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Understanding Gender Disparities in Caregiving, Stress, and Perceptions of Institutional Support among Faculty during the COVID-19 Pandemic

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Abstract: The loss of the care infrastructure that occurred during the COVID-19 crisis exposed society's continued reliance on women and mothers as default caregivers. But less is known about how this crisis produced gendered mental health outcomes, especially in occupations characterized by intensive work cultures such as academia. Drawing on quantitative and qualitative responses from a May 2021 campus-wide survey of faculty at a large research university in the United States, we explore gendered patterns in faculty caregivers' time use, stress, and perceptions of institutional support. Our findings demonstrate that childcare responsibilities were not merely more substantial for women than men in terms of hours, but they were also qualitatively different, with women's hours being more unpredictable, interruptive, and mentally and emotionally demanding. We also show that the pandemic took a higher toll on women faculty's mental health compared to men's. This gap in mental health emerged not merely because women were spending more time caregiving on average, but also because the university's policies did not effectively support the most strained caregivers. This study contributes empirical evidence to research on academic caregivers during the pandemic and to work demonstrating how (1) gendered caregiving dynamics shape mental health and remote work experiences and (2) the reliance on individual solutions to balancing work and family has failed even relatively privileged workers.

Keywords: caregiving; COVID-19; gender; academia

1. Introduction

"Mothers Are the 'Shock Absorbers' of Our Society". "Pandemic Imperils Promotions for Women in Academia". "Women are Not OK". "When Schools Closed, Americans Turned to their Usual Backup Plan: Mothers" (Grose 2020; Scheiber 2020; Peck 2020; Miller 2020). Journalistic headlines such as these announced a differential impact of remote learning and working on the health, welfare, and work-life of those who were disproportionately likely to take up care for dependents across the generations: women[1] tending to children, elders, and others who require aid in undertaking the quotidian tasks of daily renewal. The crisis of the pandemic appeared as a crisis in care, exacerbating long-term social and cultural divisions of labor (OECD 2021). In particular, the loss of safety net structures like in-person schooling and formal childcare revealed just how much society still falls back on mothers as default caregivers (Calarco et al. 2021; Dunatchik et al. 2021).

Since then, researchers have been documenting the short- and long-term impacts that this crisis had on women's career outcomes and on the gender division of labor (e.g., Collins et al. 2021; Carlson and Petts 2022; Dunatchik et al. 2021). In the case of academia, inquiries have primarily focused on the issue of research productivity. Faculty overall were less productive during the pandemic, but gender and caregiving status also shaped productivity levels (Carpenter et al. 2021). Women faculty members with school-age children were faced

with additional childcare obligations, resulting in less time for research (Deryugina et al. 2021; Riley et al. 2021; Skinner et al. 2021).

Studies also show that faculty members in general, but especially women, experienced heightened levels of stress due to the increase in childcare obligations during the pandemic (Chesley 2021; Davis et al. 2022). Universities responded by asking faculty to document caregiving-related research disruptions through "COVID impact statements". Yet, during the pandemic, universities also increased workloads by requiring faculty to revamp courses for remote delivery and adding a host of pandemic-related service obligations.

There remains a dearth of research that aims to understand, in detail, the ways in which childcare demands shaped faculty experiences during the pandemic. In particular, little has been documented about the magnitude of gender differences in the subjective emotional experiences of faculty caregivers and how aspects of the caregiving context, such as having a young child, having remote schooling obligations, or having a partner present in the household, shaped time pressures and outcomes like stress. The well-documented culture of overwork in academia (see, e.g., Cech and Blair-Loy 2014; Jacobs and Winslow 2004), as well as pandemic-related increases in work demands, make it an important analytical case for those interested in understanding how professional workers experienced and reacted to the intensity of the time crunch brought on during the crisis. Moreover, little is known about the extent to which universities' institutional response to caregivers during COVID-19 actually eased these burdens or, conversely, may have exacerbated these challenges.

In this study, we bring both quantitative and qualitative data to bear on these gaps in knowledge. First, relying on a campus-wide survey of faculty that was conducted by a large research university in the United States in May 2021, we demonstrate substantial gender gaps among caregivers in childcare time, work–family stress, and perceptions of institutional support. We also show how the presence of remote schooling obligations and young children shaped time use and exacerbated stress and dissatisfaction with the institution's response.

Second, we use our data to investigate the critical question of why the women in our sample experienced so much more stress than the men. Using regression models of quantitative survey responses, we show that the gender gap in stress can be explained by (1) the relatively more substantial increase in childcare hours that women experienced because of the pandemic, and (2) women's substantially lower levels of perceived institutional support. Then, relying on a qualitative content analysis of open-ended survey responses, we develop a more detailed understanding of these gendered patterns. We find that women faculty, who faced a bigger overall time crunch due to additional caregiving responsibilities, were (1) more vulnerable to work interruptions and unpredictability and (2) were more likely to be taking on the mental and emotional labor involved in ensuring their children's well-being. A vast majority of women faculty used extreme terms to describe their overall situation and many reported stress-related mental health challenges—ranging from anxiety to guilt to a lack of motivation. Critically, they frequently attributed these mental health experiences to the university's unwillingness to modify their workload.

Overall, our study contributes empirical evidence to the important and growing body of research on caregivers in the academy during the pandemic and to the broader body of work that demonstrates how (1) gendered caregiving dynamics shape mental health and remote work experiences and (2) the reliance on individual solutions to balancing work and family has failed even relatively privileged workers.

1.1. Women and Employment during the COVID-19 Pandemic

COVID-19 led to employees working from home en masse. While parents transitioned to working remotely, many children began online schooling, leaving parents to juggle caregiving, remote schooling activities, and paid work. Recent research has found that families were performing the equivalent of a work week in childcare activities during the pandemic, with mothers taking up a larger share of childcare, even while working full-time

(Calarco et al. 2021; Dunatchik et al. 2021; Sevilla and Smith 2020; Zamarro and Prados 2021). Both mothers and fathers reported an increase in caregiving hours at the beginning of the pandemic in the spring of 2020 (Carlson et al. 2021; Dunatchik et al. 2021). However, once the initial shock of the pandemic settled, the division of labor within households reverted to a pre-pandemic level, leaving mothers to perform most of the housework and caregiving (Carlson and Petts 2022; Carlson et al. 2021; Sánchez et al. 2021).

The pandemic had negative consequences for women caregivers in the workforce. Social distancing measures more commonly impacted female-dominated occupations, as roles in these sectors require more face-to-face interaction with customers than male-dominated occupations (Alon et al. 2020; Power 2020). Inequality in the division of childcare also led mothers with young children to be more likely to reduce paid working hours or to exit the workforce (Hamel et al. 2020; Collins et al. 2021; Petts et al. 2020; Ranji et al. 2021; Zamarro and Prados 2021). COVID-19 was even referred to as a "momcession", as mothers with young children were the population most likely to move from employed to unemployed between 2019 and 2020 (OECD 2021). For women who remained employed, they were more likely to report experiencing negative career outcomes because of the increase in caregiving activities, while men did not report negative career outcomes due to caregiving obligations (Stefanova et al. 2021).

