from respondents who report a change in the dependent or independent variables across waves. Our data are restricted to individuals who were employed in the prior year (for earnings analyses) or month (for telecommuting). Therefore, over 90% of respondents in our analysis of earnings and 96% of respondents in our analysis of telecommuting remained employed throughout each month they were surveyed and would be excluded from our analysis. A limitation of this study is the estimation of a small yet theoretically important segment of this population, so fixed effects models are not ideal as they would exclude the majority of respondents in our analysis and produce estimates that do not account for stable relationships, such as those where telecommuting across all waves corresponded to steady employment.

Hierarchical models are another method commonly used to analyze panel data. In this approach, residuals are allowed to vary by clusters in the data that would otherwise violate the assumption of independence between observations. Unlike fixed effects models, hierarchical models are capable of examining the relationship of stable higher-level characteristics on lower-order outcomes, such as assessing the association of earnings in the previous year to employment status across several months. Hierarchical models also retain observations with no variation in predictors or outcomes. This makes them suitable both for estimating the relationship of stable characteristics on outcomes as well as accounting for persistent associations.

For these reasons, hierarchical models are ideally suited to testing our hypotheses. Our data consist of person-months nested within persons and households which are nested within survey months. Each observation is associated with a single person and household, but multiple combinations of months (e.g., one respondent may be surveyed in April, May, and June while another is surveyed in May, June, and July). We therefore use cross-classified hierarchical models which account for the shared nesting structure of months to persons and households. Our approach uses a simple extension of a hierarchical logistic regression, following the form:

$$\begin{aligned}\ln\left(\frac{y_{ijp}}{1-y_{ijp}}\right) = {} & \gamma_{00} + \beta_1 m_{ijp} + \beta_2 r_{ijp} + \beta_3 t_{ij} + \beta_4 (m_{ijp} \times r_{ijp}) + \beta_5 (m_{ijp} \times t_{ij}) + \beta_6 (r_{ijp} \times t_{ij}) \\ & + \beta_7 (m_{ijp} \times r_{ijp} \times t_{ij}) + \beta_8 V_{ijp} + \beta_8 S_{ijp} + \beta_8 C_{jp} + \beta_8 P_p + U_{person(i)} + U_{household(j)} \\ & + U_{month(p)} + \varepsilon_{ijp}\end{aligned} \tag{1}$$

We predict employment (y) with gender (m), resources (r), time period (t), a set of respondent control variables (V), a set of controls for respondents' spouse (S), couple-level controls (C), and controls for pandemic-related conditions (P). The nesting structure, capturing the cross-classification of persons, households, and months, enters the models as random effects (U), and are parsed from the error term (ε_{ijp}). Equation (1) builds out a three-way interaction between gender, resources (i.e., relative earnings or telecommuting status), and time period (measured categorically by three-month intervals). From this interaction, we calculate the average marginal effects of each resource on the probability of employment for mothers and fathers across each time period. We use average marginal effects because log odds or odds ratios

calculated from interaction terms in logistic regression equations can misrepresent the comparison of effects when the conditional distribution of the binary outcome varies across groups (Long & Mustillo, 2018). Our use of average marginal effects solves this problem by estimating coefficients with the common probability scale.

Respondent control variables (*V*) include age, education (high school or less, some college, college degree or more), race (White, Black, Hispanic, and other race), foreign-born status, industry of employment in the previous year (agriculture/mining, construction, manufacturing, wholesale/retail trade, transportation/utilities, information, finance/insurance/real estate, professional and business services, education and health, leisure and hospitality, other services, and public administration), occupation of employment in previous year (management/professional, service, sales and office, natural resources/construction/maintenance, production/transportation), and full-time work status in the previous year. In analyses of relative earnings, we also control for whether the respondent worked in a telecommuting-capable occupation in the prior year (defined by Alon et al., 2020 as those in which at least 50% of workers telecommuted). Each of these individual-level variables were also measured for respondents' spouse and included as controls (*S*). When analyzing telecommuting status, we add an additional control for spouses' telecommuting status. At the couple level (*C*), we control the age of youngest child, the number of children, and total combined earnings (logged). Two items control for varying pandemic-related contexts (*P*). First, we use data from the Center for Disease Control (2022) to control for the monthly rate of COVID-19 cases per 100,000 residents in respondents' state. Second, we use data from the elementary school operating status (ESOS) database (Landivar et al., 2022) to measure the proportion of districts operating in-person (weighted by student population size, see Landivar et al., 2022) within respondents' states. We coded schools as fully open in January, February, and March 2020, fully remote or closed from April through August 2020, and used data from ESOS to measure schools' operational status in the fall 2020 academic semester and the spring 2021 academic semester. We then coded schools as closed from June through August 2021 corresponding to summer break.

