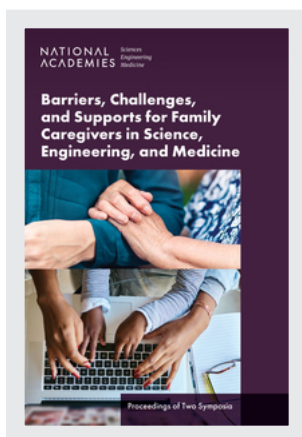


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Barriers, Challenges, and Supports for Family Caregivers in Science, Engineering, and Medicine: Proceedings of Two Symposia (2023)

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Barriers, Challenges, and Supports for Family Caregivers in Science, Engineering, and Medicine

Katie Wullert and Paula Whitacre,
Rapporteurs

Committee on Policies and Practices
for Supporting Caregivers Working
in Science, Engineering, and
Medicine

Committee on Women in Science,
Engineering, and Medicine

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This Proceedings of Two Symposia on Policies and Practices for Supporting Family Caregivers Who Work in Science, Engineering, and Medicine was reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise. The purpose of this independent review is to provide candid and critical comments that will assist the National Academies of Sciences, Engineering, and Medicine to ensure each published proceedings is as sound as possible and meets the institutional standards for quality, objectivity, evidence, and responsiveness to the charge. The review comments and draft manuscript remain confidential to protect the integrity of the process.

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HELEN YIN, University of Texas, Southwestern

Although the reviewers listed above provided many constructive comments and suggestions, they were not asked to endorse the content of the proceedings nor did they see the final draft before its release. The review of this proceedings was overseen by Marilyn Baker, National Academies. She was responsible for making certain that an independent examination

of this proceedings was carried out in accordance with standards of the National Academies and that all review comments were carefully considered. Responsibility for the final content rests entirely with the rapporteurs and the National Academies.

Preface and Acknowledgments

In January 2023, the Committee on Women in Science, Engineering, and Medicine of the National Academies of Sciences, Engineering, and Medicine initiated a consensus study that focused on policies and practices to support family caregivers in academic science, technology, engineering, mathematics, and medicine (STEMM). With the support of the National Institutes of Health, National Science Foundation, National Aeronautics and Space Administration, National Institute of Standards and Technology, Doris Duke Charitable Foundation, and Henry Luce Foundation, the study was commissioned in acknowledgment of the fact that while caregiving touches all our lives in some way, it largely remains underappreciated, underacknowledged, and undersupported. This reality has significant consequences for those who give and receive care, for our nation, and for the diversity and effectiveness of our scientific workforce.

The study committee's charge is to develop a consensus report that outlines the barriers and challenges experienced by caregivers in STEMM, documents institutional and governmental efforts to support caregivers, and offers a set of recommendations to key stakeholders. As part of that effort, the committee organized two public symposia in February and March of 2023. The purpose of these symposia was to solicit input from experts in a variety of domains about the unique experiences of caregivers in STEMM and become informed about the policy landscape at academic institutions, federal agencies, and federal and state governments.

The following proceedings summarizes the presentations from these two symposia. The committee and I are grateful to each speaker who generously shared their time and expertise and to our study sponsors.

Elena Fuentes-Afflick, M.D., M.P.H.
Chair, Committee on Policies and Practices for Supporting Family
Caregivers Working in Science, Engineering, and Medicine

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Introduction

Before the COVID-19 pandemic, research demonstrated a significant impact of family caregiving responsibilities on the careers of professionals who work in science, technology, engineering, mathematics, and medicine (STEMM)—especially women. A 2019 study, for example, reported that 43 percent of new mothers and 23 percent of new fathers left full-time STEMM employment after the birth of their first child (Cech and Blair-Loy, 2019). For parents who remain in the STEMM workforce, as well as for individuals who provide informal care to ill, aging, and/or disabled family members, the challenge of managing professional and personal responsibilities is considerable. Studies have documented the effect of family caregiving responsibilities on the health and well-being of caregivers, including elevated rates of depression, anxiety, stress, and chronic disease (NASEM, 2016).

The COVID-19 pandemic increased public recognition of the challenges experienced by caregivers in STEMM fields and created a sense of urgency among many stakeholders. For example, there is greater awareness of biases against women with children, particularly among women of color in STEMM (Kachchaf et al., 2015). Such biases are often rooted in a false perception that women who have caregiving responsibilities are not as committed or productive as their colleagues who do not have such responsibilities. Whereas fathers who return to work after the birth of a child are often viewed by colleagues as more professionally competent, mothers who

return to work may be viewed as less competent relative to working women without children (Borelli et al., 2017).

A 2020 consensus study from the Committee on Women in Science, Engineering, and Medicine identified caregiving as one factor to consider to attract and retain women in STEMM fields, and to ensure they have leadership opportunities (NASEM, 2020). In January 2023, the committee initiated work on a new consensus study to address the barriers faced by caregivers, of all genders, in STEMM fields (see Box 1-1 for the Statement of Task for both the full consensus report as well as this proceedings).

