Faculty Inclusion Before and "After" COVID-19: Investigating the Effects of Caregiving, Health, and Gender

Shuyin Liu[1]

Laurel Smith-Doerr[1]

Dessie Clark[2]

Joya Misra[3]

[1]Department of Sociology, University of Massachusetts Amherst

[2]Inclusion in Science and Engineering Leadership Institute, University of Wisconsin-Madison

[3]Department of Sociology & School of Public Policy, University of Massachusetts Amherst

ADVANCE Journal

Author Note

Shuyin Liu: https://orcid.org/0000-0002-6362-3454

Laurel Smith-Doerr https://orcid.org/0000-0002-5162-0491

Dessie Clark https://orcid.org/0000-0003-0842-5903

Joya Misra https://orcid.org/0000-0002-9427-3952

Correspondence concerning this article should be addressed to Shuyin Liu, Department of Sociology, University of Massachusetts Amherst, 200 Hicks Way, Amherst, MA 01003-9277.

Email: shuyinliu@umass.edu

Abstract

Despite significant research on the immediate disparate impacts of COVID-19 on faculty members, very few studies consider longer-term disparities. We examine the continuing effects of the pandemic on faculty equity and inclusion. Survey data from before the pandemic (2018) and from the post-acute pandemic period (2022) show a significant decline in feelings of inclusion, controlling for gender and caregiving status, race, sexuality, rank, and field among faculty. On average, faculty report that campus life has worsened. Controlling for demographic variables, faculty with health disadvantages feel more excluded. Interestingly, simply being a caregiver does not predict greater feelings of exclusion; however, faculty whose caregiving responsibilities took them away from work during the pandemic feel more excluded. Research on the continuing unequal effects of the pandemic is needed to address and improve feelings of inclusion, and thus to retain a more diverse faculty.

No other global crisis in living memory has disrupted the work of faculty so acutely and so unequally as the COVID-19 pandemic. The question of whether and how the pandemic exacerbated intersectional inequalities among faculty was much studied in the early days of COVID-19, with findings from 2020-21 describing gendered and racialized gaps in caregiving burdens and time for scholarship during lockdown (Cui et al., 2022; Fazackerley, 2020; Kitchener, 2020; Myers et al., 2020; National Academies of Sciences, Engineering, and Medicine [NASEM], 2021; Watchorn & Heckendorf, 2020). However, fewer articles investigate the continuing effects of the pandemic on intersectional inequalities, a knowledge gap that must be bridged to address the very real, continuing barriers that may affect faculty in disparate ways.

Our paper takes a novel approach by examining the continuing effects of the pandemic on a key mechanism for faculty equity—the experience of inclusion. We conceptualize inclusion as a sense of belonging and engagement with other faculty and examine inclusion as an *outcome* affected by the pandemic. Where faculty feel connected, valued, respected, and heard, they also feel included, which further relates to faculty retention (Misra et al., 2024). We conceptualize inclusion as a faculty member feeling connected with their department and engaged in professional and social interactions with their colleagues. While we know that COVID-19 affected faculty productivity and time for research (NASEM, 2021), we do not know how the pandemic has affected feelings of inclusion. Understanding how feelings of inclusion have changed over the span of the pandemic is critical. We seek to address this gap in scholarship. We further explore the extra burdens on faculty with health concerns and faculty who felt particularly burdened by caregiving during the pandemic.

We analyze faculty survey data at two time points on the same US university campus—before the pandemic (2018) and the post-acute pandemic period (2022). The data show a

significant decline in faculty members' experience of inclusion over this time, controlling for gender and caregiving status, race, sexuality, rank, and field. Our findings suggest that on average, faculty life has gotten worse since the pandemic. While sample size limits our ability to find significant differences by race, gender, sexuality, and rank, we do find significant differences by two factors—health and caregiving. Controlling for demographic variables, faculty who have health challenges are significantly more likely to feel excluded. While simply being a caregiver does not predict exclusion, faculty who report that caregiving burdens took them away from work during the pandemic are more likely to feel excluded on campus. We argue that the study of the continuing unequal effects of the pandemic must be extended so that we may see and address more dimensions of inequalities and retain a diverse faculty.

Research on Faculty Experiences of Caregiving, Health Issues, Disability, and COVID-19

We draw from three bodies of scholarship to develop our hypotheses about the effects of the pandemic on inclusion in faculty life. We first discuss the existing literature on caregiving in academia, and then literature on health and disability among faculty members. We next synthesize the literature on the impacts of the COVID-19 pandemic on faculty life. Finally, we present our three hypotheses.

Caregiving and Academia

Caregiving is a central issue for many faculty members, who often have care responsibilities for parents, extended family members, and children (Hartmann et al., 2018; Mason et al., 2013; Misra et al., 2012; Wolfinger et al., 2009; Xie & Shauman, 2005). Caregiving responsibilities further reflect gender differences, with women more likely to face expectations for caregiving for children and extended family members (Grigoryeva, 2017; Sayer, 2005). Women faculty spend more time than men on childcare, while faculty of color,

particularly Black faculty, spend more time than white faculty on elder care and long-term care (Cohen et al., 2019). LGBTQ faculty also tend to care for friends and family (Stygles, 2016). Thus, the burdens of caregiving vary by intersectional statuses, including gender, race, and sexuality.

Caregiving has significant implications for faculty members' careers. For example, mothers tend to pay career penalties, relative to childless women, while fathers earn bonuses, relative to childless men (Wolfinger et al., 2009). New parents are less likely to remain working in STEM after the birth or adoption of a new child, with women much more likely than men to leave full-time STEM employment (Cech & Blair-Loy, 2019). Among faculty physicians with very competitive research awards from NIH, women spend more time on parenting and domestic tasks than men and are much more likely to stay home with children who are ill or when there are childcare disruptions (Jolly et al., 2014). Mothers are also much more likely than fathers to report losing opportunities, missing time at work, not being able to travel, or not being able to work evenings and weekends (Moors et al., 2022). Other forms of caregiving impact faculty time, with approximately 20% of medical school faculty—particularly women and faculty of color—reporting ongoing caregiving responsibilities to a family member, friend, or neighbor with a chronic illness or disability (Skarupski et al., 2021).

Both men and women faculty regularly report challenges with work-family conflict, although these conflicts appear to be more intense for women (Ecklund & Lincoln, 2016; Fox, 2010). Importantly, where there is greater institutional support for caregiving, faculty report higher levels of workplace belonging and job satisfaction (Moors et al., 2014). Work-life conflict also appears to be mitigated where faculty feel collegial support, safety in taking risks, and opportunities to address challenges (Minnotte & Pedersen, 2019). Overall, care responsibilities

are known to impact faculty experiences, while they also reflect intersectional inequalities shaped by gender, race, and sexuality.

Health, Disability, and Academia

Health also has a significant effect on the experiences of faculty, as suggested by research showing that many faculty experience health issues (American College Health Association [ACHA], 2022). Faculty and staff further report that their work performance has been negatively affected by the death of a family member or friend, anxiety, depression, lack of quality sleep, severe headaches/migraines, and/or another illness, injury, or surgery (ACHA, 2022). Yet faculty may also experience stigma, or fear being stigmatized, if they report health issues (Gautam, 2009).

In addition to health issues, faculty often experience burnout related to the intense work demands, balancing research, teaching, service, and mentoring, as well as work-life issues (Boisaubin, 2009; Thomas et al., 2019). Burnout includes both physical and mental exhaustion, inability to concentrate, as well as insomnia, and can lead to depression that is directly related to the pressures and demands of work (Thomas et al., 2019). Burnout further leads to faculty leaving the profession (Boisaubin, 2009; Gautam, 2009).

Faculty with disabilities also experience challenges within academia, including inadequate support, inaccessible physical environments, exclusion, discrimination, harassment, and stigma (Abram, 2003; Lindsay & Fuentes, 2022; Price, 2021; Price et al., 2017; Saltes, 2020; Shigaki et al., 2012; Statistics Canada, 2020). While the Americans with Disabilities Act (1990) requires employers to provide “reasonable accommodations,” universities often require faculty with disabilities to seek out support and propose accommodations, rather than offering support and providing options (Lindsay & Fuentes, 2022; Price, 2021; Saltes, 2020; Shigaki et al., 2012).

Once accommodations are identified, they may be implemented slowly or ineffectively, requiring faculty with disabilities to prove repeatedly that they are disabled and need accommodations (Price, 2021). Other faculty choose not to disclose their disabilities, to avoid being stigmatized or losing their job (Lindsay & Fuentes, 2022; Price, 2021; Price et al., 2017; Shigaki et al., 2012). In particular, those with mental health disabilities are less likely to disclose this information to the institution (Price et al., 2017).

Given that faculty are often assessed using performance metrics that reflect an ableist standard of productivity, faculty with health issues and disabilities may struggle to meet expectations, affecting their physical and mental health and wellbeing (Lindsay & Fuentes, 2022). It is likely that health issues and disabilities also further reflect inequalities by gender and race, with gender and racial minorities experiencing disproportionately negative impacts (Brown et al., 2016; McDonald et al., 2007; Read & Gorman, 2006; Warner & Brown, 2011). These factors may limit conference travel and networking with other academics. Therefore, opportunities for more flexible schedules and working from home can benefit faculty with disabilities (Lindsay & Fuentes, 2022).