1.2. The Context of Academia

Academic faculty present an important case for understanding how the pandemic shaped professional workers' time use and mental health. The cultural and structural demands characteristic of the faculty role—such as rigid tenure and promotion timelines and expectations, work obligations that are continuous and open-ended in nature, and ideal worker norms—have long been shown to create distinct pressures and conflicts for faculty parents, especially mothers (Cech and Blair-Loy 2014; Ecklund and Lincoln 2016; Minnotte 2021; Misra et al. 2012; Salle et al. 2016). Caregiving responsibilities explain much of the short-term gender gap in research productivity and are also often perceived as a basis upon which one's work and professional legitimacy is evaluated (Morgan et al. 2021; Minnotte 2021; Ollilainen 2019; Ward and Wolf-Wendel 2012; Thébaud and Taylor 2021). In short, academic job and workplace characteristics are organized such that they reward faculty who overwork and penalize faculty who engage in or prioritize caregiving.

During the pandemic, faculty workloads increased even further, due in large part to the shift to online instruction and pandemic-related increases in academic service obligations. This increase in workload, which occurred at the same time that childcare and household work demands intensified for parents, left faculty with less time for research-related activities. For instance, the share of women submitting manuscripts for publication decreased at the onset of the pandemic, though they continued to review papers at a rate similar to men (Pinho-Gomes et al. 2020; Squazzoni et al. 2020; Viglione 2020). A study by Carpenter et al. (2021) found that, regardless of gender and caregiver status, almost 80% of faculty reported they were a little less productive during the pandemic, but the effects of caregiving on research productivity were especially damaging for pre-tenure mothers with young children.

Women faculty members were also more likely than men to report that they struggled to manage their time during the pandemic and that their research time decreased (Skinner et al. 2021). Deryugina et al. (2021) found that faculty with small children lost the most research time, with mothers having an hour and fathers a half hour less time than men without children. Other surveys, such as one of 200 Norwegian academics (Yildirim and Eslen-Ziya 2021), also showed that women with children performed more housework during the lockdown. Indeed, these gendered patterns apply not only to US academics (Carpenter et al. 2021; Chesley 2021; Riley et al. 2021; Skinner et al. 2021), but also to faculty members working across the globe (Deryugina et al. 2021; Pinho-Gomes et al. 2020; Squazzoni et al. 2020). In sum, the lack of time for research activities directly affected tenure-track progress for faculty caregivers, which threatened the career progression of

women caregivers in particular, given the unequal gender distribution of childcare (Riley et al. 2021). As we discuss below, less is known about how these conditions relate to mental health outcomes, or the extent to which institutional responses were able to effectively address this problem.

1.3. Mental Health and Institutional Support

In the US context, the COVID-19 crisis was associated with a deterioration of mental health, especially for women with children. Women with school-age children experienced heightened levels of stress during the pandemic in comparison to women without school-age children (Zamarro and Prados 2021), and there is evidence that the increase in stress that mothers experienced was largely tied to the increase in caregiving activities (Cheng et al. 2021; Hoppen 2023; Umamaheswar and Tan 2020).

Studies focusing on the academic context more specifically suggest an amplification of this gendered pattern. Indeed, all faculty members, even those without caregiving obligations, found the university environment stressful, citing high levels of burnout and low levels of well-being (Urbina-Garcia 2020). Yet, even prior to the pandemic, women were more likely to be stressed by caregiving obligations and gender discrimination than men, a dynamic that contributed to gender gaps in productivity (Eagan and Garvey 2015). These stressors were exacerbated when COVID-19 began, which fueled substantially higher levels of stress in women faculty members than in men (Chesley 2021; Davis et al. 2022; Gewin 2021; Housel 2021). For instance, a Stanford University study by Chesley (2021) showed that 60% of women faculty reported experiencing "a lot more stress" due to caregiving and work obligations compared to 49% of men faculty. A Canadian survey (Davis et al. 2022) similarly concluded that women and racial minority faculty members experienced higher levels of stress and social isolation. They also found that an increase in caregiving activities performed by women impacted productivity levels (Davis et al. 2022). Furthermore, there is evidence that women faculty experienced greater pressure than men faculty to engage in unrewarded academic labor, such as by providing emotional support to students (Górska et al. 2021; Pereira 2021).

Caregivers also reported needing additional institutional support while they were providing care for family members (Soria et al. 2020). Prior to the pandemic, women faculty reported that paid parental leave and adequate childcare were important factors in their ability to do research (Lester and Sallee 2009; Morgan et al. 2021). But when institutions encounter crises, commitments to diversity, equity, and inclusion are often overlooked; it takes purposeful and coordinated work among university administrators to ensure that this does not happen (Clark et al. 2022). When childcare centers and schools closed, many parents lost their primary form of childcare. One survey of faculty and students showed that mothers encountered a lack of institutional support, which served as a barrier to their academic success during the pandemic (Bender et al. 2021). Other research has emphasized how women felt unable to meet "institutional expectations", such as new remote teaching, when institutions did not acknowledge the need to adjust work performance expectations, provide more generous leave, or offer childcare or online tutoring supports (Kasymova et al. 2021). Similarly, faculty reported experiencing stress related to the tenure clock, and recommended tenure track-extension policies as work slowed due to personal circumstances (Gonzales and Griffin 2020). It is unknown in our empirical case whether the institutional response by the university was sufficient to ease the stress that faculty caregivers, especially women, experienced, nor which forms of institutional support would have been preferred by parents. We speak to this gap by specifying why and how women faculty experienced heightened levels of stress and perceived a lack of institutional support.

1.4. Present Study

The goal of this study is to investigate how gender, in the context of the structural changes associated with the pandemic, such as school closures and the loss of childcare for

young children, is associated with time-use patterns, work–family stress levels, and perceptions of institutional support among faculty. Furthermore, we investigate the questions of why and how men and women experienced the pressures of the situation differently and reacted to the institution in different ways. This research provides important implications for women working in academia and for universities seeking to create more equitable policies that advance the status of women and caregivers on the job. Our analysis reveals that, whereas some fathers experienced similar challenges and frustrations to mothers, on average, mothers experienced a more intensified time-bind that institutional responses failed to alleviate.

2. Data and Methods

This is a case study of how faculty members experienced caregiving and work-life stressors during the pandemic within the context of a single university. Our data are drawn from a university-wide, IRB-approved campus climate survey that was conducted at a large research university on the west coast of the United States in May 2021. The survey, which was administered by the institutional research department, was concerned with "behaviors and attitudes within a workplace or learning environment . . . that can influence whether an individual feels personally safe, listened to, valued, and treated fairly and with respect". Surveys were distributed to all campus constituents and administered through a secure and confidential online portal. Each faculty member, staff member, and student received a mail-merged email with a personalized link. The response rate for the faculty sample was 45.5%, which is higher than several comparable studies that rely on faculty samples (Carpenter et al. 2021; Chesley 2021; Sevilla and Smith 2020; Skinner et al. 2021).