BOX 1-1 Committee's Statement of Task

An ad hoc committee of the National Academies of Sciences, Engineering, and Medicine will undertake the following set of activities:

1. Summarize the published research on the challenges faced by scientists, engineers, and medical professionals who are family caregivers (i.e., parents and those with eldercare responsibilities, or both), including research on the impact of COVID-19 on these individuals;
2. Document institutional and governmental efforts to support caregivers and the positive and negative impacts of such efforts (if known), including any unintended consequences of well-intentioned policies and practices;
3. Oversee consultant-led, structured interviews with individuals in science, engineering, and medical fields with caregiving responsibilities to understand their needs related to work-life balance and the factors that affect when and if they make use of institutional and governmental policies and resources. This effort will place a particular focus on the experiences of women from multiple marginalized groups (e.g., women of color);
4. Catalogue promising and innovative practices that institutions have used to support family caregivers (which may include those from other sectors), and identify opportunities for greater coordination between government, community, industry, and institutional policies;
5. Outline barriers and facilitators to successful implementation of promising practices to support family caregivers, including academic business models, economic trends in the scientific workforce, and the culture and climate in these fields;
6. Summarize what is known about the economic impact of unpaid caregiving performed by women in science, engineering, and medicine,

To begin the information-gathering process, the committee organized two national symposia to assemble scholars and leaders from a range of sectors to identify evidence-based interventions that can support the recruitment, retention, and advancement of caregivers in science, engineering, and medical fields. The symposia were held on February 27 and March 27, 2023.

such as gaps in labor force participation, wage inequities, or job/career opportunities;

7. Offer a set of recommendations for how leaders of academic institutions, federal agencies, and other stakeholders can better support scientists, engineers, and medical professionals with caregiving responsibilities.

This Proceedings

As part of its activities, the committee will hold two public symposia on caregivers in science, engineering, and medicine. The goals of these symposia are to:

1. Outline the barriers to supporting caregivers in science, engineering, and medicine, including both structural/bureaucratic and cultural/normative barriers;

2. Detail existing policies and practices at the federal, state, and organizational levels to support caregivers including: leave policies, anti-discrimination policies, flexible work arrangements, tenure policies, childcare access, etc.;

3. Examine the role of federal and other funders in encouraging supportive organizational policies and providing resources to support caregivers currently working on grants; and

4. Highlight specific groups (e.g., minoritized racial groups, non-tenure-track faculty, international faculty, etc.) who face unique challenges related to caregiving and policies to provide support for these groups that may be typically overlooked.

A proceedings summarizing the presentations and discussions at the two symposia will be published.

INTRODUCTION FROM THE CHAIR

In welcoming participants to the symposium, committee chair Elena Fuentes-Afflick, M.D., M.P.H. (University of California, San Francisco) reviewed the committee's statement of task (see Box 1-1, above) and discussed its alignment with the goals of the Committee on Women in Science, Engineering, and Medicine. "Women bear the disproportionate brunt of unpaid and paid caregiving labor in this country, and the committee will focus on the challenges of caregiving on career advancement for women in STEMM," she said. She also noted the disproportionate impact of caregiving on women of color who are in STEMM.

The context of the current study is framed by a knowledge of the barriers to effective policy implementation to support caregivers of all genders, coupled with an awareness of the consequences of failing to provide sufficient support for individuals, for institutions, and for the nation. "We risk losing the expertise and contributions of those in the STEMM workforce with caregiving responsibilities," Fuentes-Afflick said. She underscored that while the COVID-19 pandemic put a spotlight on these challenges, they are long-standing. She noted the complementary areas of expertise and perspectives of the committee members.

The committee designed the symposia to learn about the barriers and challenges faced by caregivers in STEMM and the caregiving policy landscape at federal, state, and organizational levels. Dr. Fuentes-Afflick thanked the speakers, sponsors, and participants for their involvement in this phase of the committee's work.

ORGANIZATION OF THIS PROCEEDINGS

This proceedings is a summary of the presentations and discussions held on February 27 and March 27, 2023. Throughout the document, the terms "informal caregiving" and "unpaid caregiving" are used to refer to caring labor for children, older adults, family, or close friends that is performed outside of the formal labor market and is not remunerated, for example, a parent caring for a child or a child caring for their aging parent. The proceedings flows in the order that each of the presentations occurred across the two symposia to provide the most accurate summary of how these two events unfolded. Chapters 2 through 4 capture the first symposium session. Chapter 2 summarizes the keynote address to provide the context for the rest of the symposium. Chapter 3 captures a discussion with three

experts who are involved in policy development and advocacy at multiple levels, with particular attention to the federal and state policy landscape. Chapter 4 focuses on a summary of research on institutional policies and practices for supporting caregivers. Chapter 5 begins a summary of the second session, with research on caregivers of adults at various life stages, as well as on the careers of faculty with caregiving responsibilities. Policies and programs through federal agencies and funding are explored in Chapter 6, including caregiving provisions of the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act (CHIPS Act; P.L. 117-167) and programs within four federal science agencies. The workshop agenda and biographical sketches of the speakers can be found in the appendixes.

These two symposia provided rich insight into the current caregiving landscape in the United States. While the chapters that follow provide an in-depth account of each session in the two symposia, many key themes and insights emerged across the presentations. First and foremost, each of the presentations highlighted the challenges that caregivers face whether it be due to inadequate organizational policies and support; a lack of access to or challenges accessing state or federal support through caregiving legislation; or prevailing cultures that minimize, devalue, and ignore the work and role of caregivers in society. Additionally, these presentations showcased the state of current knowledge about policies that aim to support caregivers. Many presenters noted that evidence on existing policies remains underdeveloped in many ways but did highlight strong evidence for specific interventions such as flexibility and paid leave. Presenters also underscored the importance of ensuring equitable policies with sufficient financial support and reduction of barriers to access to ensure all caregivers can benefit. Finally, presenters drew attention to the lived experiences of caregivers, including many of their own experiences providing care, noting the challenges, the joys, and the support they received that helped them along the way.

In accordance with the policies of the National Academies of Sciences, Engineering, and Medicine, the symposia were not intended to establish any conclusions or recommendations about needs and future directions. This proceedings was prepared by rapporteurs as a factual summary of what occurred at the two symposia; the planning committee's role was limited to planning the events.