Pandemic Impacts

In the spring of 2020, the arrival of COVID-19 in the United States caused an abrupt shift in higher education. Quick, yet drastic, changes to research, teaching, service, and community engagement meant faculty members faced new and additional strains as they transitioned work to remote settings. Research notes that the impacts on STEM faculty were both immediate and severe, with disproportionate impacts by gender, race, disability, and caregiving status (NASEM, 2021). These challenges on a global scale were unprecedented.

The pandemic also disrupted caregiving, forcing care back into the home, with family

members managing the impact of the shutdown of schools, daycare centers, and disabled and eldercare supports (Mickey et al., 2023; NASEM, 2021). These transitions turned work/life boundaries upside down for those providing eldercare, care for extended family members, and care for children with disabilities (NASEM, 2021; Schneider et al., 2021). This scramble had a particular effect for women and faculty of color, who already had higher responsibilities for caregiving (Minello, 2020; NASEM, 2021). Indeed, COVID-19 has amplified many pre-existing inequities in academia (Anwer, 2020; Douglas-Gabriel, 2020; Gonzales & Griffin, 2020; Zahneis, 2020).

COVID-19 has also placed a disproportionate health and financial toll on racial minorities and immigrant communities in the US. Early in the pandemic, BIPOC, particularly Black faculty and Black women, were more likely to be coping with family illness, unemployment, or the loss of loved ones (Eligon et al., 2020; Gould & Wilson, 2020). Black workers in the US face two of the most lethal preexisting conditions for COVID-19—racism and economic inequality. Furthermore, for Black faculty racial injustice and anti-Black racism created disruptive distress, impacting life both inside and outside of the academy (Gould & Wilson, 2020).

The disruption of paid caregiving, combined with extra academic workload, on-campus and online, during the pandemic, might intensify the stress around work-life balance for faculty with caregiving responsibilities. It is well-documented that faculty who are primary caregivers did not receive adequate institutional support, such as time and financial resources, from universities in the acute pandemic period (Mickey et al., 2023; Thébaud et al, 2024), which might have contributed to lower levels of workplace belonging. Where, for example, faculty

members' lives were disrupted due to closed schools and daycares, few universities provided accommodations. Thus, we expect the following:

Hypothesis 1: *Faculty whose care responsibilities limit their work feel less included during the pandemic.*

Women, already more likely to be caregivers, experienced more challenges with work/life balance during the pandemic (Skinner et al., 2021), leading to a variety of negative outcomes including impacts on workload, scholarly productivity, and personal well-being (Carpenter et al., 2021; NASEM, 2021). Caregiving faculty responded in a variety of ways to the lack of work/life boundaries including triaging tasks, withdrawing from work-related roles as well as family demands. Those with structural or social support, such as greater workplace flexibility, changes in approaches to faculty evaluation, and understanding about caregiving needs from supervisors and colleagues, were less likely to make sacrifices at work and at home (Kossek et al., 2021). Caregiving responsibilities took a higher toll on women's mental health with women's hours being more unpredictable, interrupted, and emotionally/mentally draining and women reporting more direct interruptions from their children (Thébaud et al., 2024). Beyond the toll of individual caregiving hours, gendered institutional policies did not effectively or adequately support women faculty (Thébaud et al., 2024).

Given that women were more likely to be engaged in intensive care work even before the pandemic, and that women did substantially more care work during the worst of the pandemic without sufficient institutional support, such as greater flexibility, changes in how faculty were evaluated, and technological and financial resources, we suspect that these experiences might have led women caregivers to feel particularly less included in their departments.

Hypothesis 2: *Women caregivers feel the least included during the pandemic.*

During COVID-19, many people experienced increased loneliness due to isolation (Brooks et al., 2020), particularly before vaccines were available and social distancing mandates were in place. Limited access to mental healthcare meant that individuals had to rely on self-help, self-care, and self-medication to deal with feelings of loneliness, depression, and anxiety (Matias et al., 2020). As work moved online, interactions with colleagues changed, with fewer opportunities for interpersonal connections. All faculty, those working remotely and in person, experienced stress from the isolation which affected their feelings about their workplace (Stadtlander & Sickel, 2021).

In the United States, restrictions varied greatly by city and state—beliefs around appropriate response to the pandemic were highly polarized. Previous research has demonstrated that workers may gain a reputation as "troublemakers" for not accepting the current state of working conditions, which may have been activated when working conditions changed so swiftly during the pandemic (O'Brien, 2014). As such, workers including faculty who disagreed with national, state, and institutional COVID policies and restrictions may have feared ostracization or disapproval from their colleagues and departments. Research shows that in some cases, even "small talk" about COVID-19, and related restrictions, could exacerbate feelings of exclusion and hinder collaborative opportunities (Eikhof, 2020).

The abrupt shift to working in virtual spaces, combined with the highly politicized responses to COVID-19, likely contributed to a lack of belonging—particularly for faculty who needed the policy changes and flexibility given issues related to their health and/or disability status. For example, people with disabilities experienced first a surge in accessibility and then a precipitous drop-off. Initially, COVID-19 accommodations allowed some with disabilities to participate and collaborate in departmental life, including research collaborations, departmental

colloquia, and meetings, in ways that had been limited in the past (e.g., via telework) (Schur et al., 2020). However, as the pandemic continued, these accommodations began to fade away as a push for in-person participation increased (Kandlur et al., 2024), subsequently exacerbating exclusion for some. While the end to online meetings may have enhanced inclusion for those who benefit from in-person engagement, it may have limited inclusion for faculty with health issues who needed accommodations allowing for greater accessibility and participation. For example, an immune-compromised person may have found sudden changes to masking protocols or meeting venue difficult.

Hypothesis 3: *Faculty with health issues limiting their work feel less included during the pandemic.*

We investigate these hypotheses with our survey data, as described in the methods section below. Our goal is to understand how feelings of inclusion have been impacted by the pandemic, focusing on how care responsibilities and health may be related to inclusion.

Data and Methods

Our research was conducted at a large research-intensive public university in the Northeastern United States, with an enrollment of about 30,000 students. The study was funded by a five-year National Science Foundation ADVANCE Institutional Transformation grant. The research team had planned to run the survey in 2018 and again in 2022, to capture whether the grant had an impact on key outcomes on campus regarding collaboration, inclusion, and decision making. Instead, due to the significant shift in faculty work conditions during the pandemic (especially from Spring 2020 to Spring 2022), these two surveys best capture the impact of the highly disruptive pandemic on faculty life. Both surveys were run over the same twelve-week period, primarily in the Fall semester. The first survey in 2018 went as planned. The research team

recognized that the second survey in 2022 could also provide information about how the pandemic was affecting faculty, and thus the 2022 survey incorporates additional measures of pandemic impacts. At the same time, the research team kept the key measures regarding collaboration, inclusion, and decision-making to allow comparisons between 2018 and 2022. The team also removed questions that were low priority to reduce response burdens. When the follow-up survey was launched in Fall 2022, it was one year after faculty went back to in-person teaching and one semester after the end of the mask mandate on campus. Overall, 655 faculty members responded to the survey in 2018 (33.7%), and 453 faculty members (23.3%) responded to the survey in 2022[1]. This reduction in response rate likely reflects the pandemic-related higher levels of burnout and stress along with additional workloads experienced by faculty in 2022.

Before collecting data, the study was approved by our IRB. The consent form and our recruitment materials emphasized to faculty that their responses were entirely voluntary and confidential, that they could withdraw consent or discontinue participation at any time without penalty and skip any questions that made them uncomfortable. We also emphasized that names would not be linked to responses and survey responses would be analyzed after being grouped together with many other faculty members so that no individuals would be identifiable in any reports, presentations, or publications of the results. As the additional 2022 survey items about pandemic impacts, caregiving, and health issues are particularly sensitive, we worked to carefully construct the language in an effort to normalize the wide range of experiences and responses faculty had to the pandemic.

[1] Based on the public information provided by the university, we believe that the demographic characteristics of our survey respondents are comparable with our target population, all faculty in this institution. We had a similar gender representation in 2022, and we had a slight overrepresentation of women faculty (52% of respondents versus 47% of all faculty) in 2018. In both years, we had a slight underrepresentation of Asian faculty (8% of respondents versus 13% of all faculty).

Measures

Feelings of inclusion were measured using three questions: (1) Do you feel connected to your department or program? (2) How satisfied are you with the amount of *professional* interaction you experience with other faculty in your department or program? (3) How satisfied are you with the amount of *social* interaction you experience with other faculty in your department or program? Each item was measured using a 5-point Likert scale, with higher values representing feeling more connected or satisfied.

Experiences of decision-making were measured using four questions: (1) How often does your department Head/Chair consult with you about departmental decision-making? (2) In the decision-making process in your department, how much does your department Head or Chair value your opinion? (3) If you have any concerns about departmental issues, how often do you communicate these to your department Head or Chair? (4) In the decision-making process in your department, how much do your colleagues value your opinion?