Two of the authors of this paper participated in the study design. Specifically, we included a module that had questions only for respondents who identified as caregivers. After asking respondents to identify for whom they provided caregiving (e.g., children, parents, partners, elders, or other family, friends, or loved ones), the module questions focused on their time use, such as the number of hours per week they currently spent on caregiving compared to before the pandemic, their experiences during the COVID-19 pandemic, such as the extent to which current work and caregiving demands caused stress, and their satisfaction with the university's provision of caregiving accommodations. Finally, open-ended questions at the end of the module solicited comments on the problems that respondents faced with research, teaching, and work–life balance due to caregiving obligations and prompted them to offer feedback on the institution's response.

We restrict our sample to faculty respondents who reported that they were parents of, or had significant caregiving responsibilities for, a child under the age of 18 (*N* = 181). About three quarters of the sample reported that they had taken on remote schooling responsibilities (See Table 1). In the university community, as well as the surrounding counties, public school instruction was fully remote until March of 2021, though several private schools resumed in-person instruction in the fall of 2020. University instruction was also fully remote until September 2021, and the university childcare center was closed through the fall of 2020 and ran on limited capacity until early 2021. Because the survey was conducted in May 2021, it occurred during a time in which the experience of remote work was ongoing and remote schooling and limitations on childcare had, for many, only recently concluded.

In April of 2020, the institution announced a COVID-19 caregiver policy that applied equally to male and female faculty. It emphasized that instruction was an essential activity and departments needed to make the continuation of courses a priority. Individual faculty could request, per approval of their department chair and the university's personnel department, a very short (16 day) paid administrative leave, or a personal leave without pay. Whether lightened teaching or service was possible was at the chair's discretion; if accommodations were made, it depended on both the needs of a given department and an individual's willingness to risk retaliation or unfavorable evaluation as a consequence of such a request. Assistant professors were offered a modest childcare allowance to help

offset caregiving costs, and they could extend the tenure clock for up to a year if they put in a formal request to do so. By contrast, there were no modifications to merit or promotion clocks or childcare subsidies offered to tenured and non-tenure track faculty. The university's academic personnel system encouraged a "COVID-19 impact statement" to explain significant disruptions from care duties or illness to be included in merit and promotion cases.

Table 1. Variable means for faculty caregivers with children, by sex.

		Male	**Female**	**Total**	**SD**
Professional hours per week		49.22	47.28	48.37	14.65
Housework hours per week		16.67	16.01	16.39	9.11
Caregiving hours per week		25.59	33.73 **	29.14	17.31
COVID-19-related increase in					
	caregiving hours per day	4.07	5.06 *	4.50	2.71
Work–family stress index		3.50	4.00 ***	3.72	0.96
Institutional support index		3.22	2.92 *	3.07	0.90
Remote school (1 = yes)		0.73	0.76	0.74	
Partner (1 = yes)		0.81	0.90	0.85	
Child under 5 years (1 = yes)		0.16	0.24	0.19	
Tenured (1 = yes)		0.69	0.59	0.65	
Age					
	45 and under	0.38	0.46	0.41	
	46 to 55	0.40	0.42	0.41	
	55 +	0.22	0.13	0.18	
Discipline					
	Natural sciences	0.35	0.14 **	0.26	
	Engineering	0.21	0.09 *	0.15	
	Social sciences	0.19	0.37 **	0.27	
	Arts and humanities	0.25	0.41 *	0.32	
White (1 = white)		0.67	0.71	0.69	
Female (1 = female)		0.44			
N		102	79	181	

Note: * $p < .05$; ** $p < .01$; *** $p < .001$ two-tailed test for means between male and female samples.

2.1. Dependent Variables

Our dependent variables capture (1) time use, (2) stress, and (3) institutional support.

Time use—We investigate four variables related to time use. The first three variables reflect weekly hours spent on professional work, housework, and caregiving. Specifically, faculty members were asked how many hours per week they spent, on average, on (a) "Professional work (teaching, mentoring, service, professional activities, research)", (b) "Housework and home maintenance (e.g., cooking, cleaning, shopping)" and (c) "Caregiving (e.g., meeting the needs of children, spouse, adult dependents)". The fourth variable measures respondents' estimates of the daily increase in caregiving hours that occurred because of the pandemic: "Since the COVID-19 crisis began last March, approximately how many more hours per day do you spend caregiving now compared to before the pandemic?".

On average, participants reported spending nearly 49 h on professional work, 17 h on childcare, and 30 h on caregiving (see Table 1). However, large gender differences emerged in caregiving hours, with women reporting that they spent nearly nine more hours

caregiving per week. Women also reported a significantly larger increase in childcare hours per day than their men counterparts (about five hours versus four hours, respectively).

Work–family stress—Faculty members were asked a series of questions concerning their stress related to work and caregiving obligations. These included the extent to which a respondent reported experiencing stress related to (1) current work and caregiving demands, (2) a lack of childcare, (3) managing caregiving responsibilities, and (4) managing household responsibilities. Outcomes were measured on a five-point Likert scale, with higher values indicating higher levels of stress (e.g., 1 = not at all, 5 = very much). We calculated the mean of these variables to create a work–family stress index (α = 0.89).

Table 1 shows that, on average, women respondents reported high levels of stress, with a mean of four on the five-point scale. Men scored significantly lower than women on this measure (mean for men = 3.5).

Institutional support—Faculty members were also asked to report the extent to which they (1) felt that the university community supported them and those in their care, (2) felt the university supported their efforts to combine new caregiving demands with their career, and (3) were satisfied with the university's caregiving accommodations due to COVID-19 disruptions. Each variable was measured on a five-point Likert scale, where higher numbers indicate a higher level of perceived institutional support (e.g., 1 = strongly disagree, 5 = strongly agree). We then constructed an institutional support index, which is calculated as the mean of these three items (α = 0.87). Higher values on the institutional support index indicate higher levels of perceived institutional support.

Table 1 shows that the means for the institutional support index variable differ by sex. Women respondents did not feel particularly supported, scoring a mean of 2.92; by contrast, men reported moderate levels of support (mean for men = 3.22).

2.2. Key Independent Variables

Our key analytical interest is in understanding how gendered family dynamics, in combination with COVID-19-related structural constraints like school closures and a lack of childcare and family structures, such as the presence or absence of a partner, shaped caregivers' time use, stress, and perceptions of support. As such, our key independent variables of interest include female, the presence of remote schooling obligations, partnership status, and the presence of young children.

Female—Participants who indicated that their sex assigned at birth was female were coded 1 (male = 0).

Remote schooling—The presence of remote schooling obligations was captured with a binary response to the question: "Have you had additional remote schooling responsibilities for children?" (1 = yes).

Partnership status—Participants who indicated that they have a partner who lives with them in their household were coded 1.