Our analysis of telecommuting does not include the earnings measure from the basic monthly CPS; rather, we use earnings data from the ASEC to examine relative earnings due to its greater stability and sample size in supplemental analyses (see Appendix C). However, our results are similar when measuring telecommuting with respondents' occupation and controlling for annual earnings with the ASEC data. In addition, our analysis of telecommuting uses full-time work status, industry, and occupation in the previous month, rather than previous year, to correspond to the focal predictor of telecommuting status in the prior month.

In the following section, we first present descriptive patterns of employment and resources for mothers and fathers in our sample. We then turn to the results of our analytical models, which offer direct tests of our hypotheses. We report average marginal effects of each resource on the probability of employment for mothers and fathers across each month included in our data. We also plot how the predicted probability of employment varies over time and by resources for these two groups.

RESULTS

Descriptive statistics

In our sample of 2020 ASEC respondents, 94.5% were employed (Table 1). This rate reflects the fact that our sample is restricted to those who worked in the prior calendar year (2019). Married fathers' employment rate (97.6%) was substantially higher than married mothers' (91.3%), confirming prior research showing that mothers left work in greater numbers than fathers during the pandemic (Landivar et al., 2020; Landivar & deWolf, 2022). Examining these

TABLE 1 Descriptive statistics.

Analytic sample used for analysis of relative earnings (n = 32,366 person-months)	Fathers Mean	Fathers SD	Mothers Mean	Mothers SD	Total Mean	Total SD
Employed	0.976	0.154	0.913	0.281	0.945	0.228
Relative earnings						
1) Dichotomous measure						
Earning half or more of couple's earnings	0.738	0.440	0.297	0.457	0.521	0.500
2) Categorical						
Earning less than 40% of couple's earnings	0.130	0.337	0.478	0.500	0.301	0.459
Earning 40%–60% of couple's earnings	0.390	0.488	0.390	0.488	0.390	0.488
Earning more than 60% of couple's earnings	0.480	0.500	0.132	0.339	0.309	0.462

Analytic sample used for analysis of telecommuting (n = 71,280 person-months)	Mothers Mean	Mothers SD	Total Mean	Total SD
Employed	0.992	0.091	0.970	0.170	0.981	0.136
Telecommuting	0.285	0.451	0.320	0.466	0.302	0.459

Note: Sample in Panel A restricted to respondents surveyed in 2020 ASEC supplement. Sample in Panel B restricted to respondents in the monthly CPS who responded to the question about telecommuting in prior month.

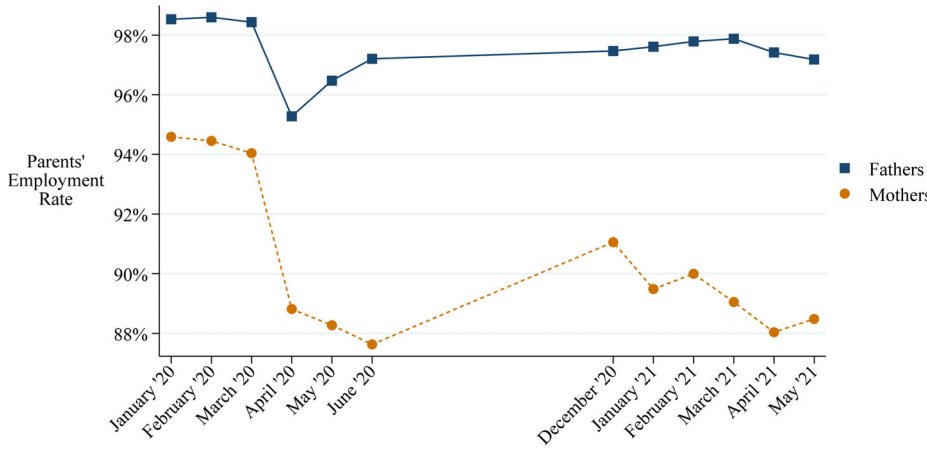

FIGURE 1 Sample used for analysis of relative earnings: employment rates for parents of young children (less than 13 years). Sample restricted to respondents surveyed in 2020 ASEC supplement. ASEC, annual social and economic supplement. [Color figure can be viewed at wileyonlinelibrary.com]

patterns from January 2020 through May 2021 in Figure 1, we find that the largest drop in employment occurred in April 2020. From March to April 2020, married fathers' employment dropped 3.2 percentage points and married mothers' fell by 5.2 percentage points. Married fathers experienced a quicker recovery after April 2020, returning to employment rapidly through June 2020. From this point, married fathers' employment rate remained steady at