For a more straightforward interpretation in some analyses, we created three dichotomous variables (1=Yes, 0=No) to measure feelings of inclusion: (1) Feel connected to their department or program; (2) Feel satisfied with professional interactions; (3) Feel satisfied with social interactions. The same applies to experiences of decision-making (1=Yes, 0=No): (1) Chair consults my opinion; (2) Chair values my opinion; (3) Often communicates concerns to Chair; (4) Colleagues value my opinion. For more complex analyses, we rely on an index for feelings of inclusion using the original 5-point Likert scale. This score ranges from 3 to 15, summarizing three measures: (1) Feel connected to their department or program; (2) Feel satisfied with professional interaction; (3) Feel satisfied with the social interaction.

We examined two focal independent variables: health issues and caregiving impacts. Participants were asked if they experienced the following negative impacts on their research productivity or creative activity because of the pandemic since it began in 2020: (1) Personal health issues limited my ability/time to work on research or creative work; (2) Family or care demands limited my ability to work on research or creative work. Both independent variables are dichotomous. The variable is coded as 1 if the participant reported that they experienced such a negative impact; the variable is coded as 0 if they did not experience such a negative impact.

We also controlled for the following demographic characteristics: gender and caregiving status, race, sexuality, rank, and field. Gender and caregiving status[2] were measured by four categories: men non-caregivers (the reference group), women non-caregivers, men caregivers, and women caregivers. Race was measured using three categories: Asian, historically minoritized groups, and white (the reference group). Sexuality was measured by two categories: LGBTQIA+, and Heterosexual (the reference group). Rank was measured using four categories: non-tenure-track faculty, assistant professor, associate professor, and full professor (the reference group). Field was measured by whether faculty were in STEM fields (STEM as the reference group).

We originally planned to run intersectional analyses that would explore how, for example, health status intersected with race and gender, and other key characteristics. However, the relatively small sample size limited our power to find statistically significant results. These findings do not suggest that, for example, women of color caregivers did not have more negative experiences than other groups; they simply reflect the limitations of the method and sample size

[2] Respondents were classified as caregivers if they reported that they are a primary caregiver for children or adult family members.

to find such effects. Our analyses were also limited because the relatively small sample size could make it easier to identify individuals in intersectional analysis, and we had to maintain confidentiality.

Table 1.

Descriptive Statistics of Variables Used in the Regression Model (N=263, Survey 2022)

	N	P
Gender & Caregiving Status		
Men Non-caregivers	65	24.7%
Men Caregivers	72	27.4%
Women Caregivers	80	30.4%
Women Non-caregivers	46	17.5%
Race		
White	200	76.0%
Asian	22	8.4%
Historically minoritized groups	41	15.6%
Sexual Orientation		
Heterosexual	243	92.4%
LGBTQIA+	20	7.6%
Rank		
Non-tenure-track	56	21.3%
Assistant	51	19.4%
Associate	49	18.6%
Full	107	40.7%
Field		
STEM	179	68.1%
Not-STEM	84	31.9%
Health Issues		
Yes	27	10.3%
No	236	89.7%
Caregiving Impacts		
Yes	122	46.40%
No	141	53.60%
	Mean	SD
Feelings of Inclusion	10.05	2.96

Descriptive statistics of variables used in the regression results are reported in Table 1. In terms of health issues and caregiving impacts, 10.3% of the sample reported that their personal health issues limited their ability/time to work on research or creative work, while almost 50% of the sample indicated that family or care demands limited their ability to work on research or creative work. The measure of inclusion, as noted above, ranges from 3 to 15 and captures whether faculty feel connected to their department, and satisfied with their professional and social interactions with colleagues. The mean for feelings of inclusion is 10, suggesting there is not a high level of inclusion overall.

Analytical Approach

Initially, we ran seven logistic regressions predicting the seven dichotomous dependent variables, examining how feelings of inclusion and experiences of decision-making change over time. Each model included the survey year as the key independent variable, with the year 2018 as the reference group. All models controlled for key demographic characteristics, including gender and caregiving status, race, sexuality, rank, and field. As noted above, while we would have preferred to look at different racial groups separately or examine intersectional groups such as women who belong to historically minoritized groups, the relatively small N made it difficult to interpret these findings, as null findings might either mean no relationship or that the sample was too small.

We then conducted descriptive analysis on specific positive and negative impacts of the pandemic, showing the percentage of respondents who experienced such pandemic impacts. We found that extra demands during the pandemic were some of the major negative impacts that faculty experienced. Given that research conducted in the early days of the pandemic and conducted before the pandemic suggested that women, especially women caregivers experienced

more barriers to academic productivity (Collins et al., 2021; Cui et al., 2022; Fazackerley, 2020; Kitchener, 2020; Myers et al., 2020; Watchorn & Heckendorf, 2020), and tend to carry much higher teaching and service loads (Misra et al., 2012), we further examined how faculty with different gender identities and caregiving status experience an array of extra demands during the pandemic. More specifically, we examine the relationship between respondents reporting (1) extra teaching or mentoring demands; (2) extra service demands; (3) extra family or care demands, and gender and caregiving status. We used chi-square tests to examine whether there were significant differences by gender and caregiving status (comparing caregiving men, caregiving women, non-caregiving men, and non-caregiving women).

As our primary focus is caregiving impacts and health concerns, we estimate three linear regression models to examine their effects on inclusion. Model 1 is the baseline model controlling for demographic characteristics: gender and caregiving status, race, sexuality, rank, and field. Caregiving impacts and health concerns are significantly correlated with each other ($r=0.263$, $p<0.001$), and adding them simultaneously masks the true effect of both variables. Thus, these variables are included in the models separately: Model 2 adds caregiving impacts and Model 3 adds health concerns. The sample for the linear regression models consists of 263 faculty members in 2022, after excluding cases that have missing information on key independent, dependent, and control variables.

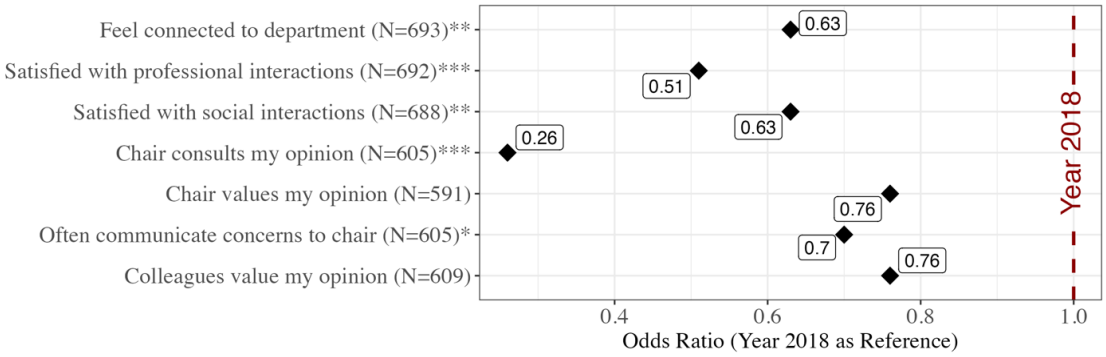
Findings on Overall Pandemic Impacts

We start by demonstrating the overall impacts of the pandemic through examining how faculty members' feelings of inclusion and experiences of departmental decision-making differ between the pre-pandemic period (2018) and the post-acute pandemic period (2022). As noted above, we ran a series of logistic regressions to examine whether the time period affects faculty

members' sense of inclusion and decision-making, controlling for other factors.

Figure 1.

How Faculty Experiences Change Over Time, 2022 compared to pre-pandemic 2018



Note. *p<0.05; **p<0.01; ***p<0.001. Faculty experiences in 2022 were shown as dots and faculty's experiences in 2018 were included as the reference group (shown as a line).

Figure 1 compares faculty experiences in inclusion and decision-making before and after the pandemic, controlling for key demographic characteristics (gender, caregiving status, race, sexuality, rank, and field). Table A1 in the appendix shows the full logistic regression results from which this figure is derived. While faculty in 2018 were certainly not perfectly satisfied with inclusion, this modeling strategy allows us to show the precipitous decline between the two periods. Overall, as Figure 1 suggests, faculty members' feelings of inclusion and decision-making experiences in 2022 were much worse than their experiences in 2018.

Compared to before the pandemic, faculty were much less likely to report feeling connected to their department, and much less likely to report feeling satisfied with professional and social interactions in 2022. For example, based on our survey data, the odds of faculty feeling satisfied with professional interactions in 2022 are 49% lower compared to before the pandemic. At the same time, faculty were also less likely to feel included in the decision-making

process: they were significantly less likely to report that their Department Chair or Head consults their opinion or that they often communicate concerns to their Chair. The odds that faculty believed that their Department Chair or Head consults their opinion in 2022 were only 26% of the odds prior to the pandemic.

These findings have important implications but are not particularly surprising. At the institution under study, all activities moved online in the Spring of 2020, and faculty, for the most part, continued to teach online through Fall 2020 and Spring 2021. With testing protocols and masking, many faculty returned to on-campus teaching in Fall 2021. Mandatory masking ended in Spring 2022—this surprise announcement caught many disabled faculty members off-guard. Yet, after more than a year of working primarily from home, the return to the office was not fully implemented/followed at the time of our second survey (Fall 2022)—many faculty came on campus only to teach, and in-person intellectual and social events were still few. As such, there was limited interaction among faculty, especially spontaneous and organic interactions as might happen on campus and in department spaces prior to the pandemic. Such abrupt shifts in work conditions and limited opportunities to engage with colleagues could be the reasons why we saw faculty feeling less satisfied with professional and social interactions in 2022.