Young children—Respondents who indicated that they were the parent of a child under the age of 5 were coded 1. Nearly 20 percent of respondents reported having a young child (see Table 1).

2.3. Control Variables

In our analysis, we include simple controls for tenure status, age, aggregated discipline, and race-ethnicity.

Tenured—Participants were asked to provide their current departmental rank. A dummy variable was created to capture tenure status (1 = tenured).

Age—Age was measured with a categorical variable: 1 = 45 and under, 2 = 46–55, and 3 = 55+.

Discipline—We include an aggregated discipline variable that was based on the college that a respondent's department belongs to. These included (1) natural sciences, (2) engineering, (3) social sciences, and (4) arts and humanities.

Race-Ethnicity—Participants were asked how they racially identify. A dummy variable was created to indicate whether they identified as white only (1 = yes) and did not identify as a racial or ethnic minority. A total of 69% of respondents identified as white only.[2]

2.4. Open-Ended Responses

As part of our module on COVID-19 and caregiving responsibilities, participants were invited to respond to the following three open-ended questions: (1) What is the biggest problem you are facing with your research, teaching, or work–life balance, due to caregiving obligations? (2) What part of [the university's] response to COVID-19 for caregivers could be improved? (3) And what has been most helpful? We coded text from 157 caregivers of children who responded to at least one of these questions (79 men, 78 women). Of these, the vast majority responded to at least two of the three questions (84%), and over 80% provided detailed responses (e.g., multiple paragraphs with hundreds of words for each question response). Employing an open-coding strategy (Corbin and Strauss 1990), two members of the research team independently coded the open-ended participant responses, separately noting broad themes in participants' experiences. The researchers then examined the frequency of these themes as patterned by gender. After each coder completed their independent coding, the research team compared their initial open codes to determine the most relevant and salient themes. Then, each coder re-reviewed the participant responses and revised the assigned codes according to these analytic themes. Key themes pertaining to mental health outcomes, time use, and perceptions of the university's response emerged across responses to all three questions.

2.5. Analytic Strategy

To investigate the relationships between gender and our key outcomes of interest, we estimate a series of multiple regressions that assess how gender, remote schooling, and family factors are related to time-use outcomes, stress, and institutional support, net of controls. We then estimate a secondary set of models that explore the extent to which time-use variables and institutional support may help explain gender gaps in work–family stress. Finally, we present findings from our inductive, qualitative analysis from the thematic coding of open-ended responses. This portion of the analysis yields important insights into the mechanisms that underlie the gendered patterns that we observe in the survey data.

3. Results

3.1. Modeling Time Use, Stress, and Institutional Support

As noted in Table 1, compared to male respondents, female respondents reported significantly more caregiving time overall, a larger increase in caregiving time as a result of the pandemic, higher levels of work–family stress, and lower levels of institutional support. Table 2 estimates multiple regressions to assess whether these gendered patterns hold when we control for important covariates. Our models also allow us to assess the impact of other key factors—like remote schooling obligations and the presence of young children—on these outcomes.

Models 1 and 2 in Table 2 confirm that male and female respondents reported spending roughly similar amounts of time on both professional work and on housework each week. However, parents with remote schooling obligations did report significant increases in housework hours—about four more hours per week, net of other factors. They also reported a decrease in professional work time, though this coefficient is marginally significant at the *p* < .10 level. Respondents who were living with a partner also reported about 4.5 fewer housework hours per week, net of other factors.

Table 2. Multiple regressions estimating time use, work–family stress, and institutional support.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Professional Work Hours (Weekly)	**Housework Hours (Weekly)**	**Caregiving Hours (Weekly)**	**Caregiving Hours (Daily Increase Since Covid)**	**Work–Family Stress Index**	**Institutional Support Index**
Key Independent Variables						
Female (1 = yes)	−0.361	−1.238	6.213 *	0.785 +	0.371 **	−0.370 **
	(2.379)	(1.458)	(2.54)	(0.417)	(0.137)	(0.139)
Remote Schooling (1 = yes)	−4.737 +	4.096 *	3.975	1.048 *	0.355 *	−0.399 *
	(2.641)	(1.618)	(2.82)	(0.463)	(0.153)	(0.154)
Partner (1 = yes)	3.876	−4.513 *	−2.764	−0.686	−0.326 +	0.384 *
	(3.216)	(1.971)	(3.434)	(0.563)	(0.186)	(0.187)
Child under 5 yrs (1 = yes)	2.86	0.675	−5.837 +	0.522	0.450 *	−0.353 +
	(3.17)	(1.942)	(3.384)	(0.555)	(0.183)	(0.207)
Control Variables						
Tenure (1 = yes)	1.236	−1.148	−2.581	−0.669	0.0747	−0.252 +
	(2.487)	(1.524)	(2.655)	(0.436)	(0.144)	(0.145)
Age						
Ref. = 45 and under						
46–55	2.27	0.858	−12.25 ***	−0.813 +	−0.578 ***	0.267 +
	(2.742)	(1.68)	(2.928)	(0.48)	(0.158)	(0.159)
55+	6.735 +	−0.101	−20.46 ***	−1.502 *	−0.795 ***	0.439 *
	(3.508)	(2.15)	(3.745)	(0.614)	(0.203)	(0.205)
Aggregate Discipline						
Ref = Natural sciences						
Engineering	2.93	−0.176	−0.343	−0.0131	0.208	−0.368 +
	(3.537)	(2.167)	(3.776)	(0.619)	(0.204)	(0.206)
Social Sciences	−2.512	3.360 +	2.766	0.0203	0.266	0.032
	(3.207)	(1.965)	(3.424)	(0.562)	(0.185)	(0.187)
Arts and Humanities	−2.718	0.168	1.223	0.29	0.157	0.082
	(3.015)	(1.848)	(3.219)	(0.528)	(0.174)	(0.176)
White (1 = yes)	−2.395	−0.223	−1.638	−0.990 *	−0.0396	0.11
	(2.345)	(1.437)	(2.503)	(0.411)	(0.174)	(0.137)
Constant	47.99 ***	17.24 ***	37.31 ***	5.479 ***	3.687 ***	3.141 ***
	(4.766)	(2.921)	(5.089)	(0.835)	(0.275)	(0.278)
Observations	181	181	181	181	181	181
R^2	0.08	0.107	0.249	0.176	0.277	0.176

Note: Standard errors in parentheses; + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Models 3 and 4 investigate time spent on caregiving. In Model 3, we find a significant main effect of female, confirming that female respondents reported significantly more hours per week on caregiving than men, even after adjusting for key factors like remote schooling. A similar pattern emerges when we consider the relative increase in time spent caregiving: the female coefficient is marginally significant in this model, suggesting that women increased their caregiving time somewhat more than men did, net of other factors. Not surprisingly, parents with remote schooling obligations also reported a substantially larger increase in caregiving time.