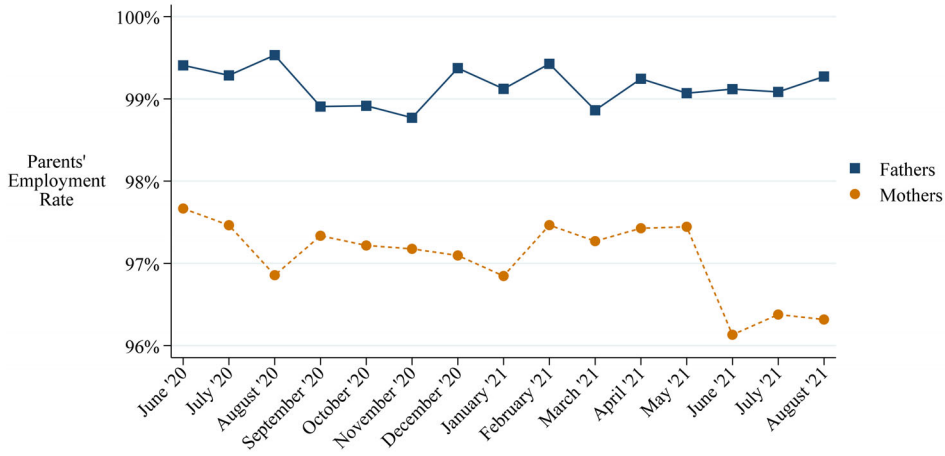

FIGURE 2 Sample used for analysis of telecommuting: employment rates for parents of young children (less than 13 years). Sample restricted to respondents in the monthly CPS who responded to question about telecommuting in prior month. CPS, current population survey. [Color figure can be viewed at wileyonlinelibrary.com]

around 97% to 98% for the remaining months in our sample. In comparison, married mothers' employment rate was even lower in June 2020 (87.6%) than April 2020 (88.8%). Although married mothers experienced some recovery by December 2020 (91.1%), it soon returned to the low levels observed at the start of the pandemic, falling to 88% in April 2021.

Table 1 also reports relative earnings between married mothers and fathers in our sample. About 74% of fathers earned at least half of married couples' earnings, compared to 30% of mothers. About 40% of married mothers and fathers earned about half of couples' earnings (between 40% and 60%), whereas married fathers were over three times as likely as mothers to earn more than 60% of couples' combined earnings (48% and 13.2% respectively).

Our sample of CPS basic monthly respondents used to analyze telecommuting was restricted to respondents who worked in the previous month. Hence, rates of employment were slightly higher in this sample, but gender differences remained persistent. Across all months, married mothers' employment rate was between 1.5 and 3 percentage points lower than married fathers (Figure 2). Married mothers' employment rate in our sample fell to 96.9% in August 2020, reached 97.5% in February 2021, and fell to its lowest point in June 2021 at 96.1%. It is important to note, again, that these estimates reflect the employment rate of those who worked in the previous month. Overall, these patterns indicate greater fluctuation in mothers' work attachment compared to fathers during the pandemic.

Just over a quarter of respondents reported telecommuting. Married mothers were 3.5 percentage points more likely than married fathers (32.0% vs. 28.5%, respectively) to telecommute across the full period of study. Yet, rates of telecommuting varied dramatically from May 2020 through August 2021. Figure 3 shows the monthly percentage of employed respondents in our sample who were telecommuting. In May 2020, 51% of married mothers were telecommuting, compared to 41% of married fathers. From this point, the share of respondents telecommuting declined each subsequent month, with the exception of a slight increase in telecommuting from October 2020 through December 2020, corresponding with a new wave of COVID-19 cases. Telecommuting declined at a faster rate for married mothers than married fathers. Whereas married mothers were 10 percentage points more likely to telecommute than married fathers in May 2020, this gap disappeared by July 2021 when about 17.5% of both married mothers and fathers were telecommuting.