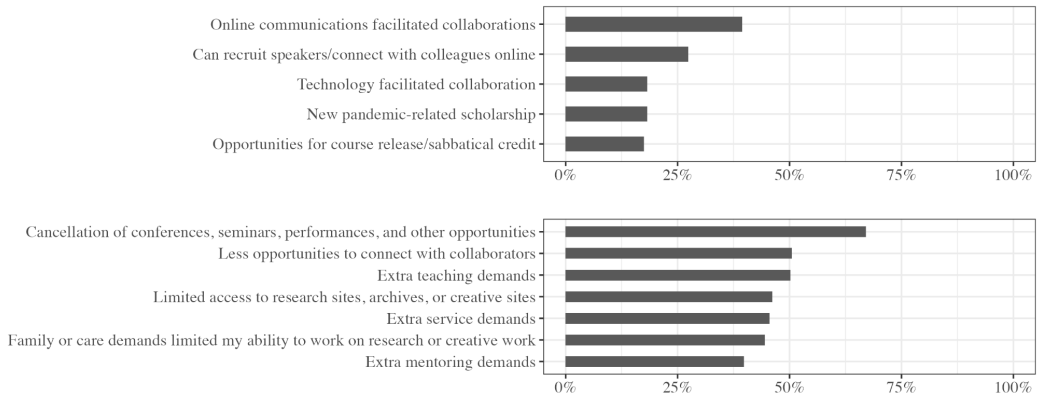
It is also not surprising to find the dismal results with regards to decision-making, another impact we were measuring in our surveys. Despite returning to in-person teaching, many meetings continued to occur online, including meetings among campus leadership. Online meetings were sometimes limited by many faculty members not turning on their cameras, making it difficult to connect with colleagues and engage in meaningful conversations for decision-making. Many Department Chairs could not have informal conversations with

colleagues, given limited interactions on campus, and decisions on departmental issues tended to be made in more pro forma ways, rather than as a result of sustained conversation. Thus, it is not unexpected that faculty communicated less often with Chairs, and they felt that Department Chairs and colleagues consult and value their perspectives less. When faculty don't feel their opinion being valued and heard, they might feel less connected with their own department.

Another set of questions, which was only asked in the 2022 survey, explores whether the faculty feel that they have experienced either positive or negative impacts from the pandemic. Faculty could respond to specific questions as well as make open-ended responses. Figure 2 shows the percentage of respondents who experienced major positive and negative pandemic impacts.

Figure 2.

Positive Impacts (N=401) and Negative Impacts (N=422) of the Pandemic



While almost 30% of respondents reported that they experienced no positive impacts, some saw at least limited benefits. For those in ongoing collaborations, the survey results show that new technologies facilitated those collaborations. Faculty also noted that they could recruit speakers for online talks or connect with distant colleagues whom they previously only saw at in-person meetings. At the university where the survey was conducted, negotiated by the faculty

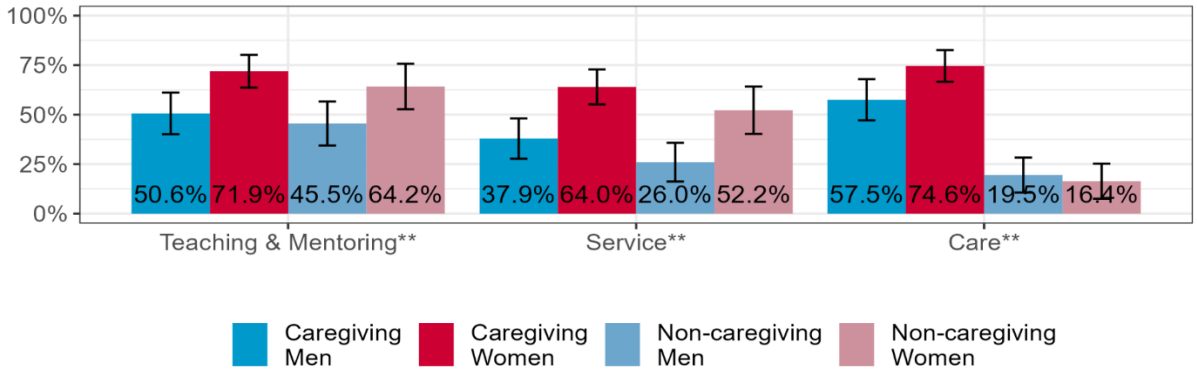
union, untenured faculty received credit toward future course release and tenured faculty received credit toward their next sabbatical as compensation for the extra work of moving courses online with little or no lead time to prepare. Faculty also reported opportunities for pandemic-related work, community-engaged work, or for some—more time for research.

Yet, unsurprisingly, the survey results show that negative impacts on research productivity or creative activity reported far outweighed the positive. Many people could not share their work at conferences since most were canceled in the first year of the pandemic. Although some conferences were held online, there were potentially lower levels of engagement among attendees due to various reasons such as screen fatigue, lower commitment expectation (Jack & Glover, 2021), burdens from managing caregiving responsibilities and health issues. Despite some positive responses about online tools and collaboration, many respondents noted fewer opportunities to connect with collaborators. There were demands limiting faculty research time, including teaching, service, mentoring, and caregiving. Faculty also noted challenges with conducting research, accessing research sites, and working with and hiring staff. Indeed, only 7% of faculty respondents saw no negative impacts due to the pandemic.

Figure 2 above shows that extra teaching, service, and caregiving demands were major negative impacts that faculty experienced during the pandemic. The literature suggests that women, especially women caregivers, tend to carry much higher teaching and service responsibilities (Misra et al., 2012) and experience more barriers to academic productivity (Collins et al., 2021; Cui et al., 2022; Fazackerley, 2020; Kitchener, 2020; Myers et al., 2020; Watchorn & Heckendorf, 2020). Figure 3 below further illustrates how extra demands during the pandemic vary by gender and caregiver status.

Figure 3.

Extra Demands during the Pandemic (N=435)



Note. (1) We used chi-square tests to look for significant differences across four groups, caregiving men, caregiving women, non-caregiving men, and non-caregiving women. (2) *p<0.05; **p<0.01. The statistical significance indicates a significant difference across four groups, not identifying which specific groups differ from each other. (3) Error bars represent 95% confidence intervals of percentages of each group.

As shown in the first subgraph in Figure 3, women faculty who were primary caregivers were the most likely to face extra teaching and mentoring demands, while non-caregiving men were the least likely to experience those extra demands. Similarly, as shown in the second and third subgraphs in Figure 3, for service demands at work (e.g., chairing/serving on committees etc.) and care demands at home, caregiving women were the most likely to face these extra demands. While caregiving men faced high levels of extra care demands, and non-caregiving women faced high demand for service, teaching, and mentoring, caregiving women faced the highest levels of demand in all three areas. Non-caregiving women faced high demand for service, teaching, and mentoring, while caregiving women faced the highest levels of demand in all three areas. Thus, analyzing the intersection between caregiving and gender makes the pandemic challenges faced by caregiving women more visible.

How Do Caregiving Burdens and Health Issues Affect Inclusion?

In Table 2, we present results for how faculty's feeling of inclusion is associated with caregiving burdens and health issues during the pandemic. Model 1 shows the results of our baseline model with gender and caregiving status, race, sexuality, rank, and field. In terms of racial differences, faculty from historically minoritized groups felt less included compared to white faculty. We did not find significant differences between Asian faculty and white faculty, which might reflect the small sample size of Asian participants (N=22). Similarly, we did not find significant differences by sexuality, which might relate to the small sample size of LGBTQIA+ participants (N=20). Compared to full Professors, non-tenure-track faculty feel less included ($p<0.1$). Lastly, we did not find significant differences by field. The effects of the control variables remain robust after including measures of caregiving impacts and health issues in Models 2 and 3.

Table 2.

Linear Regression Models Predicting Faculty Inclusion (N=263)

	Model 1 Baseline Factors	Model 2 Care Demands	Model 3 Health Concerns
Care demands limited my work		-1.010*	
		(0.429)	
Health limited my work			-1.392*
			(0.604)
Men Caregivers	-0.065	0.283	-0.058
(r: Men Non-caregivers)	(0.506)	(0.523)	(0.502)
Women Caregivers	-0.731	-0.226	-0.661
	(0.499)	(0.539)	(0.496)
Women Non-caregivers	-1.352*	-1.461*	-1.352*
	(0.575)	(0.572)	(0.570)
Asian (r: White)	0.032	0.142	0.123
	(0.684)	(0.679)	(0.679)

	Model 1 Baseline Factors	Model 2 Care Demands	Model 3 Health Concerns
Historically minoritized groups	-1.036*	-1.102*	-1.043*
(r: White)	(0.518)	(0.515)	(0.514)
LGBTQIA+ (r: Heterosexual)	-0.430	-0.392	-0.280
	(0.691)	(0.685)	(0.688)
Rank: NTT (r: Full Professor)	-0.945+	-1.050*	-0.967*
	(0.484)	(0.481)	(0.480)
Rank: Assistant	0.058	0.213	0.223
	(0.527)	(0.526)	(0.527)
Rank: Associate	-0.115	0.125	-0.025
	(0.516)	(0.521)	(0.513)
Not-STEM (r: STEM)	-0.026	-0.054	0.005
	(0.396)	(0.392)	(0.393)
Constant	10.937***	11.131***	10.985***
	(0.433)	(0.437)	(0.429)
Observations	263	263	263
R^2	0.063	0.083	0.083
Note:	+p<0.1; *p<0.05; **p<0.01; ***p<0.001		

Model 2 adds a measure of COVID-related caregiving burdens, showing that those who experienced such limitations felt significantly less included, controlling for other factors. This supports Hypothesis 1 which states that faculty whose caregiving responsibilities limit their work feel less included during the pandemic. Given that women faculty did disproportionately more care work during the pandemic, we had hypothesized that women caregivers might feel particularly less included in their departments (Hypothesis 2). Yet we find that women non-caregivers feel significantly less included compared to men non-caregivers, while both women caregivers and men caregivers do not show significant differences from men non-caregivers in how they experience inclusion in their departments. The fact that women non-caregivers are the group feeling the least included, is a surprising finding that does not support Hypothesis 2.