Overall, these time-use patterns suggest that women faculty were overloaded: they were maintaining professional and housework activities on par with men counterparts, but they were simultaneously taking on substantially more caregiving. This pattern echoes other studies suggesting that, when women worked from home during the pandemic, they were more likely than men to multitask caregiving with paid work.

Next, Model 5 assesses effects on the work–family stress index measure. Net of other factors, women were significantly more likely than men to report experiencing stress. Faculty who had remote schooling obligations or who had a child under the age of 5 also reported higher levels of work–family stress. By contrast, having a partner in the home appears to have modestly mitigated stress ($p < .10$), perhaps in part because having a partner is also associated with a reduction in housework time (see Model 2). But it is notable that the magnitudes of the female, remote schooling, and young child effects are considerably larger than the effect of having a partner.

Finally, Model 5 examines perceptions of institutional support. Female respondents, respondents with remote schooling obligations, and respondents with young children reported significantly lower levels of institutional support, net of controls. Similar to the pattern for other variables, however, having a partner in the household was associated with significantly higher levels of perceived support. Overall, this pattern suggests that

women, individuals experiencing more caregiving demands, and individuals who do not have a partner available to help, were much more critical of the university's response to the COVID-19-related caregiving crisis.

3.2. Explaining Gender Differences in Stress

One of the major themes emerging in Table 2 is that female respondents experienced higher caregiving demands and stress, and less institutional support, than their male counterparts. Moreover, individuals with greater caregiving demands experienced higher levels of stress and lower levels of institutional support. In Table 3, we investigate the extent to which gendered patterns of time use and institutional support might be able to help explain the higher levels of stress that female respondents reported.

Table 3. Multiple regression estimates for the effects of gender, caregiving, and institutional support on work–family stress.

|	Model 1	Model 2	Model 3
Key Independent Variables			
Female (1 = yes)	0.371 **	0.243 +	0.143
	(0.137)	(0.127)	(0.119)
Remote (1 = yes)	0.355 *	0.203	0.099
	(0.153)	(0.141)	(0.131)
Partner (1 = yes)	−0.326 +	−0.226	−0.113
	(0.186)	(0.169)	(0.158)
Child under 5 yrs (1 = yes)	0.450 *	0.410 *	0.290 +
	(0.183)	(0.170)	(0.159)
Control Variables			
Tenure (1 = yes)	0.0747	0.172	0.053
	(0.144)	(0.131)	(0.123)
Age			
Ref. = 45 and under			
46–55	−0.578 ***	−0.419 **	−0.367 *
	(0.158)	(0.151)	(0.140)
55+	−0.795 ***	−0.511 *	−0.432 *
	(0.203)	(0.200)	(0.185)
Discipline			
Ref. = Natural Sciences			
Engineering	0.208	0.211	0.075
	(0.204)	(0.185)	(0.173)
Social Sciences	0.266	0.251	0.267 +
	(0.185)	(0.169)	(0.157)
Arts and Humanities	0.157	0.115	0.157
	(0.174)	(0.158)	(0.146)
White (1 = yes)	−0.0396	0.0942	0.097
	(0.136)	(0.125)	(0.116)
Mediating Variables			
Caregiving hours per week		0.00452	0.003
		(0.00426)	(0.004)
COVID-19-related increase in caregiving hours		0.128 ***	0.093 ***
		(0.0260)	(0.025)
Institutional support			−0.367 ***
			(0.068)
Constant	3.687 ***	2.819 ***	4.214 ***
	(0.275)	(0.295)	(0.375)
R^2	0.277	0.412	0.501

Note: N = 181; standard errors in parentheses; + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Model 1 in Table 3 shows the significant and positive main effect of female on work–family stress (this model is identical to Model 5 in Table 2). Model 2 adds the two caregiving time measures to the model. This model indicates that, net of total caregiving hours, the

relative increase in caregiving time during the pandemic is highly predictive of stress. Moreover, the magnitude of the female effect decreases by about 35 percent and becomes only marginally significant. This suggests that some of the female effect can be explained by the structural differences between men and women in terms of the additional caregiving hours that women, compared to men, took on after the initial lockdown.

Model 3 adds the institutional support index to the model. The large, significant, and negative effect of this index indicates that a lack of institutional support drives higher work–family stress levels. After adding this variable to the model, the magnitude of the main effect decreases by another 42 percent, suggesting that a lack of institutional support also contributes to the gender gap in stress levels.

Figure 1 shows the predicted values from these models for men and women. Here, one can visualize more clearly how the magnitude of the gender gap in stress narrows across models. Moving across models, predicted stress values decrease for women and increase for men. Overall, the gender gap in predicted stress shrinks by 62 percent after the two time-use variables and the institutional support index are included in the model.
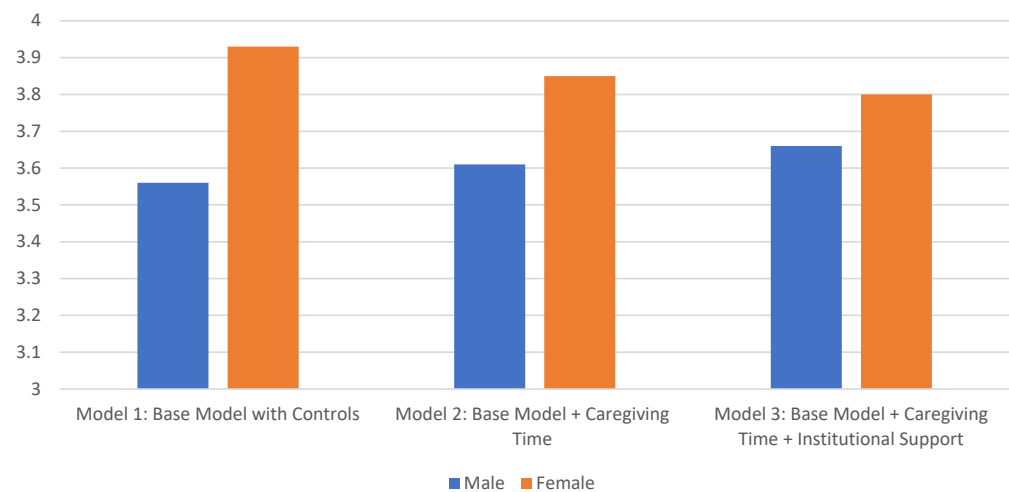
Figure 1. Predicted stress index values by sex.

We also conducted Sobel tests to better understand whether COVID-19-related caregiving hours or, alternatively, institutional support, significantly mediate gender differences in stress. The results of the Sobel test for the institutional support index are statistically significant ($p < .05$) and indicate that this variable mediates 47 percent of the total gender effect. By contrast, the mediating effect of COVID-19-related increases in caregiving hours is marginally significant ($p = .07$) (mediating 30 percent of the total gender effect).

From this analysis, we cautiously conclude that women reported higher levels of stress than men in part because they (1) experienced a more dramatic increase in their caregiving time and (2) felt that they received less support from the institution to help manage those additional time demands. In the next three sections, we discuss our analysis of open-ended responses. The patterns we find give more context and detail to help understand these quantitative patterns.