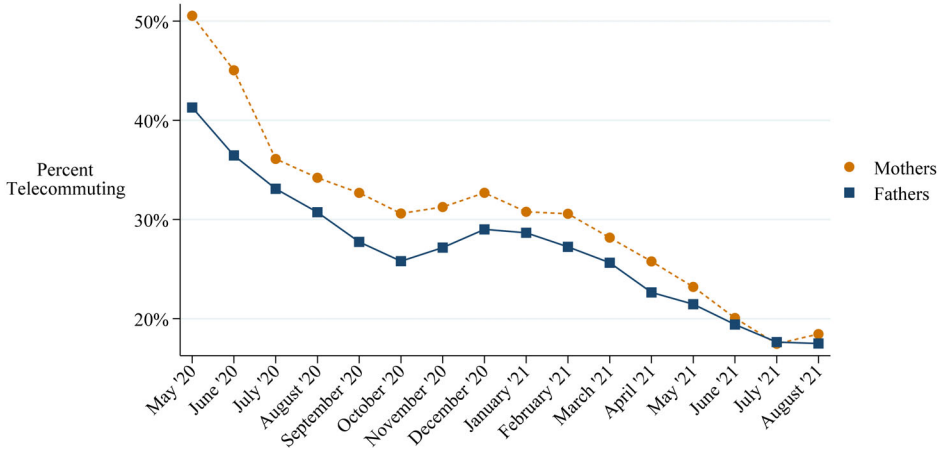

FIGURE 3 Rates of telecommuting for mothers and fathers, May 2020 through August 2021. *Source*: current population survey (Flood et al., 2021). [Color figure can be viewed at wileyonlinelibrary.com]

We report descriptive statistics across time periods and for control variables in Appendix E. Other than rates of employment and telecommuting (see Figures 1, 2 and 3), descriptive patterns were generally consistent across time periods for the 2020 ASEC sample used to analyze relative earnings and the basic monthly sample applied to our examination of telecommuting. Both samples are generally more educated and more likely to have worked in managerial/professional occupations than the general population (Flood et al., 2021).

Descriptive trends reveal dynamic patterns of employment and resource availability for married mothers and fathers and across the months of the pandemic. Whereas married fathers earned more than married mothers, they were less likely to telecommute, especially early in the pandemic. To examine how these differences in resources relate to employment, we now turn to the results of our hierarchical logistic regression models.

The relationship between relative earnings and employment

We first examine the relationship between couples' relative earnings and employment status using the analytic sample linked to the ASEC data. The results of our hierarchical logistic regression models appear in Table 2. The coefficients represent the average marginal effects of relative earnings on married mothers' and fathers' probability of employment, net of contextual measures like COVID-19 case numbers and school closures. The first column reports the results of a two-way interaction between gender and relative earnings to identify the overall relationship of relative earnings to employment for mothers and fathers. The remaining columns report results from an additional model using a three-way interaction between gender, time period, and relative earnings to determine the relationship of relative earnings to mothers' and fathers' employment throughout the pandemic. To ease interpretation, we used these models to calculate the predicted probability of married mothers' and fathers' employment. These patterns are illustrated in Figure 4.

Overall, the relationship of relative earnings to employment was stronger for fathers than mothers. Focusing on general trends, fathers who earn more than half of couples' income were 1.8 percentage points more likely to be employed throughout the pandemic ($p < .01$), lending support for rational choice arguments. Mothers earning at least half of the couples' income were not more likely to remain employed throughout the pandemic, indicating that gendered

TABLE 2 Average marginal effects of relative earnings on mothers' and fathers' probability of employment.

		By period			
	Main effect	January–March 2020	April–June 2020	December 2020–February 2021	March–May 2021
Relative earnings					
1) Dichotomous variable					
Earns half or more of couples' earnings					
Fathers	0.18**	0.013*	0.031**	0.005	0.016
	(0.006)	(0.006)	(0.010)	(0.010)	(0.010)
Mothers	0.006	0.018***	0.002	−0.008	−0.001
	(0.006)	(0.006)	(0.010)	(0.013)	(0.012)
Significant difference: Mothers & Fathers?	NO	NO	YES	NO	NO
2) Three-category variable					
Earns about half (40%–60% of couple's earnings) relative to earning less than 40%					
Fathers	0.016*	0.015	0.027	−0.009	0.015
	(0.008)	(0.008)	(0.014)	(0.013)	(0.013)
Mothers	0.020***	0.021***	0.024*	0.018	0.015
	(0.006)	(0.006)	(0.010)	(0.011)	(0.011)
Significant difference: Mothers & Fathers?	NO	NO	NO	NO	NO
Primary earning (more than 60% of couple's earnings) relative to earning less than 40%					
Fathers	0.023**	0.014	0.044**	0.004	0.016
	(0.008)	(0.008)	(0.014)	(0.012)	(0.013)
Mothers	0.015	0.029***	0.019	−0.004	−0.0003
	(0.009)	(0.008)	(0.014)	(0.019)	(0.018)
Significant difference: Mothers & Fathers?	NO	NO	NO	NO	NO