Yet, as mentioned above, we also examined care demands that limited the ability/time to work on research or creative work during the pandemic. The negative effect of these demands is particularly telling since the model already controls for caregiving status. For those who experience work limitations due to care responsibilities (e.g., caring for seniors or young children), such demands are negatively associated with their feelings of inclusion within the department. Thus, while we do not find that faculty who are caregivers felt less included compared to faculty who are non-caregivers, there is a negative effect on faculty who report that caregiving limited their ability to work, with a decrease in feelings of inclusion of 1.01 (a substantial change on an index ranging from 3 to 15). Faculty members whose pandemic-related care responsibilities stood in the way of their work continue to feel, in 2022, less included. In addition, we noticed gender differences in experiencing care demands that limited work—52.4% of women faculty reported such work limitation while only 41% of men faculty reported being negatively affected by caregiving.

Model 3 adds a measure of COVID-related health concerns. As Model 3 shows, health issues are negatively correlated with inclusion, controlling for other factors; this result is statistically significant ($p<0.05$), supporting Hypothesis 3 which states that faculty with health issues limiting their work feel less included during the pandemic. We see a decrease of 1.39 (again, a large change on an index ranging from 3 to 15) in feelings of inclusion if faculty reported health issues impacting their work during the pandemic. This finding suggests that faculty who have experienced limitations on their work due to health issues feel much less included in their departments in 2022, controlling for other factors.

Discussion and Conclusion

Our study of faculty inclusion as an *outcome* allows new insights on the effects of the COVID-19 pandemic on faculty equity. The existing literature notes that the pandemic restricted faculty research time because of more time spent on teaching and service, which could have long-lasting effects on faculty productivity (NASEM, 2021). Yet, few studies have explored other pandemic impacts, such as faculty inclusion. In this post-acute pandemic phase, it is critical to consider how to strengthen feelings of inclusion and belonging among faculty. Our research shows that two groups particularly need greater support: those who faced pandemic-related care demands and experienced health issues that limited their work.

Our study analyzed faculty surveys from two different time points in the same US university campus, from before the pandemic (2018) and after the acute period of the pandemic lockdown (2022). Overall, we found that faculty felt much less included after the pandemic hit, even after controlling for key demographic characteristics such as gender, caregiving status, sexuality, race, rank, and discipline. When we further examined the major negative pandemic impacts that faculty experienced, those disruptions to scholarship included extra demands, such as teaching, mentoring, service, and family or care demands. Aligned with the existing literature (Collins et al., 2021; Cui et al., 2022; Fazackerley, 2020; Kitchener, 2020; Myers et al., 2020; Watchorn & Heckendorf, 2020), our survey shows that such burdens are distributed unequally among faculty. Women caregivers are more likely to experience extra demands that negatively impact their research productivity.

Regression analyses based on the 2022 data show the additional effects of COVID-related caregiving demands and health issues. Controlling for demographic characteristics, faculty who experienced health issues are less likely to feel included. In terms of caregiving, we

measure both caregiving status (e.g., primary caregiver for children or adult family members) and caregiving impacts (i.e., whether family or care demands limit work during the pandemic). Thus, we can separate the effect of being a caregiver and the effect of COVID-related caregiving burdens. Caregiving affects faculty careers differently by gender, with women caregivers experiencing more disruptions in their careers (Wolfinger et al., 2009). Surprisingly, we found women *non*-caregivers feel the most excluded among all faculty, which held up both before and after controlling for caregiving impacts. Non-caregivers, on the one hand, may have more time to ruminate on how the pandemic has been alienating, while caregivers are too busy for this kind of reflection. On the other hand, non-caregivers—especially women—may be asked to do more service in the workplace which could lead to resentment and frustration. Although being asked to do more in the department may seem inclusive on the face of it, if a faculty member is asked to take on more service work because she has 'no family responsibilities,' that kind of message feels marginalizing. As for the caregivers feeling relatively more included, it is possible that being a caregiver captures some benefits of having family around during lockdowns. If caregiving faculty have more interactions with their family at home and receive the social support that they need there, it could have some protective effects on their feelings of inclusion in the workplace.

Importantly, we find when caregiving is perceived as getting in the way of productivity, it contributes to unequal burdens on faculty and results in feelings of exclusion. Controlling for caregiving status, we found that faculty members who expressed concerns about care demands limiting their ability to work are less likely to feel included. Future research could investigate whether those reporting family caregiving as a barrier to work are also experiencing more caregiving of students and colleagues in the workplace, and intersectional workload inequalities

that affect time for scholarship. Perhaps compounding effects of different caregiving demands across faculty members' relationships may be affecting feelings of exclusion at work. Our findings leave us with questions that indicate further research on caregiving locations—at work and at home—and how those burdens are gendered and racialized, is needed.

Limitations and Future Directions

As with all survey research, there are limitations to studying underrepresented groups of people. While we were able to include race and gender identity in our quantitative models, the on-the-ground lived experience of faculty from marginalized groups is something we cannot speak to and requires qualitative data analysis (Turner et al., 2011; Zambrana, 2019). For example, we know from qualitative interview-based research that women faculty of color experience both active and passive exclusion in academia and over-inclusion in certain types of racialized and gendered service work (Misra et al., 2024). Although we know that interlocking systems of power are inseparable and there are important impacts of race, disability status, and other social locations on gendered experiences (Crenshaw, 1991), our data limited these insights for this study, including for women of color and faculty with disabilities. Our survey faced limitations in the number of faculty respondents for key intersecting categories, which unfortunately does not allow the results to speak to experiences of inclusion specific to women faculty of color. Further research is needed, including qualitative observations of departmental life for faculty, and participatory research that engages with minoritized academics across all disciplines. What findings from our survey do suggest is that qualitative research on inclusion in the post-acute pandemic period of faculty life is particularly needed among faculty from historically minoritized groups facing caregiving and health burdens.

An additional limitation of our particular faculty survey is that we do not have a measure

of disability status, although we do see that health concerns drive a lack of inclusion. On the one hand, this health concern variable may be an indicator of the negative effects of ableism on inclusion, regardless of the pandemic. Faculty who identify as people with disabilities might be more likely to report burdensome health concerns and might struggle to meet expectations based on ableist standards of productivity, potentially contributing to feelings of exclusion in the workplace. On the other hand, people with strong disability identities have been found to better navigate social stress (Forber-Pratt & Zape, 2017). Unfortunately, we do not have the data to demonstrate how disability status may be related to inclusion. Including survey items on disability would be a start, but even beyond that, more study of the intersection of ableism with gender, race, class, and sexuality is needed.

Another limitation of this study is that our model fit statistics (such as R-squared, see Table 2) are quite low, suggesting that other factors explaining faculty members' lack of inclusion might not be reflected in our models. Perhaps general malaise and burnout are operating in ways not captured in the survey items we used. Threats to higher education and culture wars in the United States may further increase faculty's sense of exclusion from their work. We do not have these observations in our data. But what is clear is that faculty need social support to thrive, be productive, and train the next generation of scientists and leaders. Future research should investigate the kinds of social support that make all faculty feel included—especially those with caregiving and health concerns.

Implications for Institutional Transformation

Despite its limitations, there are some implications we can draw from our study. We find that faculty who experienced personal health issues and those who have high caregiving burdens are less likely to feel included. Our findings suggest that greater institutional support is needed to

provide accommodations to faculty with health issues and additional support for caregiving faculty. From the literature, recommendations for supporting caregiving faculty include on-campus childcare facilities, emergency grants for elder and family care, and paid leave time (Anicha et al., 2024; Cronley & Ravi, 2021; Marchetti et al., 2024; NASEM, 2024; Thébaud et al., 2024). Caregiving and health concerns are two aspects of life that almost all faculty will encounter at some point during their careers, thus support for these situations benefits all faculty.

Yet we also need policies that allow these faculty to develop deeper and more meaningful connections with their colleagues. The pandemic has shut doors and limited opportunities for spontaneous connection. Focusing on rebuilding faculty intellectual communities and life may appear less critical than other challenges facing colleges and universities; yet, ignoring these issues will likely lead some faculty—those whose pandemic-related caregiving and health burdens had the largest impact—to leave academia. Institutions must redouble their efforts to bring faculty back into meaningful dialogue and engagement.