Outlining the Challenges Facing Caregivers in STEMM

Christina Mangurian, M.D., M.A.S. (University of California, San Francisco [UCSF]) opened the first symposium with an overview entitled “Promoting Equity for Caregivers in STEMM [Science, Technology, Engineering, Mathematics, and Medicine].” That is because, she said, supporting family caregivers is a pragmatic way to achieve gender equity in the sciences. “The system was not built with women or family caregivers in mind, so it is important to think about the policies and procedures that impact this population,” she stated. Committee member Reshma Jaggi, M.D. (Emory University) introduced Dr. Mangurian and facilitated the discussion that followed.

FRAMING THE PROBLEM

In summarizing her research on caregivers, Dr. Mangurian issued several caveats. First, much of the data focuses on women, although women are not the only ones affected by caregiving responsibilities and gender is not binary. She also noted that there are insufficient data regarding women of color, although she echoed Elena Fuentes-Afflick’s, M.D., M.P.H. (University of California, San Francisco) introductory remarks that caregiving disproportionately affects women of color in STEMM (see Chapter 1). Dr. Mangurian’s research focuses on women in medicine, although there are similarities across the sciences. She acknowledged partnerships and

collaborations that “shine a spotlight on problems in an effort to build rocks for policymakers to throw to promote gender equity.”

As discussed in a 2020 report issued by the National Academies of Sciences, Engineering, and Medicine (NASEM, 2020), the participation of women in STEMM declines along the educational and career pathway. The highest proportion of women is at the bachelor’s degree level, and the proportion falls as faculty reach professor ranks. “Women do not advance not because they lack talent and aspirations, but because they face multiple barriers, including implicit and explicit bias, sexual harassment, unequal access to funding and resources, and higher teaching and mentorship loads,” Dr. Mangurian stated. In 2015, the *British Medical Journal* published a cross-sectional study of more than 1,000 chairs in 50 top medical schools and found that there were more men with moustaches, 19 percent of department chairs, than there were women, who represented 13 percent of chairs in the top 50 medical schools (Wehner et al., 2015). While the article presented the information somewhat lightheartedly, Dr. Mangurian commented that the comparison highlights a problem. In collaboration with colleagues, Dr. Mangurian projected that gender parity will not be achieved in U.S. academic medical leadership for 50 years based on the current trajectory (see Figure 2-1; Beeler et al., 2019).

Caregiving responsibilities are one of the barriers obstructing gender equity, because women are more likely to be caregivers and bear the burden of domestic responsibilities, Dr. Mangurian said, a reality referred to as the “maternal wall” (Williams and Dempsey, 2014). This wall prevents mothers from progressing in many different fields, including medicine, as mothers are seen as less competent and effective as leaders. Dr. Mangurian pointed to a recommendation of the National Academies 2020 report that leaders “adapt actionable, evidence-based strategies and practices . . . that directly address particular gender gaps in recruitment, retention, and advancement of women in science, engineering, and medicine within their institution” (NASEM, 2020). She stressed the role of institutional policies to create structural changes, rather than waiting for the broader culture to change.

FAMILY LEAVE POLICY RESEARCH

Dr. Mangurian and colleagues surveyed the top 10 medical schools in the United States to learn about their family leave policies for faculty, residents, and staff. For faculty, 100 percent of the institutions had a policy, and provided 8.6 weeks of paid leave on average. For residents, 50 percent had

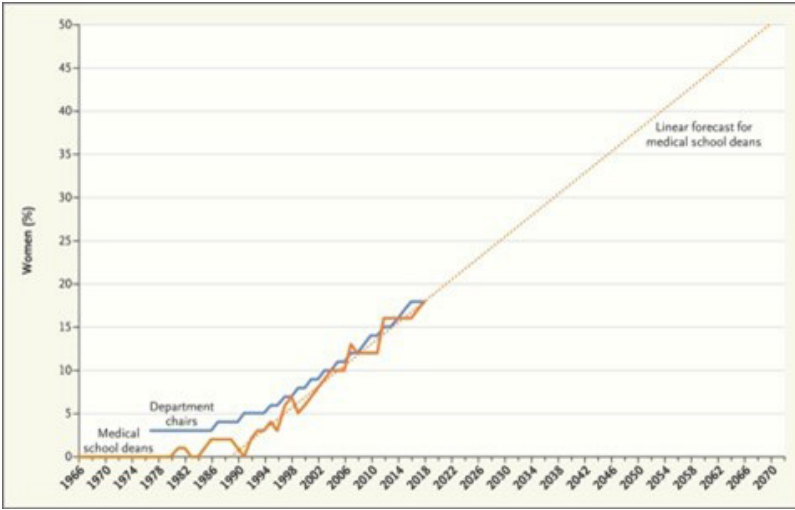


FIGURE 2-1 Trajectory of women in medical school leadership positions, based on current trends.

SOURCE: Christina Mangurian, Workshop Presentation, February 27, 2023, from Beeler et al., 2019.

a policy, providing 5.7 weeks of leave on average. For staff, 17 percent had policies, offering an average of 6 weeks of paid leave (Riano et al., 2018). This differential brings up privilege issues for faculty versus residents and staff, but even the faculty leave does not adhere to recommendations from pediatricians, who recommend 12 weeks of family leave, she commented.

Another study focused on leave for medical school students (Roselin et al., 2022). It found that only 14 percent of schools had substantive, stand-alone parental leave policies for students. Most offer a leave of absence, but not specifically for parents. Extended periods of leave during training affects long-term earnings and has other effects, the authors note. The recommendations for medical schools offered in their work include to adopt a formal and public parental policy, provide an academic adjustment option for enrolled parents, guarantee approval to take and return from leave, and continue students' health-care and financial benefits during the leave. She added that the lawyers involved in this research suggested the deficit of robust parental leave policies for students may violate antidiscrimination laws.