Note: Coefficients reflect average marginal effect on the probability of employment. Results by time period calculated from hierarchical logistic regression model with a three-way interaction between gender, period, and relative earnings. Controls for both respondent and spouse include: age, education, race, foreign born status, industry employed last year, occupation employed last year, if occupation last year was telecommuting capable, and if worked full time last year. Controls at the couple-level included age of youngest child, number of children in the home, and total income (logged). State-level controls include prevalence of COVID-19 (rates per 100,000 residents) and elementary school operating status (share of districts operating in person).
*$p < .05$; **$p < .01$; ***$p < .001$.

resources are more influential. Despite these differences, the overall effect of relative earnings on employment was not significantly different between mothers and fathers. Similar trends are observed when we measure primary earning status by focusing on those who earn more than 60% of couples' income relative to those earning less than 40%. Fathers were 2.3 percentage points more likely to remain employed ($p < .01$) compared to mothers, where no significant relationship between primary earning status and employment was observed. Again, however, the difference in coefficients between fathers and mothers was not statistically significant. Among respondents earning about half of couples' income, both mothers and fathers had a similarly positive relationship between earning status and employment ($p < 0.05$), which may capture equal-earning couples' tendency to share domestic labor more equally (see Discussion and conclusion). Although our focus in this analysis is on different-sex, married, dual-earner couples, in additional analyses (not shown), households with a single earner (mother or father) were more likely to maintain labor force attachment during the pandemic as the household's sole earner.

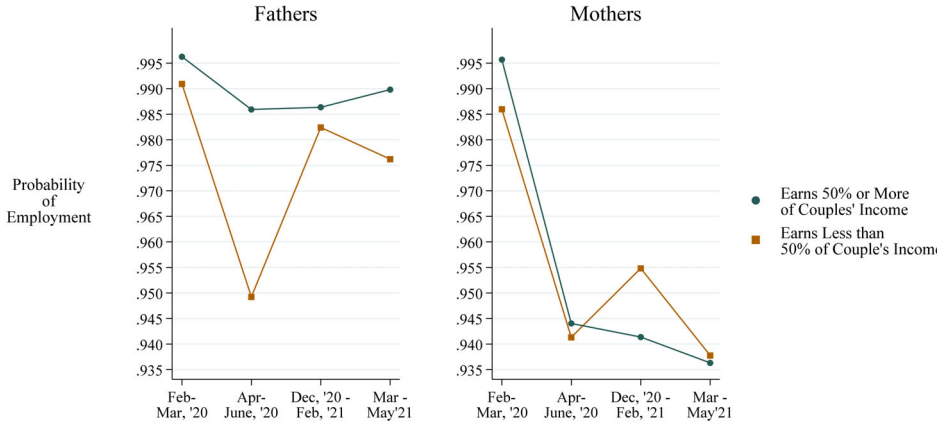

FIGURE 4 Predicted probability of parents' employment by relative earnings. Results calculated from hierarchical logistic regression model using dichotomous measure of relative earnings reported in Table 2. [Color figure can be viewed at wileyonlinelibrary.com]

The remaining columns in Table 2 reveal substantial variability in the relationship of relative earnings to mothers' and fathers' employment throughout the pandemic. Prior to the initial onset of the pandemic in the United States, primary-earner status generally supported both mothers' and fathers' employment. From January to March 2020, both mothers and fathers earning a larger relative share of couples' combined earnings were more likely to remain employed. The effect was slightly larger for mothers, but the difference in coefficients between mothers and fathers was nonsignificant.