Institutions that want to transform toward greater inclusive practices need to consider a variety of solutions to support faculty with different needs. One approach for creating greater feelings of inclusion may be moving from remote-only faculty meetings to in-person meetings. However, such practices need to pay careful attention to caregiving and health issues and disability status of faculty to make sure such a move would not exacerbate exclusionary effects exactly for those faculty who already feel least included. Providing safe, accessible in-person meeting spaces is paramount. Creative thinking (e.g., how to stage outdoor meetings that everyone can join safely, asking colleagues to wear masks in order to make spaces more accessible to faculty with disabilities, creating events where families and pets are welcome) is needed.

Unfortunately, universities and colleges often treat accommodations for faculty in ways that stigmatize individual members who need the support to do their best work. Faculty are deeply committed to their work, and rather than treat them as potential shirkers, higher education organizations that provide generous support to faculty will outcompete other institutions and retain the most excellent, diverse faculty. To know more about the challenges on their particular campus, it is also crucial for universities and colleges to conduct faculty climate surveys regularly (Thébaud et al., 2024). Understanding the continuing disparate effects of the pandemic and the role of institutional supports, are necessary conditions to improve faculty inclusion over time. For faculty members, rather than relying on the goodwill of administrative leaders, supporting strong faculty governance and unionization (Dominguez-Villegas et al., 2020) may be the most effective strategy for instituting practices that support caregivers and those with health issues.

Although our data for this study do not speak to the departmental level, previous research has shown the importance of this level of faculty life for inclusion. At the departmental level, previous research on inclusion provides some suggestions for practices that can transform workplaces for all faculty, but especially for the experiences of minoritized faculty. Feelings of inclusion are positively affected by regular social interactions among faculty (Stewart, 2018). Departments can create inclusive environments with regular faculty meetings, regular one-on-one meetings with the Department Chair and with members of promotion committees, meaningful committee work, research talks, writing groups, teaching practice groups, and annual social events (Misra, 2019). Building a sense of belonging through mentoring relationships is especially important for the retention of women of color faculty (Goltz & Sotirin 2024; Russell, 2022). Meaningful mentoring for women of color faculty includes work-focused sessions like

writing sessions, and departmental recognition of women faculty—not just as mentors, but also those who have successfully sought out mentoring support for themselves in creative ways (Wheaton & Moore, 2020). Faculty retention, especially for women of color faculty, is accomplished through universities providing equitable access to resources, relationships, and recognition (Misra et al., 2017; Smith-Doerr et al., 2023). Inclusion follows from support for positive connective ties and relationships among faculty.

Acknowledgments

Research in this paper was supported by funding from National Science Foundation Award #1824090/#2136150. The findings and opinions presented are those of the authors and do not necessarily represent the views of the funder. The authors gratefully acknowledge support from the UMass ADVANCE leadership team as well as comments from participants at the 2023 ADVANCE Equity in STEM Community Convening and American Sociological Association conference.

References

Abram, S. (2003). The Americans with Disabilities Act in higher education: The plight of disabled faculty. *Journal of Law & Education*, *32*(1), 1–20. https://scholarcommons.sc.edu/jled/vol32/iss1/3

American College Health Association. (2022). *American College Health Association-national faculty & staff health assessment II: Reference group data report Fall 2021*. American College Health Association. https://www.acha.org/wp-content/uploads/2024/07/ACHA-NFSHA_FALL_2021_REFERENCE_GROUP_DATA_REPORT.pdf

Americans With Disabilities Act of 1990, 42 U.S.C. § 12101 et. seq. (1990). www.ada.gov/archive/adastat91.htm

Anicha, C. L., Aragon, C. R., Bilen-Green, C., Blaser, B., & Burgstahler, S. (2024). A continuum of actions you can take now to ADVANCE disability equity: A report from the field. *ADVANCE Journal*, *4*(2). https://doi.org/10.5399/osu/ADVJRNL.4.2.9

Anwer, M. (2020). Academic labor and the global pandemic: Revisiting life-work balance under COVID-19. *Susan Bulkeley Butler Center for Leadership Excellence and ADVANCE Working Paper Series*, *3*(2), 5–13. https://www.purdue.edu/butler/documents/5-wps-2020-special

Boisaubin, E.V. (2009). Causes and treatment of impairment and burnout in physicians: The epidemic within. In T. R. Cole, T. J. Goodrich, & E. R. Gritz (Eds.), *Faculty health in academic medicine: Physicians, scientists, and the pressures of success* (pp. 29–38). Humana Press. https://doi.org/10.1007/978-1-60327-451-7_3

Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review

of the evidence. *The Lancet*, *395*(10227), 912–920. https://doi.org/10.1016/S0140-6736(20)30460-8

Brown, T. H., Richardson, L. J., Hargrove, T. W., & Thomas, C. S. (2016). Using multiple-hierarchy stratification and life course approaches to understand health inequalities: The intersecting consequences of race, gender, SES, and age. *Journal of Health and Social Behavior*, *57*(2), 200–222. https://doi.org/10.1177/0022146516645165

Carpenter, M. A., Cotter, D. A., & Berheide, C. W. (2021). "I have no time for anything:" Differences in faculty research productivity during the COVID-19 pandemic. *ADVANCE Journal*, *2*(3). https://doi.org/10.5399/osu/ADVJRNL.2.3.3

Cech, E. A., & Blair-Loy, M. (2019). The changing career trajectories of new parents in STEM. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(10), 4182–4187. https://doi.org/10.1073/pnas.1810862116

Cohen, S. A., Sabik, N. J., Cook, S. K., Azzoli, A. B., & Mendez-Luck, C. A. (2019). Differences within differences: Gender inequalities in caregiving intensity vary by race and ethnicity in informal caregivers. *Journal of Cross-Cultural Gerontology*, *34*(3), 245–263. https://doi.org/10.1007/s10823-019-09381-9

Collins, C., Landivar, L. C., Ruppanner, L., & Scarborough, W. J. (2021). COVID-19 and the gender gap in work hours. *Gender, Work & Organization*, *28*(S1), 101–112. https://doi.org/10.1111/gwao.12506

Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review*, *43*(6), 1241–1299. https://doi.org/10.2307/1229039

Cronley, C., & Ravi, K. E. (2021). Maintaining career momentum: Women-centered strategies for social sciences career success in the context of COVID-19. *ADVANCE Journal*, *2*(3). https://doi.org/10.5399/osu/advjrnl.2.3.9

Cui, R., Ding, H., & Zhu, F. (2022). Gender inequality in research productivity during the COVID-19 pandemic. *Manufacturing & Service Operations Management*, *24*(2), 707–726. https://doi.org/10.1287/msom.2021.0991

Dominguez-Villegas, R., Smith-Doerr, L., Renski, H., & Sekarasih, L. (2020). Labor unions and equal pay for faculty: A longitudinal study of gender pay gaps in a unionized institutional context. *Journal of Collective Bargaining in the Academy*, *11*(1). https://doi.org/10.58188/1941-8043.1793

Douglas-Gabriel, D. (2020, March 17). With spotty sick leave and health care, adjunct professors worry about the spread of coronavirus. *The Washington Post*. https://www.washingtonpost.com/education/2020/03/17/with-spotty-sick-leave-health-care-adjunct-professors-worry-about-spread-coronavirus/

Ecklund, E. H., & Lincoln, A. E. (2016). *Failing families, failing science: Work-family conflict in academic science.* New York University Press.

Eikhof, D. R. (2020). COVID-19, inclusion and workforce diversity in the cultural economy: What now, what next? *Cultural Trends*, *29*(3), 234–250. https://doi.org/10.1080/09548963.2020.1802202

Eligon, J., Burch, A. D. S., Searcey, D., & Jr, R. A. O. (2020, April 7). Black Americans face alarming rates of coronavirus infection in some states. *The New York Times*. https://www.nytimes.com/2020/04/07/us/coronavirus-race.html

Fazackerley, A. (2020, May 12). Women's research plummets during lockdown—But articles from men increase. *The Guardian*. https://www.theguardian.com/education/2020/may/12/womens-research-plummets-during-lockdown-but-articles-from-men-increase?CMP=share_btn_tw

Forber-Pratt, A. J., & Zape, M. P. (2017). Disability identity development model: Voices from the ADA-generation. *Disability and Health Journal*, *10*(2), 350–355. https://doi.org/10.1016/j.dhjo.2016.12.013

Fox, M. F. (2010). Women and men faculty in academic science and engineering: Social-organizational indicators and implications. *American Behavioral Scientist*, *53*(7), 997–1012. https://doi.org/10.1177/0002764209356234

Gautam, M. (2009). Measuring and Maintaining Faculty Health. In T. R. Cole, T. J. Goodrich, & E. R. Gritzn (Eds.), *Faculty health in academic medicine: Physicians, scientists, and the pressures of success* (pp. 39–52). Humana Press. https://doi.org/10.1007/978-1-60327-451-7_4

Goltz, S., & Sotirin, P. (2024). Reflections on experience: A community of practice mentoring initiative for mid-career professionals. *ADVANCE Journal, 5*(2). https://doi.org/10.5399/osu/ADVJRNL.5.2.5

Gonzales, L. D., & Griffin, K. A. (2020). *Supporting Faculty During & After COVID-19: Don't let go of equity*. Aspire Alliance.