Along with outlining potential legal requirements, Dr. Mangurian discussed the mental and physical health effects of family leave. A literature

review across fields (Van Niel et al., 2020) showed multiple benefits of paid family leave: (1) decrease in postpartum depression and intimate partner violence; (2) improvement in infant attachment and child development; (3) decrease in infant mortality and rehospitalizations; (4) increase in pediatric visit attendance and timely immunizations; and (5) increase in breastfeeding initiation and duration. “It’s a no-brainer,” Dr. Mangurian said. “In medicine, we should be leading the effort for 12 weeks of paid family leave.”

After decades of work by many individuals, UCSF moved to 12 weeks of paid family leave, she reported. The Accreditation Council for Graduate Medical Education and American Board of Medical Specialties have approved at least 6 weeks of paid leave for residents and fellows, which she said was a move in the right direction.¹

INPUT FROM INFORMAL CAREGIVERS

Dr. Mangurian strongly supports paid leave for faculty to care for other family members besides newborns. In the midst of receiving her first National Institutes of Health career development award, Dr. Mangurian said her son became ill and required extensive hospitalization and isolation for 2 years. She noted her good fortune in having financial, family, and other support, but many people do not. The experience shaped her career and research interests beyond academic medicine itself, including being selected to lead the Doris Duke Fund to Retain Clinical Scientists program at UCSF.²

To understand the prevalence of informal caregiving, Dr. Mangurian and colleagues polled members of the online Physician Moms Group (<https://mypmg.com>). Sixteen percent said they are informal caregivers, and some identified as “triple caregivers”: caring for patients, children, and ill family members. They have significantly higher rates of burnout and anxiety, compared with other physician mothers, yet few policies allow paid family leave across a woman’s lifespan (Yank et al., 2019). At the start of the

¹ For more information on the policies, see <https://www.acgme.org/newsroom/blog/2022/acgme-answers-resident-leave-policies/> and <https://www.abms.org/policies/parental-leave/>.

² The Doris Duke Fund to Retain Clinical Scientists was launched in 2015 to help sustain research productivity of physician scientists when faced with periods of family caregiving responsibilities and to raise awareness about the importance of added research assistance for caregivers as a retention mechanism. For more information, see <https://www.dorisduke.org/funding-areas/medical-research/fund-to-retain-clinical-scientists/>.

UCSF Faculty Family-Friendly Initiative, a cross-sectional, mixed-methods survey of faculty found 11 percent of respondents were informal caregivers (rising to 15.5 percent among school of medicine faculty with children).³ Caregivers in the survey suggested policies such as expanded family leave, increased flexibility, and financial support would be most beneficial to them.

Dr. Mangurian noted her own bias while conducting this work in assuming that the greatest challenges for caregivers happened when they were caring for young children. Her perspective shifted as she entered the phase of the sandwich generation and her dad was recently diagnosed with Alzheimer's disease. In fact, the weekend before the symposium, her father broke his hip and was hospitalized, leading her to almost cancel the presentation. While noting that her father was doing okay, she pointed out that caregiving affects faculty across their lifespan, not just at the period where they are caring for young children.

Dr. Mangurian highlighted early evidence of the impact of COVID-19 on caregivers. Among the groups most vulnerable for psychological sequelae during the pandemic were women and caregivers. A National Academies committee on the impact of COVID-19 on the careers of women in academic science, engineering, and medicine conducted a national survey of 933 women in STEM (NASEM, 2020). Almost three-quarters said the pandemic had a negative effect on their work, with both increased workload and decreased productivity. Many reported they put the well-being of their family ahead of their own, and Dr. Mangurian observed that the mental health implications and other consequences from this will last a long time.

She was part of a team to conduct a study on physician mothers that took place early in the pandemic, with recruitment in April 2020. Greater than 40 percent of participants had symptoms consistent with anxiety, compared with 19 percent of the adult population before COVID-19. Those most at risk were frontline workers and informal caregivers (Linós et al., 2021; Halley et al., 2021), which she believes is an underreporting.

CONCLUSIONS

Dr. Mangurian offered her recommendations to support caregiving academic scientists. First, she urged the institution of family-friendly policies, including 12 weeks of fully paid childbearing leave (or equivalent

³ For information on the UCSF Faculty Family-Friendly Initiative, see <https://facultyacademicaffairs.ucsf.edu/faculty-life/3FI>.

policies for students); lactation rooms and protected time for breast milk pumping; onsite childcare services with emergency backup care; paid catastrophic leave and/or sick leave for informal caregivers beyond the minimum levels of the Family and Medical Leave Act (FMLA; P.L. 103-3); and career flexibility.

Dr. Mangurian also called for improved mentorships, sponsorships, and targeted funding for family caregivers. She urged centering efforts on women of color, which would have benefits for all women. Examples include research support for family caregivers, such as the Doris Duke Charitable Foundation's Fund to Retain Clinical Scientists, and peer mentorships, such as WARM Hearts.⁴ Peer mentoring is not only helpful, she commented, but also does not add to the burden of institutions or more senior women. She also urged sponsorships to target women to create more equity in STEMM.

Recapping her presentation, Dr. Mangurian concluded that

- gender disparities in academic medicine leadership persist and are not projected to close for another 50 years at the current rate of change;
- current family leave policies in medicine are limited, which affects the physical and mental health of caregivers;
- unpaid caregivers experience psychological distress, which has been heightened during the COVID-19 pandemic; and
- institutions should develop stronger family-friendly policies across the lifespan of faculty members.

DISCUSSION

To launch the discussion, Dr. Jagsi asked Dr. Mangurian to reflect on ways that academic medicine has stigmatized caregiving and any way to transform that culture. To illustrate the stigma with a personal example, Dr. Mangurian shared that when she was first appointed vice dean at her institution, her father had been facing health challenges. She had pondered whether to talk about her father's health situation and she was advised not to. "This speaks to how we are supposed to put up a front, especially in medicine," she said. She has tried to be open about her caregiving responsibilities intentionally so that others see she could advance her career, "but we are not

⁴For information on WARM Hearts, see <https://zsfq.ucsf.edu/warm-hearts>.

there yet.” She also noted a further stigma around mental health, in which it is viewed as more “acceptable” to say family members are struggling with a physical illness than a mental illness. She noted the peer groups that are part of the Doris Duke program are helping transform culture by empowering participants to be able to speak about their own challenges. It is meaningful to institutions to receive recommendations from a group of outstanding faculty researchers, rather than individuals, she said.