The onset of the pandemic brought about a major divergence in the relationship between relative earnings and employment by gender. Across both measures reported in Table 2, married fathers who were primary earners were more likely to maintain employment from April through June 2020 ($p < .01$). In contrast, married mothers' higher relative earnings and status as the primary earner did not support their sustained employment during this period. As reported in Table 2, fathers earning at least 50% of couples' income were three percentage points more likely to remain employed during the first quarter of the pandemic ($p < .01$). In contrast, there was virtually no benefit of primary earning status for mothers' employment. This difference in the employment benefits of earning at least 50% of couples' income was significant between mothers and fathers ($p < .05$). A similar pattern emerged when focusing on those earning at least 60% of couples' income. Fathers with this level of primary earning status were 4.4 percentage points more likely to be employed ($p < .01$), an effect more than twice as large as the nonsignificant effect observed for mothers with similar earnings. However, the difference in coefficients for earning at least 60% of couples' income was not statistically significant between mothers and fathers.

In the months following the initial pandemic wave in April to June 2020, we find that relative earnings played a smaller role in sustaining parents' employment, but in different ways for fathers and mothers. Among fathers, relative earnings were less consequential because the employment of lower-earning fathers bounced back to pre-pandemic levels by December 2020 to February 2021 (see Figure 4). By this point, fathers who were the primary earner were only slightly (0.5 percentage points) more likely to be employed than lower-earning fathers, a relationship that is six times smaller than what was observed in the early months in the pandemic. In this regard, relative earnings was less consequential for fathers over time as lower earners experienced significant employment recovery. By contrast, neither higher nor lower-earning mothers substantially regained employment throughout the first year and a half of the

TABLE 3 Average marginal effects of telecommuting in prior month on mothers' and fathers' probability of employment.

		By period				
	Main effect	**June–August, 2020**	**September–November, 2020**	**December, 2020–February, 2021**	**March–May, 2021**	**June–August, 2021**
Fathers	0.003*	0.003	0.005	0.002	0.003	0.002
	(0.001)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Mothers	0.014***	0.016***	0.015***	0.010*	0.015***	0.014***
	(0.002)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Significant difference: Mothers & Fathers?	YES	YES	NO	NO	YES	YES

Note: Coefficients reflect average marginal effect on the probability of employment. Results by time period calculated from hierarchical logistic regression model with a three-way interaction between gender, period, and telecommuting status in prior month. Controls for both respondent and spouse include: age, education, race, foreign born status, industry employed last month, occupation employed last month, if worked full time last month, and if spouse telecommuted last month. Controls at the couple-level included age of youngest child and number of children in the home. State-level controls include prevalence of COVID-19 (rates per 100,000 residents) and elementary school operating status (share of districts operating in person). *$p < .05$; **$p < .01$; ***$p < .001$.

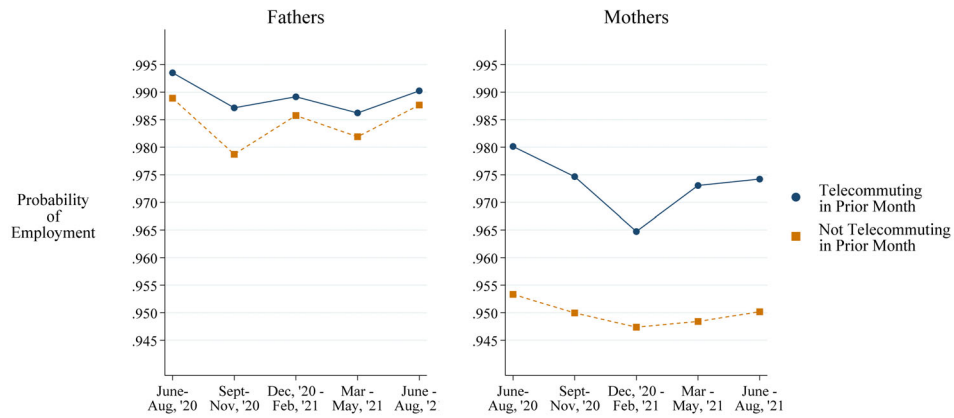

FIGURE 5 Predicted probability of parents' employment by telecommuting status. Results calculated from hierarchical logistic regression model reported in Table 3. [Color figure can be viewed at wileyonlinelibrary.com]

pandemic, demonstrating that gender more than earnings predicted mothers' employment as the pandemic dragged on. Indeed, by spring 2021 mothers' employment was over four percentage points lower than pre-pandemic levels regardless of their earning status.