Gould, E., & Wilson, V. (2020). Black workers face two of the most lethal preexisting conditions for coronavirus—Racism and economic inequality. *Economic Policy Institute.* https://www.epi.org/publication/black-workers-covid/

Grigoryeva, A. (2017). Own gender, sibling's gender, parent's gender: The division of elderly parent care among adult children. *American Sociological Review*, *82*(1), 116–146. https://doi.org/10.1177/0003122416686521

Hartmann, K. E., Sundermann, A. C., Helton, R., Bird, H., & Wood, A. (2018). The scope of extraprofessional caregiving challenges among early career faculty: Findings from a university medical center. *Academic Medicine*, *93*(11), 1707–1712. https://doi.org/10.1097/ACM.0000000000002229

Jack, T., & Glover, A. (2021). Online conferencing in the midst of COVID-19: An "already existing experiment" in academic internationalization without air travel. Sustainability: Science, Practice and Policy, 17(1), 292–304. https://doi.org/10.1080/15487733.2021.1946297

Jolly, S., Griffith, K. a, DeCastro, R., Stewart, A., Ubel, P., & Jagsi, R. (2014). Gender differences in time spent on parenting and domestic responsibilities by high-achieving young physician-researchers. *Annals of Internal Medicine*, *160*(5), 344–353. https://doi.org/10.7326/M13-0974

Kandlur, R., Hager, N. M., & Glenn, C. R. (2024). Transitioning back to campus: resource needs and disparities among college and university members during the COVID-19 pandemic. *Perspectives: Policy and Practice in Higher Education*, 1–13. https://doi.org/10.1080/13603108.2024.2384984

Kitchener, C. (2020). Women academics submitting fewer papers to journals during coronavirus. *The Washington Post*. https://www.washingtonpost.com/gender-identity/women-academics-seem-to-be-submitting-fewer-papers-during-coronavirus-never-seen-anything-like-it-says-one-editor/

Kossek, E. E., Dumas, T. L., Piszczek, M. M., & Allen, T. D. (2021). Pushing the boundaries: A qualitative study of how stem women adapted to disrupted work–nonwork boundaries during the COVID-19 pandemic. *Journal of Applied Psychology*, *106*(11), 1615–1629. https://doi.org/10.1037/apl0000982

Lindsay, S., & Fuentes, K. (2022). It is time to address ableism in academia: A systematic review of the experiences and impact of ableism among faculty and staff. *Disabilities*, *2*(2), 178–203. https://doi.org/10.3390/disabilities2020014

Marchetti, C. E., Foster, S. B., Schley, S., Bailey, M. B., & Kavin, D. (2024). Pathways of women who are deaf and hard-of-hearing to faculty careers in higher education. *ADVANCE Journal*, *4*(2). https://doi.org/10.5399/osu/ADVJRNL.4.2.4

Mason, M. A., Wolfinger, N. H., & Goulden, M. (2013). *Do Babies Matter?* Rutgers University Press. http://www.jstor.org/stable/j.ctt5hj7tp

Matias, T., Dominski, F. H., & Marks, D. F. (2020). Human needs in COVID-19 isolation. *Journal of Health Psychology*, *25*(7), 871–882. https://doi.org/10.1177/1359105320925149

McDonald, K. E., Keys, C. B., & Balcazar, F. E. (2007). Disability, race/ethnicity and gender: Themes of cultural oppression, acts of individual resistance. *American Journal of Community Psychology*, *39*(1–2), 145–161. https://doi.org/10.1007/s10464-007-9094-3

Mickey, E. L., Misra, J., & Clark, D. (2023). The persistence of neoliberal logics in faculty evaluations amidst Covid-19: Recalibrating toward equity. *Gender, Work and Organization*, *30*(2), 638–656. https://doi.org/10.1111/gwao.12817

Minello, A. (2020, April 17). *The pandemic and the female academic*. Nature. https://www.nature.com/articles/d41586-020-01135-9

Minnotte, K. L., & Pedersen, D. E. (2019). Department environment and work-to-life conflict among faculty in the stem fields. *Journal of Family Issues*, *40*(10), 1299–1320. https://doi.org/10.1177/0192513X19837316

Misra, J. (2019). *Faculty mentoring best practices.* University of Massachusetts Amherst. https://doi.org/10.7275/ygcn-sc38

Misra, J., Kane-Lee, E. S., Mickey, E., & Smith-Doerr, L. (2024). "I don't believe that I have been wanted": Processes of overinclusion and exclusion in racialized and gendered organizations. *Social Problems*, spae043. https://doi.org/10.1093/socpro/spae043

Misra, J., Lundquist, J. H., & Templer, A. (2012). Gender, work time, and care responsibilities among faculty. *Sociological Forum*, *27*(2), 300–323. https://doi.org/10.1111/j.1573-7861.2012.01319.x

Misra, J., Smith-Doerr, L., Dasgupta, N., Weaver, G., & Normanly, J. (2017). Collaboration and gender equity among academic scientists. *Social Sciences*, *6*(1), 25. https://doi.org/10.3390/socsci6010025

Moors, A. C., Malley, J. E., & Stewart, A. J. (2014). My family matters: Gender and perceived support for family commitments and satisfaction in academia among postdocs and faculty in STEMM and non-STEMM fields. *Psychology of Women Quarterly*, *38*(4), 460–474. https://doi.org/10.1177/0361684314542343

Moors, A. C., Stewart, A. J., & Malley, J. E. (2022). Gendered impact of caregiving responsibilities on tenure track faculty parents' professional lives. *Sex Roles*, *87*(9–10), 498–514. https://doi.org/10.1007/s11199-022-01324-y

Myers, K. R., Tham, W. Y., Yin, Y., Cohodes, N., Thursby, J. G., Thursby, M. C., Schiffer, P., Walsh, J. T., Lakhani, K. R., & Wang, D. (2020). Unequal effects of the COVID-19

pandemic on scientists. *Nature Human Behaviour*, *4*(9), 880–883. https://doi.org/10.1038/s41562-020-0921-y

National Academies of Sciences, Engineering, and Medicine. (2021). *The impact of COVID-19 on the careers of women in academic sciences, engineering, and medicine*. The National Academies Press. https://doi.org/10.17226/26061

National Academies of Sciences, Engineering, and Medicine. (2024). *Supporting family caregivers in STEMM: A call to action*. The National Academies Press. https://doi.org/10.17226/27416

O'Brien, A. (2014). 'Men own television': Why women leave media work. *Media, Culture & Society*, *36*(8), 1207–1218. https://doi.org/10.1177/0163443714544868

Price, M. (2021). Time harms: Disabled faculty navigating the accommodations loop. *South Atlantic Quarterly*, *120*(2), 257–277. https://doi.org/10.1215/00382876-8915966

Price, M., Salzer, M. S., O'Shea, A., & Kerschbaum, S. L. (2017). Disclosure of mental disability by college and university faculty: The negotiation of accommodations, supports, and barriers. *Disability Studies Quarterly*, *37*(2), 1–18. https://doi.org/10.18061/dsq.v37i2.5487

Read, J. G., & Gorman, B. K. (2006). Gender inequalities in US adult health: The interplay of race and ethnicity. *Social Science & Medicine*, *62*(5), 1045–1065. https://doi.org/10.1016/j.socscimed.2005.07.009

Russell, M. (2022). African American women faculty at predominantly white institutions (PWIs): Empowering through mentoring. *ADVANCE Journal*, *3*(1). https://doi.org/10.5399/osu/ADVJRNL.3.1.9

Saltes, N. (2020). Disability barriers in academia: An analysis of disability accommodation policies for faculty at Canadian universities. *Canadian Journal of Disability Studies*, *9*(1), 53–90. https://doi.org/10.15353/cjds.v9i1.596

Sayer, L. C. (2005). Gender, time and inequality: Trends in women's and men's paid work, unpaid work and free time. *Social Forces*, *84*(1), 285–303. https://doi.org/10.1353/sof.2005.0126

Schneider, M. C., Graham, L., Hornstein, A. S., LaRiviere, K. J., Muldoon, K. M., Shepherd, S. L., & Wagner, R. (2021). Caregiving, disability and gender in academia in the time of covid-19. *ADVANCE Journal*, *2*(3). https://doi.org/10.5399/osu/ADVJRNL.2.3.5

Schur, L. A., Ameri, M., & Kruse, D. (2020). Telework after COVID: A "silver lining" for workers with disabilities? *Journal of Occupational Rehabilitation*, *30*(4), 521–536. https://doi.org/10.1007/s10926-020-09936-5

Shigaki, C. L., Anderson, K. M., Howald, C. L., Henson, L., & Gregg, B. E. (2012). Disability on campus: A perspective from faculty and staff. *Work*, *42*(4), 559–571. https://doi.org/10.3233/WOR-2012-1409

Skarupski, K. A., Roth, D. L., & Durso, S. C. (2021). Prevalence of caregiving and high caregiving strain among late-career medical school faculty members: Workforce, policy, and faculty development implications. *Human Resources for Health*, *19*(1), 1–9. https://doi.org/10.1186/S12960-021-00582-3/TABLES/1

Skinner, M., Betancourt, N., & Wolff-Eisenberg, C. (2021, May 13). *The disproportionate impact of the pandemic on women and caregivers in academia*. The Chronicle of Higher Education. https://www.chronicle.com/professional-development/report/the-disproportionate-impact-of-the-pandemic-on-women-and-caregivers-in-academia

Smith-Doerr, L., Mickey, E. L., & Kane-Lee, E. S. W. (2023). Deciding together as faculty: Narratives of unanticipated consequences in gendered and racialized departmental service, promotion, and voting. *Journal of Organizational Sociology*, *1*(2), 171–198. https://doi.org/10.1515/joso-2023-0004

Stadtlander, L., & Sickel, A. (2021). A qualitative study examining home as faculty workplace during COVID-19 self-isolation. *Higher Learning Research Communications*, *11*(0), 96–105. https://doi.org/10.18870/HLRC.V11I0.1218

Statistics Canada. (2020, September 22). *Unfair treatment, discrimination or harassment among postsecondary faculty and researchers*. https://doi.org/10.25318/3710016901-eng

Stewart, A. J. (2018). *An inclusive academy: Achieving diversity and excellence*. The MIT Press.