Committee member Mary Blair-Loy, Ph.D. (University of California, San Diego) commented about the need to reduce stigma through universal policies that cover maternal and paternal leave, as well as leave for adoptions and fostering. Dr. Mangurian strongly agreed with the value of paid family leave for all who are welcoming a child in their home. She noted most of the data is on paid maternity leave, but that investing in paid leave for caregivers of all genders is worthwhile. Dr. Jagsi commented that a gendered effect of only providing paid leave to a mother is that she is perceived as the “expert parent” throughout the child’s life.

Committee member Ellen Ernst Kossek, Ph.D. (Purdue University) highlighted her research with economics faculty that showed that paid leave decreased women’s chances to attain tenure. She also urged more flexibility, such as a reduced workload rather than stepping out of the workforce entirely. Dr. Mangurian underscored the challenges to change workforce policies within the prevailing culture. For example, data show that when some men take family leave, they use the leave to write more grant proposals and publications. She said increasing the number of women in middle and top leadership positions could create change, as well as thinking across the life span. If workloads are reduced, the reduction must be meaningful, she added. Dr. Jagsi commented on the “soft pressure” at some institutions for men not to take leave or to emerge after leave with a book or other product. She urged creative approaches to account for variations of lived experience, and added that STEMM professions can lead the way, noting the transformative effect of the National Academies report on sexual harassment (NASEM, 2018).

Speaking from a business perspective, committee member Marianne Bertrand, Ph.D. (University of Chicago) shared a concern about the negative effect of leave policies on women’s careers. She noted the potential trade-off in which these policies may retain women but also hamper their career advancement. In the consulting world, one such result is that women are not allocated to the most interesting clients because of the concern they will take time off. Dr. Mangurian said this problem applies in medicine,

too, such as when women are not considered for sponsorship and other opportunities. Yet, she countered, these life experiences are beneficial for individuals to grow, empathize better with team members and patients, and strengthen their value to an organization. The men at the table also need to talk about the importance of caregiving, she said. The next generation entering the field is more willing to challenge the status quo, she added, but leaders need to act now.

A policy that gives everyone time off after the birth of a child can have unintended consequences when men are under pressure to show they are “ideal workers” and women face pressure to show they are “ideal mothers,” posited committee member Joan Williams, M.A., J.D. (University of California, San Francisco). In contrast, she noted that Harvard Law School changed its family leave policy so that those on leave must certify that they spend at least 50 percent of their time on caregiving. “That begins to change the norms within the institution, so the policy is associated with responsible parents who are doing right by their children,” Ms. Williams said. Well-designed policies must consider social norms, she stressed. Regarding the potential negative effect on leave policies, she observed that some mothers will continue without leave, but others will drop out entirely. “It’s a numbers game,” she said. “If the mothers take leave and their careers are dinged, that is unacceptable. But it is better than if they drop out, which would be the likely outcome.”

Dr. Mangurian added that privilege and family wealth play a role. Hiring a paid caregiver allows for more flexibility but is expensive. Diversifying the STEMM workforce means providing financial support, ensuring the continuation of health insurance, and other issues. In considering the trade-off between expanding leave policies and slowing down women’s progress, Dr. Mangurian said this needs to be measured. She suggested pilots can be developed and tweaked as needed. There may be ways to provide funding for “helping hands,” such as for a research assistant or grant writer. Beyond leave policies, there is often broader pressure not to take time off, observed committee member Robert Phillips, Jr., M.D. (American Board of Family Medicine), bringing up that Americans do not take all the paid vacation leave they are due. In addition to a focus on policies, he suggested looking at the field of behavioral economics to create “culture nudges” that taking leave is not only acceptable but also rewarded. These incentives might include addenda in grants or some kind of mitigation to recognize that team members take breaks. Rather than just tacit support, he suggested that sponsors acknowledge and formally support these “nudges” in their applications. Dr.

Mangurian agreed with a reframing, which could include an accountability metric in which leaders are evaluated on whether their faculty took vacation time. Psychiatrists and health economists have found that when workers do not take breaks, they are not as strong.

A question from an attendee homed in on the situation for staff, who hold less privilege than faculty across institutions, as well as for faculty and others at underresourced institutions. Dr. Mangurian concurred that this issue needs more attention. Institutions can learn from one another, she noted, in developing and using funding mechanisms. She suggested the committee consider how to finance supportive policies and how the information can be readily accessible to all institutions. Faculty who run research labs have an additional pressure when taking leave, and a participant asked how to address this pressure in the context of caregiving. Dr. Mangurian suggested building in more redundancy, such as to assign a junior faculty member, senior postdoc, or senior colleague, with dollars set aside to do these tasks so the labs can continue to function.

Terminology came up to conclude the session. “Informal” may undermine the important role that people are undertaking, a participant suggested. The term is an issue, Dr. Mangurian agreed, although it is what is used in the literature to differentiate from paid caregivers (e.g., home health aides). She commented that the committee has broadened the term to “family caregivers,” but it is still stigmatized. She concluded with the emphasis on caregiving across the life span and across various points of challenges.