3.3. Gendered Experiences of Time Demands and Time Use

The most prevalent theme across all the open-ended responses from parents was that they described experiencing a time crunch. Responses like, "Not enough time to cover everything", "too much work to do, not enough time", and "lack of time" were extremely common. Both mothers and fathers described struggles with balancing work and caregiving, especially as normal work hours conflicted with the school day. One mother explained that she "prioritize[s] caregiving during the day and leave[s] major work—and even substantive emails—for after 10 P.M". Others described difficulties with carving out the large blocks of time necessary for writing and research, or that their "lack

of bandwidth" meant that the little time they had for work suffered from a lack of energy and ability to focus. Overall, many parents described spending an increased amount of time on childcare, homeschooling, and/or domestic responsibilities, which reduced their available time for conducting research, writing papers, applying for grants, and preparing for classes, especially given the additional labor involved in transferring courses from an in-person to a remote format.

However, our qualitative data also reveal that faculty's time demands were complex, and gendered, in ways that go beyond the sheer number of hours spent. Although mothers and fathers were similarly likely to characterize the work-from-home environment as "distracting", we found gendered patterns in the ways that parents experienced their professional work time. On the one hand, more than twice as many fathers as mothers complained about a lack of a separate physical workspace or office. "The 'caregiving' itself wasn't a major issue, as my kids are not so young", explained one father, "it was more the distraction and lack of private space in our relatively small personal space". Another lamented about "Not being able to use my [campus] office (escape my kids)" and a third simply stated: "I'm ready to be back on campus and in my building/office". For many fathers, then, the quality of their work time suffered as a result of spatial issues more so than their direct involvement in caregiving per se.

On the other hand, more than twice as many mothers as fathers described experiencing direct interruptions from their children. They were also more likely to describe such interruptions as "constant" or "frequent". As one mother explained, "Even if I have some time for myself and research, the quality is low as I'm frequently interrupted". Another mother wrote that: "Constant interruptions by children mean that the focus needed for writing is not available". Four mothers, but none of the fathers, also raised the issue of children directly interrupting classes or faculty meetings on Zoom. One mother wrote that her child's behavior "disrupts live zoom classes that I give, and sometimes the recordings of asynchronous classes". Two other mothers highlighted this issue when expressing gratitude for their respective departments' flexibility, supportiveness, and understanding when these disruptions occurred: one mother said her "colleagues [are] understanding when my child interrupts meetings and classes", while the other said her colleagues (most of whom also have children) are "understanding when meetings are interrupted by family needs", and that they have been very supportive of one another. That mothers expressed "gratitude" suggests that the language of rights was unavailable to frame institutional reactions to teaching disruptions, and that perceptions of responsibility remained individualized even despite common structural experiences.

In addition, mothers were more likely to encounter unexpected caregiving than fathers. They frequently described their time as "unpredictable" and more commonly referenced the fact that they'd miss entire days of work because of unanticipated childcare demands. For these mothers, work hours were often unexpectedly converted to caregiving hours. Perhaps because of this experience, women were also more likely to describe their need for childcare as a need for "reliable" childcare. These findings echo earlier studies showing how workers with caregiving responsibilities tend to experience unpredictability so often that their work–family lives become "predictably unpredictable" (Heymann 2000); in the context of the COVID-19 crisis, when caregiving demands intensified overall and backup support was less available—and women overwhelmingly became default or fallback caregivers (Calarco et al. 2021)—unpredictability also became a more frequent feature of their lives. These findings also resonate with studies showing that, when mothers work from home, they are less likely to obtain worktime that is completely free from caregiving obligations (see, e.g., Lyttelton et al. 2020).

3.4. Mental Health

Paralleling our quantitative findings, we also found highly gendered patterns in the ways that mothers and fathers talked about their experiences with stress and mental health. When asked to describe what has been most challenging for them during the pandemic,

mothers were far more likely to mention their mental and emotional health. Terms like "stress", "anxiety", "exhaustion", "lack of motivation", "guilt", "burnout", or "mental health" came up more than six times as frequently in the sample of mothers than in the sample of fathers.

When these issues did arise, mothers also described the negative impact of these factors far more intensely than fathers did. For instance, the three fathers who reported mental health issues said they felt "stressed" or "frayed". By contrast, more than 20 mothers indicated mental health issues, which they described with terms such as "emotionally exhausted", "burned out", "stressed", "anxious" (about the safety of their children), and "guilty" (about not spending enough time with their children). Mothers' responses were also more frequently conveyed with a palpable sense of anger at the situation. As one mother explained, "Working has shifted significantly into the evening/night, given my childcare/remote schooling responsibilities during the day. And at the same time, my work responsibilities (such as transitioning courses to remote teaching) expanded exponentially. I have been working on very little sleep, with no breaks, for so long. I am completely drained and dispirited and infuriated". Another mother wrote, "I sacrificed my sleep, sanity, and self-care during the pandemic to remain afloat in my job while caring for children with nearly no help". Mothers, then, not only experienced negative mental and emotional health at higher rates than fathers did, but they also struggled with these experiences more intensely.

Moreover, mothers were far more likely than fathers to describe their negative affect as resulting from their concerns about—or their direct managing of—their children's wellbeing, which further underscored their position as the default, or primary, caregiver. "Dealing with remote schooling and children's emotional state has been taxing and exhausting", wrote one mother. Another reported that she lacked motivation because "Mental energy gets spent on children's wellbeing". A third mother elaborated more on her responsibility for her children's mental health and how she needed to prioritize that over her own work: "I don't have the mental bandwidth to spend all day teaching on zoom and . . . supervising two kids learning from home (zoom) and then be creative. My children have suffered learning loss and the older is depressed and unmotivated. Under these circumstances, research/creative [work] takes a back seat". For some women, the emotional labor also took the form of guilt. For instance, one mother explained that she has been "Feeling guilty that [she is] not spending enough time with [her] children and they need more from [her] than they did when they could spend time in programs and with friends". Although some fathers also described a "frayed" and "stressful" mental and emotional state that stemmed from caregiving-related responsibilities, these issues were largely due to sleep deprivation from shouldering home-schooling and distance learning for their children rather than directly burdening themselves with their children's (negative) mental and emotional health. One notable exception is a father who explained that his "partner is a physician who could remain home at most three mornings per week, so the brunt of the care-giving fell to [him]", adding that his "biggest problem is then either stress from a child fighting me all day or lack of productivity due to this stress (and lack of time)".

Overall, mothers were not only spending more time with their children, but they were also more likely to be taking on the "mental load" and emotional labor (Dean et al. 2022; Hjálmsdóttir and Bjarnadóttir 2021). Given that the crisis dramatically impacted children's schedules and social lives, the need for this kind of caregiving labor, and especially emotional support, was unprecedentedly high. Our results suggest that the increasing intensity of the emotional labor demands associated with caregiving, in combination with increases in professional workloads and disruptions, created a perfect storm of stress for many mothers.