The relationship between telecommuting status and employment

We report our analysis of telecommuting in Table 3 and Figure 5 to test this alternative resource. These analyses used data from the CPS basic monthly panel and include a broader period from June 2020 through August 2021 when information on telecommuting status was measured in the prior month. All analyses contain individual-, spouse-, couple-, and state-level controls (COVID-19 infection rates and school closures).

Overall, telecommuting in the prior month supported both mothers' and fathers' employment, but the effect was over four times larger for mothers. This overall difference between mothers and fathers was significant. Mothers who telecommuted were 1.4 percentage points more likely to remain employed a month later compared to those who did not telecommute ($p < .001$). For fathers, this effect was only 0.3 percentage points ($p < .05$). The benefits of telecommuting to mothers' employment were observed across all time periods spanning June 2020 through August 2021. In every period, mothers who telecommuted were between 1.0 and 1.6 percentage points more likely to remain employed ($p < .01$) than mothers whose work was in person. In short, mothers who telecommuted sustained employment at higher rates than those who worked on-site throughout the pandemic (see Figure 5). In contrast, the effects of telecommuting were nonsignificant for fathers across every period of the pandemic we studied. By and large, fathers who telecommuted and those who worked on-site had similar rates of employment during the pandemic, lending greater support for gendered resources explanations for mothers' employment patterns (H4). The difference in the effect of telecommuting on employment between mothers and fathers was significant for all but two periods (September to November 2020 and December 2020 to February 2021), but even in these periods the effect was three to five times greater for mothers than fathers. In supplemental analyses that include couples' relative earnings, we further observed that working in a telecommuting-capable occupation supported mothers' employment. Net of this association, we find primary-earning fathers in non-telecommuting capable jobs were more likely to remain employed than primary-earning mothers, indicating that earnings were less effective in buffering mothers against employment disruptions, particularly when telecommuting was not available.

DISCUSSION AND CONCLUSION

The pandemic posed unparalleled challenges for parents responding to widespread school and childcare closures, dramatic shifts in employment, and surging infection rates. Initial research showed that this period was particularly detrimental to mothers who absorbed intensified childcare and housework demands (Petts et al., 2021) and were more likely to exit employment (Collins, Ruppanner, et al., 2021). Telecommuting proved a critical resource for parents to maintain employment at the start of the pandemic, but mothers of young children still reduced employment despite access to this critical benefit (Collins, Landivar, et al., 2021). As the pandemic extended into 2021, critical questions about the role of telecommuting and economic resources on parental employment emerged. Here, we assess two of these questions: (1) Did parents who contributed a larger share of the family income and had access to telecommuting maintain employment at higher rates than those without these resources? (2) Did these patterns vary between married mothers and fathers?

We weighed classic rational choice arguments against gendered resource explanations. Rational choice posits that the individual with the greatest utility—here, the partner earning more of the family income—will maintain employment. We expand this theoretical explanation to also include telecommuting as a vital resource.

Our results indicate that rational choice explanations are partially supported in fathers' employment outcomes but fail to explain those of mothers. Prior to the pandemic, higher relative earnings supported employment for both mothers and fathers, a pattern consistent with previous research (Carlson & Lynch, 2017; Killewald, 2011). Yet, with the onset of the pandemic, we found that higher relative earnings no longer supported mothers' employment while continuing to boost fathers' employment. Indeed, different-sex, married mothers who were the primary earners prior to the onset of the pandemic saw their employment drop by five percentage points with the onset of the COVID-19 crisis and mothers' employment did not fully recover in subsequent months. We do not see equivalent patterns for mothers who were equal

earners to their partners. This is, perhaps, unsurprising given that primary-earner mothers often carry larger domestic loads than those with more equal contributions to family incomes (Brines, 1994; Schneider, 2011). Thus, domestic intensifications driven by the pandemic may have uniquely challenged primary-earner mothers. Specifically, most childcare centers and public schools closed for extended periods at the start of the pandemic (Education Week, 2020; Lee & Parolin, 2021). School closures were particularly prolonged in the United States (Bariola & Collins, 2021; UNESCO, 2022). By fall 2020, nearly 45% of elementary students attended school districts that were fully remote, and 17% attended schools that operated hybrid schedules with primarily part-day or part-week schedules (Landivar et al., 2022). This dramatic reduction in in-person instruction harmed mothers' employment (Collins, Ruppanner, et al., 2021; Landivar et al., 2022) and we show here (Figure 2) that mothers' employment declined throughout the first year of the pandemic, with an especially pronounced decline into August 2020 when most schools commenced the academic year.