Understanding the Federal and State Policy Landscape

“Caregiving connects us all,” stated committee member Jason Resendez (National Alliance for Caregiving) in opening the next symposium session. “From the moment we take our first breath to the moment we take our last, care is a constant in our lives, but that does not mean that it is easy or evenly supported by policies.” He further pointed out, “Even though caregiving impacts us all, it does not mean that caregiving impacts us all *equally*.” Mr. Resendez facilitated a discussion about how policies can lay the groundwork for caregiving to be more dignified and equitable for the country’s 53 million unpaid caregivers. Panelists were Jocelyn Frye, J.D. (National Partnership for Women and Families), Jessica Lee, J.D. (Center for WorkLife Law), and Susan Reinhard, Ph.D., R.N. (AARP). The panelists spoke to a wide variety of different policies at the federal and state and, at times, local level. The goal of this panel was to provide an overview of the policy landscape and challenges within this landscape, not a comprehensive list of all existing policies given the challenging policy patchwork across the nation. Table 3-1 provides an overview of the policies detailed in the order in which they were discussed by panelists.

PERSPECTIVES ON POLICY

Mr. Resendez first asked the panelists to describe their organizations and how they frame the policy debate around caregiving. Ms. Frye described the National Partnership for Women and Families as a rights organization,

TABLE 3-1 Federal and State Policies Discussed by Panelists

Policy	Federal/State/Local	Description
PUMP for Nursing Mothers Act	Federal	Updates and closes loopholes in a 2010 act that required employers to provide reasonable time and private space for lactating employees to pump milk during the workday
Pregnant Workers Fairness Act	Federal	Requires employers to provide accommodations for pregnancy, childbirth, or related medical conditions
Antidiscrimination Laws	5 states, some local jurisdictions	Provide some degree of protection against family responsibilities discrimination with variation across states/localities
Americans with Disabilities Act	Federal	Prohibits discrimination based on disability, including disability related to pregnancy
Title VII of the Civil Rights Act of 1964	Federal	Prohibits sex discrimination and pregnancy discrimination as amended by the Pregnancy Discrimination Act
Family and Medical Leave Act	Federal	Entitles eligible employees to take up to 12 weeks of unpaid leave for family and medical reasons in a 12-month period
Paid Family Leave	11 states and the District of Columbia	Provision of paid time away for work for qualifying life events, with variation across states
Paid Sick Leave	14 states	Provision of paid time away to deal with illness; states vary in whether this allows time off to care for ill family members
CHIPS and Science Act	Federal	A provision of the CHIPS and Science Act requires all those seeking federal funding through the act above \$150 million must provide quality and affordable childcare
CARE Act	46 states and the District of Columbia	Requires hospitals to record the name of family caregivers on medical records, inform caregivers when care recipient is being discharged, and provide caregivers with education and instruction on medical tasks
Families First Coronavirus Response Act	Federal	One provision of this act provided paid leave during the COVID-19 emergency

with the goal to help women and all people lead the lives they want to lead. Since its inception more than 50 years ago, it has focused on care-related issues because women are disproportionately caregivers (family members and others who provide unpaid care) and care workers (health workers and others paid for their labor), particularly women of color. Women have been expected to do this work, and the work has been devalued for centuries, she stated. It is essential to support caregivers and care workers as one key to women's progress. Sharing her own lived experience as a family caregiver who had access to paid leave, Ms. Frye commented on the importance of that support to fulfill her caregiving responsibilities: "If I had not worked for the National Partnership or a White House where people cared about paid leave, I would not have been able to give my parents the care that they needed."

Ms. Lee explained that the Center for WorkLife Law at the University of California, San Francisco, seeks to advance gender, racial, and class equity through a focus on the needs of family caregivers at work and in education. The center develops and implements evidence-based interventions in schools and workplaces and works to change policy at the state and national levels. They have compiled a database of legal cases dealing with family responsibilities discrimination. Research is used to make the case for stronger protections and to inform institutional changemakers, policymakers, and attorneys. The center also provides direct assistance to organizations; conducts bias interrupter training; and operates a free legal help line for workers and students.

Ms. Lee also discussed her role as director of the Pregnant Scholar Initiative in which she focuses on workers and students who are welcoming new children in their homes. Recent research in which she was involved, published in the *American Journal of Cardiology*, found a correlation between employment practices and pregnancy complications among women cardiologists (Gulati et al., 2022). She was also involved in a study that found that only 14 percent of the top 50 medical schools have policies for parental leave (see Chapter 2). Mothers are only half as likely to be in science, technology, engineering, and mathematics programs as in non-STEM programs, which she noted has implications for those who feel pushed out and for the workforce and country at large. Ms. Lee pointed to

some successes in 2022, including the PUMP for Nursing Mothers Act and the Pregnant Workers Fairness Act.¹

Dr. Reinhard introduced herself as the second of six children, with many caregiving responsibilities over the years, including for family members with mental health challenges, and as a nurse who spent many years in clinical practice. She now leads the AARP Public Policy Institute, which conducts research on family caregiving and other topics. In her own observations and in research, Dr. Reinhard said she has seen the amount of unpaid care that is expected of family members. She and colleagues developed a Burden Assessment Scale as a tool that is simple and quick, and has been translated and used around the world to assess caregiver burden (Reinhard et al., 1994).² She stressed the need for action, and to blend clinical practice with policy and research to reach more people. She called attention to the AARP Long-Term Services and Support (LTSS) Scorecard, including a 2023 release on “valuing the invaluable” that spotlights the economic contribution of family caregivers.³

DIFFERENT LAWS ACROSS THE COUNTRY

Mr. Resendez observed that the laws covering discrimination against caregivers vary across the nation. Dr. Reinhard commented that while she wished there was more federal legislation, the reality is that most caregiving-related actions occur at the state level, making it necessary to review what is happening in each state to identify promising practices and policies. She noted that this patchwork of laws made it a challenge to make progress from state to state and identify promising practices in policy. The LTSS Scorecard has included state-level laws related to discrimination for several years, noting as well that some local jurisdictions have passed such laws. She acknowledged the need to learn more about how this happened at the local level, who was championing it, and how it was able to pass. She also noted

¹ Both these acts were passed by the 117th Congress in 2022. The PUMP for Nursing Mothers Act (S. 1658) was signed into law by President Biden on December 29, 2022, as part of the Consolidated Appropriations Act, 2023 (P.L. 117-328). It extends to more nursing employees the rights to receive break time and a private place to pump at work. The Pregnant Workers Fairness Act (H.R. 1065) requires employers with at least 15 employees to provide “reasonable accommodations” to a worker’s known limitations related to pregnancy, childbirth, or related medical conditions.