3.5. Institutional Support

Finally, the themes that emerge from our qualitative data help us to better understand why stress is related to perceptions of institutional support and caregiving experiences. To

begin, most of the men and women respondents were aware that the university offered some accommodations for caregivers: only seven (~4%) indicated in their comments that they were unaware of a response on the part of the university. Despite this awareness, however, the vast majority argued that the response was inadequate because it was too slow, and policies were unclear, difficult to use, or would be entirely useless or inapplicable to them. As one father wrote, "[The university] cares but is so slow. By the time all the town halls were over and everyone had a chance to elaborate the nuances of the problem, we had already figured out the problem ourselves. We needed to, because this process took months". Another father's response was, "With [the institution], the response is often 'too little too late'". A mother similarly expressed, "The accommodations, if any, have been slow. They have come only after faculty have demanded them". Respondents also expressed frustration that making use of the resources available required parents' willingness to carry out additional labor and to take on potential career risks. As one mother put it: "When caregivers are already taxed to their limits it makes no sense to require them to jump through additional hoops to *maybe* receive benefits, especially when there's also the perception that such requests can reflect poorly on the person (being seen as needy or wanting handouts)".

However, mothers were far more likely than fathers to critique the adequacy of the university response. For instance, mothers were far less likely than fathers to find the university's response helpful in any respect. When asked "What was most helpful?" a few respondents thought of positive things, such as the lack of a commute, or one department chair's support for teaching schedule accommodations. Tellingly, however, 16 of the female respondents, but only three male respondents, went out of their way to indicate that they felt that the university response had not been helpful at all (e.g., "Nothing. Extraordinarily disappointed in [the institution's] response to caregiving obligations during COVID"; "I can't think of anything"; "I have received no help"; "NADA"). As we discuss below, these differences emerge primarily as a result of mothers' greater need, on average, for workload accommodations.

Specific criticisms of the university response fell into one of two categories: (1) inadequate provision of childcare either directly through campus centers or through childcare subsidies, and (2) inadequate attempts to reduce workloads or to make up time for faculty, in the form of course release or service release (either in the present or in the future), paid leave, deadline extensions, additional TA support, or modifications to productivity demands. Mothers and fathers were similarly likely to lament the lack of childcare, and to express anger and frustration over it. One father wrote: "[The University] completely abandoned its community during COVID when it came to childcare and caregiving. They closed the childcare centers in March with zero communication to parents until well into August—long after all other daycare centers had announced their plans or had reopened". Another father reported, "[We need an] increased number of childcare options. The children's center waitlist is very lengthy and isn't really a viable option for new children of faculty". Similarly, a mother explained, "In my case, the only thing that would help me is additional subsidized childcare, as 50% of my after-tax salary pays for childcare. Additionally, childcare that is full-time would be helpful, and not the extremely truncated hours of [the University's] Children's Center that we have endured during the pandemic".

By contrast, although mothers and fathers both expressed a desire for the university to modify workloads via reduced teaching, service, or research obligations, mothers were more than twice as likely as fathers to mention this issue, and when they did, they discussed it in greater detail and with more intensity. For instance, mothers requested: "more time off. Reduced work responsibilities or expanded breaks between courses", "A true leave from teaching and/or service in order to make up for this lost research time", and "course reliefs and/or supplemental sabbatical credits to give those who have been impacted the research time they need to get their careers back on track". The fact that women were more likely to say that they wanted the university to give them their "time back" makes sense in light of our finding (above) that women were taking on more of the caregiving labor, were more

often multitasking work and care, and were more likely to serve as the primary, or default, caregiver. In other words, the structural imbalance between fathers and mothers in terms of domestic responsibilities meant that mothers, on average, needed an objectively higher level of workload accommodations from the university in order for such accommodations to be perceived as acceptable or sufficient.

Additionally, some mothers, but none of the fathers, framed their desire for more work-time accommodations explicitly in terms of mental health, offering "sanity" and the need to "recover" as justifications: "[We need] teaching releases for parents and caregivers who lost an entire year of research/sanity", "What we really want is the time to pursue our research—or simply to just recover". One mother's comments revealed how the steps the university did take to address mental health were ineffective for those most affected by caregiving-related stress: "I appreciate all the workshops and resources related to mental health and self-care. However, at this point, I'm too tired to attend those. People with caregiving responsibilities are fighting for some more minutes and don't have much time or mental space for these resources. What could be directly helpful is a course release... to offset the lost time". This mother's experience underscores our findings, above, that a lack of adequate institutional support (i.e., workload accommodations) directly contributed to women's higher levels of stress.

The connection between mental health outcomes and perceptions of institutional support becomes even clearer when we consider that several of the women—but none of the men—who flagged mental health concerns explicitly connected their experience to the university's response, which they found to be both inadequate and counterproductive. For instance, one mother, who has a toddler and a kindergartener and is in a leadership role in her department, summarized her experience this way:

> "[Childcare and remote schooling] responsibilities have significantly set back my research productivity and had a substantially negative impact on my work-family balance and mental health. The COVID "accommodations" at [the institution] have been nonexistent or would actually create more work/setbacks in the long run in my case."

Along the same lines, another mother who identified as a woman of color reported that "Nothing has been offered that helped me in the moment. All the "help" has been extremely difficult to access and that just gave me MORE STRESS and STOLE MORE OF MY TIME". A third mother, who is single with a disabled child, similarly explained:

> "I simply do not have the hours in the day or bandwidth to manage the responsibilities... With the public schools closed and limited respite support, I have spiraled into an impossible work/caretaking situation. This has severely affected my health and wellbeing. I am furious... I feel the university has done nothing to support myself and other [faculty] in similar situations."

In summary, while many parents found the institutional support lacking, misguided, or nonexistent, mothers were especially affected by this problem. This, perhaps, is unsurprising given gendered imbalances in caregiving loads and experiences: because more mothers than fathers took on primary responsibility for caregiving, and the university's childcare accommodations and workload accommodations for caregivers were largely inadequate given the extreme time burdens of the COVID-19 crisis, mothers suffered more from institutional shortcomings than fathers did.

4. Discussion

It is well-established that the COVID-19 crisis was a gender-differentiated crisis of care, especially for working parents who faced school closures and the loss of childcare. We contribute to this growing body of work by showing the extent to which the experiences of faculty—professionals who, by most standards, are fairly privileged in terms of education, job security, and access to benefits—were also highly gender-differentiated and shaped by the lack of an institutional safety net. Our analysis of faculty parents illuminates how

childcare responsibilities were more substantial for women than men, both in quantitative magnitude (total hours and relative increase in hours) and in qualitative terms (more interruptions of work time, more multitasking, greater mental and emotional loads associated with care, etc.). Furthermore, our findings suggest that the pandemic took a higher toll on women faculty's mental health compared to men's, not merely because women were spending disproportionately more time and energy on caregiving, but also because the university was unwilling to significantly modify workloads and expectations for faculty caregivers.