We find that telecommuting proved an important resource for different-sex, married mothers to maintain employment, transcending the value of earnings. Married mothers who had access to telecommuting jobs were more likely to remain employed than those required to work on-site, even after accounting for the type of job held and local COVID-19 rates. The benefits of telecommuting for married mothers persisted across the time period we analyzed, spanning from May 2020, early in the pandemic, to August 2021, well over a year into the crisis. Different-sex, married fathers' employment, by and large, did not benefit from telecommuting. Instead, married fathers maintained relatively high levels of work attachment regardless of telecommuting status, indicating that earnings rather than telecommuting played a more critical role in married fathers' continued employment. This was especially true for primary-earner fathers.

Overall, our analysis showed that work flexibility through telecommuting was more predictive of married mothers' sustained employment during the pandemic than the financial importance of their primary earning status. In other words, different-sex, married parents were less likely to upend traditional gendered expectations that prioritize fathers' employment even when mothers earned more. Telecommuting proved to be a vital tool to sustain married mothers' work attachment, but this is likely because it allowed married mothers to shoulder increasing care demands rather than directly challenge the traditional norms that task mothers with these domestic responsibilities in the first place. These strategies can come at great cost, even if they help maintain employment. Mothers who telecommute report more disruptions while they are working than fathers, which may add stress and carry work penalties, and they also take on a greater share of household labor as a result (Pabilonia & Vernon, 2022). In addition, added caregiving during the pandemic significantly reduced mothers' sleep and wellbeing (Ruppanner et al., 2021). Our findings underscore the importance of telecommuting policies in supporting married mothers' employment, while also highlighting the profoundly negative consequences of normative expectations that place double burdens on married mothers seeking to sustain employment while bearing primary responsibility for childrearing. These experiences likely have serious ramifications for mothers' feelings of burnout, stress, and mental and physical health that warrant further research.

Our study is not without limitations. Our focus on different-sex, dual-earner, married parents allows us to assess the impact of relative earnings, but we know that single mothers were particularly vulnerable to employment exits (Hertz et al., 2020; Landivar et al., 2023), declines in income (Kent, 2021), and increased poverty (Fins, 2020) during the pandemic. Thus, a comparison of the outcomes across these groups would be valuable, especially over time. Further, mothers absorbed most homeschooling demands and related childcare in the pandemic (Petts et al., 2021), making flexible work arrangements essential to maintaining employment. Due to data limitations, however, we are unable to estimate couples' household labor shares and reallocation in the pandemic, which would be a critical addition given our finding that mothers

were more likely to maintain employment in couples where earnings were egalitarian. This provides a clear direction for time use research. Additionally, we control for industry and occupation but, given data limitations, we cannot estimate the qualitative differences in employment that often disadvantage mothers, such as workplace power, autonomy, time pressure, and discrimination in hiring and layoffs. These factors may have impacted mothers' ability to maintain employment despite contributing a larger share of family earnings pre-pandemic. Subsequent research would benefit from more detailed exploration of these relationships. Finally, due to sample size limitations, we are unable to fully evaluate how earnings may have changed for some couples throughout the pandemic and its association with those couples' employment decisions. Use of administrative earnings records in future studies may be able to provide additional insight about household employment dynamics associated with shifting earning patterns during the pandemic.

Our results provide important insights. First, we cannot assume that families acted according to classical rational choice logics in response to the COVID-19 crisis. Different-sex, married mothers who were the primary earners prior to the onset of the pandemic reduced employment at higher rates than similar fathers. Given that married mothers earn the bulk of the family income in 29.9% of married U.S. households (U.S. Census Bureau, 2021), these married-couple households are particularly vulnerable to the economic consequences of reductions in mothers' economic contributions during the pandemic. Second, we find that telecommuting proved a critical resource for maternal employment, meaning those without access to telecommuting benefits likely experienced more harm to their employment, further widening inequality between mothers with access to generous workplace resources and those without. Finally, robust evidence is mounting to show that the pandemic was more detrimental to mothers, particularly those with fewer resources and lower educational attainment (Landivar, 2023; Landivar et al., 2023). A full recovery for less resourced and advantaged mothers will be supported by availability of reliable, safe, and affordable childcare infrastructure (childcare and schools) and well-resourced employment options (Landivar et al., 2022; Scarborough et al., 2021). These should be top policy priorities for workplaces and governments alike.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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