² Dr. Reinhard noted that “burden” is not currently used terminology to reflect caregiving responsibilities but was commonly used in the 1990s when she developed the scale.

³ See <https://www.aarp.org/ppi/info-2015/valuing-the-invaluable-2015-update.html>.

that unemployment insurance contains a little-known clause that covers caregiving. In her observations, an increasing number of policymakers are experiencing caregiving challenges, which helps them understand the problems but still need to find solutions, especially when money is involved.

Ms. Lee concurred that it is a “slog” getting these laws passed state by state, but she has seen progress. Five states—Alaska, Delaware, Minnesota, New York, and Maine—have some protection against family responsibilities discrimination, but the definitions vary from state to state. In particular, she noted that New York defines family status as being a parent of children, which excludes a huge group of workers who need protections as caregivers for other individuals. Two hundred localities also have some protection against family caregiving discrimination, but many focus on parents. The latest estimate is that 30 to 40 percent of the workforce is covered through different policies and laws; those who are left out try to find other legal recourse, such as the Americans with Disabilities Act of 1990 (P.L. 101-336) or Title VII of the Civil Rights Act of 1964 (P.L. 88-352). However, she noted, most workers do not have access to a lawyer who can help them find these routes. She urged federal legislation to make protections clearer and not have to engage in legal gymnastics to get caregivers the protections they need. Ms. Frye posited that the legal framework is complicated because perceptions of care are rooted in gender and gender roles. Society devalues care work, especially by women of color, and it must be elevated as worthy to protect, she said. National laws will help, but she stressed the need to look at cultural and not just legal challenges.

The Family and Medical Leave Act (FMLA; P.L. 103-3) is marking its 30th anniversary in 2023,⁴ and Ms. Frye called for modernization of eligibility. It omits 40 percent of the working population because the employer is not covered, the employee has not worked for the employer long enough, or for other reasons. Workers of color are disproportionately not covered. Dr. Reinhard noted 11 states and the District of Columbia have legislated paid family leave, but the protections and implementation vary especially at the state level. In addition, she pointed out, only 14 states mandate paid sick leave, with differences across states about whether this leave can be used for caregiving of family members who are sick. To Dr. Reinhard, taking full advantage of existing policies is the “lowest-hanging fruit.” Ms. Lee underscored the need for laws to prevent discrimination against caregivers. “I see antidiscrimination law as hand in hand with sick and paid family leave,”

⁴For information about the FMLA, see <https://www.dol.gov/agencies/whd/fmla>.

she stressed, noting that she has seen cases where employees are penalized or retaliated against under the assumption they will need accommodations. Sometimes employees do not feel safe asking for leave. While FMLA has protections against retaliations and interference, the act does not cover all workers, nor does it protect against other forms of bias.

EXEMPLARS OF PROMISING PRACTICES

Mr. Resendez agreed on the need for discrimination protection dispelling of stigma, and building a culture that supports caregiving. He asked the panelists about any exemplars at the state level. Ms. Lee pointed to policies in Delaware, California, and Minnesota, as well as in New York, although the law in that state only covers caregiving for children. In Delaware, she noted, there is a law against caregiver discrimination and providing paid family leave, though she noted the details of this law had some shortcomings in her opinion. She also discussed expanding access to paid family leave in California and the provision of emergency sick leave as a result of the pandemic and a recently passed bill on bereavement leave. The California legislature was also currently considering legislation to ban family responsibilities discrimination, which Ms. Lee noted she was watching closely. Ms. Frye noted that Washington State has introduced progressive wage replacement as part of its implementation of the Build Back Better Act (P.L. 117-169), in which people with the lowest incomes can take leave and still receive some of the wages they must forego.

Ms. Frye reinforced that FMLA is at its heart an antidiscrimination measure to remedy sex discrimination under the assumption that women are the primary caregivers. Building from Dr. Mangurian's presentation on caregiving as an aspect of gender equity (see Chapter 2), Mr. Resendez asked about the core elements to achieve equity. Dr. Reinhard suggested using a caregivers' assessment to understand individuals' needs. She commented that when she co-conducted a literature search on what is known about family caregiving across cultures, she found research in the 1980s and 1990s within a stress paradigm, followed by many years with almost no research. The research is starting again, but also improving, she said, with oversampling as a critical way to understand the needs of diverse caregivers in terms of populations, cultures, the conditions of the people for whom they are caring, and other variables. This knowledge can lead to better policies and interventions, Dr. Reinhard said.

Ms. Lee flagged another dynamic that is relevant to science, technology, engineering, mathematics, and medicine. In STEMM fields, caregiving responsibilities stop some people from getting into the workforce in the first place. Students who are mothers are half as likely to major in STEMM, with the gap highest among Black and Latina women, but this gap does not hold for students who are fathers. These data are backed up by calls to the WorkLife Law helpline from students who are pregnant or have small children and feel they are being pushed out of STEMM, as well as from postdocs experiencing caregiving bias. To achieve diversity in the STEMM workforce, bias throughout the pipeline must be tackled, she said. Beyond looking at the situations for faculty members or graduate students, “as we go earlier in the pipeline, the research is thinner and the stories grow more dire,” she commented. One in 10 family caregivers are enrolled in college, Mr. Resendez pointed out. Lower-income students and students of color feel more regressive effects, including taking more time to get degrees or choosing different pathways.