Our findings speak to the broader literature on pandemic-related shifts in gender, work, and caregiving, as well as the more specific question of the situation within academia. In a broad sense, our findings specify details about how the mental and emotional load of caregiving is not only gendered in the academic context, but also how that gendering is amplified when structural supports go missing (Calarco et al. 2021; Dean et al. 2022). It also contributes to the more specific literature on academic work and workplaces by suggesting that work-intensive cultures and institutions like those found in academia (Cech and Blair-Loy 2014; Thébaud and Taylor 2021)—which became even more work-intensive during the pandemic—amplified the already deleterious effects that the loss of childcare had on professional workers more broadly. Our analysis suggests that the convergence of these two factors created nearly catastrophic conditions for the workers who are most likely to be tasked with the physical, mental, and emotional responsibilities of care. In particular, our findings regarding the gendered impact of the crisis on mental health should be of interest and concern to (1) scholars who seek to understand how organizational contexts and professional norms produce and exacerbate inequalities and (2) institutional leaders whose goal is to advance gender equity in the academy.

4.1. Limitations

Our analysis is not without limitations. Although we draw our sample from a large research university, and its size and COVID-19 policy response are similar to several others on the West Coast of the United States, our sample is from just one university and as such, our findings are not broadly generalizable to faculty experiences across other universities, or in other state or country contexts. Moreover, although the response rate for the survey approached 50%, our sample size is relatively modest given that we focus on faculty caregivers. This factor limited our ability to include a large number of detailed covariates and to conduct intersectional analyses. The small number of individuals reporting elder and other forms of care also prevented us from being able to undertake a separate, meaningful, analysis of their experiences. And, as with all volunteer-based surveys, individuals self-selected into the survey; as such, we are unable to determine the extent to which selection processes may have shaped our findings.

Our survey measures also have limitations. In particular, our measures of time use are imperfect, given that they are (1) based on self-reports, which are known to be less accurate than time diaries, and (2) time use categories are imprecise and overlapping in nature. Given these caveats, we believe that the emergent patterns in our qualitative data, which indicate that caregiving demands were greater and were experienced more intensely for women than for men faculty, lend validity to the overall patterns that we find in our limited quantitative measures. Unfortunately, the survey also lacked information about the work status, work location, and occupation of a respondent's partner, which prevented us from investigating in detail the extent to which gendered household dynamics may have played a role in shaping our outcomes of interest. Further, there is an urgent need for subsequent research on the caregiving, stress, and institutional support experienced by faculty groups that we were unable to systematically capture with our data, including faculty of color (especially women faculty of color), faculty in same-sex relationships, non-cisgender women, and other populations.

Finally, going forward, additional research would help us to better understand the possible scarring effects of the pandemic on the career trajectories of faculty within academia, as well as how such effects may vary by gender or other factors. We suspect, for instance,

that whereas the caregiving crisis is now less acute than it was at the time of the survey, there are likely long-term effects on research productivity, mental health, and perceptions of the institution's ability—and willingness—to support caregivers.

4.2. Recommendations for Universities

The empirical results and open-ended responses together lead us to recommendations that emphasize collective over individual responsibility for the labor of care. Our recommendations pertain to three broad areas: faculty workloads, childcare infrastructure, and faculty engagement.

First, universities must create an environment that grants, and supports the use of, reasonable adjustments to workloads in situations where caregivers are excessively overburdened due to a lack of other supports (as was the case during the COVID-19 pandemic). Structurally, this would mean implementing policies that concretely "give time back" to faculty caregivers, regardless of their academic rank and tenure track status. Examples include default reductions in service requirements (e.g., limiting committee assignments), course releases (without reductions in pay), co-teaching opportunities, bridge funding for faculty grant support, or funds for additional teaching or research assistant support (see, e.g., Chesley 2021 for similar recommendations). In order to be effective, however, policies need to be transparent and well-communicated by the institution (see, e.g., Hammoudi Halat et al. 2023), and supported by the faculty and staff at the department level. For instance, to avoid adding time burdens for parents and to minimize power and status differentials that often dissuade individuals from requesting accommodations (Ward and Wolf-Wendel 2012), universities should provide default options for modifications from which faculty must opt-out rather than opt-in.

We also support the, now common, practice of requiring tenure and promotion committees to take into account productivity loss associated with the pandemic when evaluating faculty (Gonzales and Griffin 2020). However, such accommodations are also one example of the broader limitations of the university response, which was often "too little too late" (as one participant, above, expressed it). Going forward, universities should be better prepared to respond to caregiving crises *before* they happen, so that when they happen, they are prepared to respond effectively. For instance, universities should have standing, and varied, policy tools that they can implement that would ease workloads on caregivers as soon as a crisis arises, rather than having to make allowances for caregivers' experiences after the fact.

Second, adequate childcare provisions and/or sufficient childcare subsidies are needed, especially in emergency situations like that of COVID-19. Several universities created new childcare resources during the pandemic when faced with the closure of daycare facilities. For example, the University of Michigan provided faculty, staff, and students with free access to a care.com membership and a family-to-family support posting board where parents could provide support and resources to one another. These resources accompanied preexisting resources, which included a childcare center that remained open throughout the pandemic, Kids Kare at Home, Family Helpers, and the Campus Childcare Homes Network (Kaleba 2021). Many of these resources allowed faculty to hire last-minute or ongoing weekday childcare services from students. Similarly, Stanford University provided back-up childcare services to faculty and staff, where members could hire childcare for 10 days/year if their caregiver was unavailable, the school was closed, or flex work was required (Stanford Report 2021). These resources might not have been sufficient but were a step in the right direction when faculty were often faced with little to no childcare options. As universities move forward, it is necessary to rethink how childcare on campus looks, and to devise plans to ensure that all faculty can better manage caregiving and work obligations.

Third, institutions should provide collective rather than individual solutions to disputes, like taking decisions on accommodations out of individual departments, which has led to arbitrariness, and placing them in a more representative committee that includes parents and other stakeholders. Researchers have found that when faculty members have a

stake and voice in the formation of the policies made available to them, they are more likely to devise policies that are more useful and result in better mental health (Hammoudi Halat et al. 2023). Devising a large committee of faculty members to represent faculty concerns and voices would be a useful step forward to ensure that needs are being met as we move beyond the pandemic. These members should have their time compensated for either through stipends or through course relief.

More broadly, we emphasize that going forward, universities should regularly conduct faculty campus climate surveys to track change over time. This is critical for understanding the degree to which caregiving and work time crises persist among faculty, how those crises may continue to shape mental health outcomes, and the degree to which there may still be scarring effects of the pandemic on career outcomes, especially for faculty with caregiving responsibilities.

Notes

[1]   We use the term "women" throughout this study in reference to cisgender women. Although it was provided as an option, none of the respondents in our sample indicated that they were intersex or that they preferred to self-identify their gender.

[2]   Unfortunately, our small sample size prevents us from including more detailed racial and ethnic categories in our models.

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