Stygles, K. N. (2016). Queering academia: Queer faculty mothers and work-family enrichment. *Higher Education Ph.D. Dissertations*, *71*. https://scholarworks.bgsu.edu/he_diss/71

Thébaud, S., Hoppen, C., David, J., & Boris, E. (2024). Understanding gender disparities in caregiving, stress, and perceptions of institutional support among faculty during the covid-19 pandemic. *Social Sciences*, *13*(4), 181. https://doi.org/10.3390/socsci13040181

Thomas, C. M., Bantz, D. L., & Mcintosh, C. E. (2019). Nurse faculty burnout and strategies to avoid it. *Teaching and learning in nursing*, *14*(2), 111–116. https://doi.org/10.1016/j.teln.2018.12.005

Turner, C. S. V., Carlos Gonzalez, J., & Wong (Lau), K. (2011). Faculty women of color: The critical nexus of race and gender. *Journal of Diversity in Higher Education*, *4*(4), 199–211. https://doi.org/10.1037/a0024630

Warner, D. F., & Brown, T. H. (2011). Understanding how race/ethnicity and gender define age-trajectories of disability: An intersectionality approach. *Social Science & Medicine*, *72*(8), 1236–1248. https://doi.org/10.1016/j.socscimed.2011.02.034

Watchorn, D., & Heckendorf, E. (2020, December 21). *Busier than ever and burned out – New research reveals the realities of publishing in a pandemic*. https://blog.degruyter.com/busier-than-ever-and-burned-out-new-research-reveals-the-realities-of-publishing-in-a-pandemic/

Wheaton, D., & Moore, L. (2020). Advancing women of color in stem through meaningful mentoring: Key observations from the Jackson State University advance institutional transformation project. *ADVANCE Journal*, *1*(2). https://doi.org/10.5399/osu/ADVJRNL.1.2.5

Wolfinger, N. H., Mason, M. A., & Goulden, M. (2009). Stay in the game: Gender, family formation and alternative trajectories in the academic life course. *Social Forces*, *87*(3), 1591–1621. https://doi.org/10.1353/sof.0.0182

Xie, Y., & Shauman, K. A. (2005). *Women in science: Career processes and outcomes*. Harvard University Press.

Zahneis, M. (2020, March 18). *The COVID-19 crisis is widening the gap between secure and insecure instructors*. The Chronicle of Higher Education. https://www.chronicle.com/article/the-covid-19-crisis-is-widening-the-gap-between-secure-and-insecure-instructors/

Zambrana, R. E. (2019). *Toxic ivory towers: The consequences of work stress on underrepresented minority faculty*. Rutgers University Press. https://doi.org/10.36019/9780813593012

Appendix **Table A1.** Logistic Regression Results Showing How Faculty's Feelings of Inclusion and Experiences of Decision-making Differ between the Pre-pandemic Period (2018) and the Post-acute Pandemic Period (2022)

	Dichotomous dependent variable in each model:						
	Feel Connected	Satisfied w/Professional Interactions	Satisfied w/ Social Interactions	Chair Consults Opinion	Chair Values Opinion	Communicate Concerns to Chair	Colleagues Value Opinion
Year 2022 (reference: 2018)	-0.462**	-0.664***	-0.469**	-1.364***	-0.268	-0.360*	-0.279
	(0.164)	(0.164)	(0.161)	(0.189)	(0.183)	(0.174)	(0.174)
Men Caregiver (reference: Men Non-caregiver)	-0.025	-0.017	-0.272	-0.334	-0.359	0.079	-0.245
	(0.233)	(0.232)	(0.221)	(0.270)	(0.261)	(0.244)	(0.245)
Women Caregiver (reference: Men Non-caregiver)	-0.132	-0.197	-0.225	-0.323	-0.536*	-0.103	-0.313
	(0.227)	(0.226)	(0.219)	(0.263)	(0.253)	(0.238)	(0.239)
Women Non-caregiver (reference: Men Non-caregiver)	-0.435+	-0.734**	-0.821***	-0.789**	-0.630*	-0.006	-0.404
	(0.242)	(0.241)	(0.241)	(0.281)	(0.270)	(0.258)	(0.255)
Asian (reference: White)	0.188	0.249	0.078	-0.085	-0.122	-0.008	-0.041
	(0.290)	(0.298)	(0.278)	(0.325)	(0.315)	(0.306)	(0.300)
Historically minoritized groups (reference: White)	-0.183	-0.237	-0.036	-0.257	-0.605*	-0.022	-0.408
	(0.235)	(0.235)	(0.234)	(0.270)	(0.263)	(0.263)	(0.259)
LGBTQIA+ (reference: Heterosexual)	-0.534*	-0.459+	-0.433+	-0.792**	-0.386	0.036	-0.203
	(0.253)	(0.255)	(0.257)	(0.286)	(0.278)	(0.266)	(0.275)
Rank: NTT (reference: Full Professor)	-0.761***	-0.333	-0.283	-0.900***	-0.865***	-0.848***	-1.123***
	(0.207)	(0.206)	(0.204)	(0.243)	(0.229)	(0.223)	(0.225)
Rank: Assistant (reference: Full Professor)	-0.596*	-0.050	0.001	-0.409	-0.268	-0.895***	-0.568*
	(0.236)	(0.238)	(0.234)	(0.268)	(0.260)	(0.249)	(0.258)
Rank: Associate (reference: Full Professor)	-0.291	-0.002	0.033	-0.440+	0.094	-0.511*	-0.637**
	(0.230)	(0.229)	(0.221)	(0.258)	(0.252)	(0.239)	(0.232)

Not-STEM (reference: STEM)	-0.151	-0.316^{+}	-0.132	0.296	0.247	-0.133	0.267
	(0.182)	(0.181)	(0.180)	(0.212)	(0.205)	(0.197)	(0.194)
Constant	1.227***	1.083***	0.531**	1.998***	1.323***	0.956***	0.994***
	(0.210)	(0.207)	(0.195)	(0.257)	(0.231)	(0.216)	(0.214)
Observations	693	692	688	605	591	605	609
Log Likelihood	-445.826	-447.348	-461.986	-351.518	-373.010	-398.579	-400.908
Akaike Inf. Crit.	915.652	918.695	947.971	727.036	770.019	821.158	825.816
Note:	+p<0.1; *p<0.05; **p<0.01; ***p<0.001						

COVID, CAREGIVING, HEALTH, AND FACULTY INCLUSION

Shuyin Liu is a doctoral student in the Department of Sociology at the University of Massachusetts, Amherst. She serves as the graduate research assistant on the NSF ADVANCE-IT grant at the University of Massachusetts, Amherst. Broadly, her research interests include gender, work and family, unpaid family labor, and social demography. Her dissertation project examines how women navigate the time commitment and financial demands associated with housework and caregiving, and the role that household structures play in the division of household labor.

Laurel Smith-Doerr is Professor of Sociology and served as PI of the NSF ADVANCE-IT grant at the University of Massachusetts, Amherst. In addition to centering faculty equity in crisis times like COVID-19, her ADVANCE-related research focuses on intersectional equity in faculty governance and research collaboration. She is Co-PI on an interdisciplinary NSF Future of Work at the Human-Technology Frontier grant that reimagines the future of work in trucking, with a driver-centered approach and an eye to researching how truck driving—in the face of automation and AI—can continue to be a good job that creates opportunities and access for more workers.

Dessie Clark is the Director of Curriculum Development and Implementation for the University of Wisconsin-Madison Inclusion in Science and Engineering Leadership Institute. Dr. Clark received an M.Ed. in Community Development and Action from Vanderbilt University and a PhD in Community Sustainability from Michigan State University. She implements and conducts research on interventions and educational modules designed to increase the diversity of faculty

and leaders in academic science, technology, engineering, mathematics, and medicine (STEMM).

Joya Misra is Provost Professor at the University of Massachusetts, Amherst. She has been a co-PI and PI on the NSF ADVANCE-IT grant at the University of Massachusetts, Amherst focused on collaboration and equity, and Massachusetts Team Leader on the NSF ADVANCE-Plan-IHE grant on workload equity led by KerryAnn O'Meara. She currently is PI on an NSF EHR-CORE grant on pathways and barriers to STEM leadership. Her ADVANCE work explores intersectional inequalities in higher education, including in research collaborations, mentoring, workload equity, departmental inclusion, and decision-making.