Elaborating on the help line mentioned earlier, Ms. Lee said calls increased by 700 percent during COVID-19. The care infrastructure crumbled, and caregivers could not count on schools, childcare, nursing homes, or other providers. During the initial phase of the pandemic, she added, the cultural signal was that it was acceptable to talk about these needs, and this “opened the floodgates” to the type and number of calls received. Callers realized that they were not alone in their challenges. The two biggest topic areas related to workplace accommodations and the lack of child, disabled, and eldercare. Without paid leave, many workers had to decide between losing their job or putting family members in an unsafe position. The pandemic is not over, Ms. Lee pointed out, and the need for backup care and other provisions continues. While callers have raised these issues for the 25 years that the help line has operated, a more recent issue has been the importance of antidiscrimination provisions. For example, after employers furloughed workers during the pandemic, they did not call the parents in their workforce back to work as readily, even if they were not asking for leave.

Administrative actions can help support caregiving, Mr. Resendez noted, citing the announcement by the Biden administration that as part of the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act (CHIPS Act; P.L. 117-167), subcontractors must provide childcare to be eligible for the act’s funding (see Chapter 6). Ms. Frye said the administration is working to ensure that the CHIPS Act and other

legislation support women in the workforce, and part of achieving this is to ensure that supports are in place for women to take these jobs. She also noted the CHIPS Act includes a provision that principal investigators who are caregivers are not penalized in accessing research grants. It provides greater flexibility to adjust the timeline of a grant, which she said is one piece of the puzzle for greater diversity by not derailing people with caregiving demands.

Dr. Reinhard also pointed out that through the Caregiver Advise, Record, Enable (CARE) Act passed in 46 states and the District of Columbia, patients discharged from the hospital can identify a person who will help them, and that person is included in the patient's medical record and receives training. AARP is following implementation of the act across states.⁵ She suggested this requirement be included under Centers for Medicare and Medicaid regulations or Joint Commission standards.⁶

As discussed throughout the workshop, some policies face unexpected challenges or lead to unintended consequences in implementation, Mr. Resendez said, and he asked discussants for their thoughts on the kinds of unintended consequences that have occurred with current policies. Pointing to lessons learned from the FMLA and from states with paid family medical leave, Ms. Frye underscored that "policy is the first piece. It is all about implementation and how it is integrated in the workplace to intentionally promote a culture that supports the law. If the culture does not support caregiving, even with a policy in place, the incentive is not to have people who are caregivers. Implementation matters." She also said a robust infrastructure is essential for policy to work effectively. For example, the technical infrastructure must be in place to deliver benefits to people weekly or biweekly when they are on leave. Also, all leave policies are not the same, she said. Some organizations have policies only for high-level workers, or even instances where leave is available to all employees, only women take leave and men are discouraged from doing so. The fact that policies are on paper is not the same as using them, Ms. Frye stated.

Ms. Lee also suggested not waiting for laws to change. "If you have political capital at your institution to push for family caregiving policies, please use it," she urged participants. Only a handful of states prohibit family responsibilities discrimination, but the need is growing: The population

⁵ For more information, see <https://www.aarp.org/politics-society/advocacy/caregiving-advocacy/info-2014/aarp-creates-model-state-bill.html>.

⁶ For more on Joint Commission standards, see <https://www.jointcommission.org/standards/about-our-standards/>.

is aging, the number of workers with disabilities has grown almost 19 percent, and the U.S. Supreme Court's *Dobbs v. Jackson Women's Health Organization* decision on access to abortions will have consequences.⁷ "At some point, our system is going to break again," Ms. Lee said. "We are going to continue suffering from a STEMM workforce and education pipeline that cuts out women, people of color, and family caregivers."

DISCUSSION

Opening the public discussion, committee member J. Nicholas Dionne-Odom, Ph.D., R.N. (University of Alabama at Birmingham) asked about leveraging federal policies to effect changes within institutions. Ms. Frye said, "My message to anyone at an institution or organization is 'this is coming.' Paid leave will be here, not if but when, and hopefully sooner rather than later. It is better to be on top of the issue now and to do it effectively."

In answer to a question from committee member Sandra Masur, Ph.D. (Icahn School of Medicine at Mount Sinai) about data resources for the committee and the public to learn more on existing policies across states, Dr. Reinhard suggested the LTSS Scorecard, which was last compiled in September 2020 and will be updated for release in September 2023. In fall of 2022, WorkLife Law created a table of state and discrimination laws.⁸ The National Partnership for Women and Families also collects and shares information, including a website set up for the 30th anniversary of FMLA.⁹

Committee member Jeff Gillis-Davis, Ph.D. (Washington University in St. Louis) expressed concerns about what courts may decide on caregiving, noting the Supreme Court's decision on *Dobbs v. Jackson* and the court's upcoming case on affirmative action. Ms. Frye said the history of the Supreme Court on caregiving related to FMLA is uneven, but she expressed hope in this area, referring to the *Hibbs* decision (Nevada Department of

⁷ See *Dobbs, State Health Officer of the Mississippi Department of Health, et al. v. Jackson Women's Health Organization et al.* (2022) at https://www.supremecourt.gov/opinions/21pdf/19-1392_6j37.pdf.

⁸ WorkLife Law, State and Local FRD [family responsibilities discrimination] Laws Prohibiting Employment Discrimination against Parents and Other Caregivers, <https://worklifelaw.org/wp-content/uploads/2021/10/State-and-Local-FRD-Law-Table.pdf>.

⁹ This website no longer appears to be available online as of May 2023. An archived view of the website can be found at <http://web.archive.org/web/20230410154716/https://www.nationalpartnership.org/our-impact/news-room/news-coverage/long-live-leave-celebrating.html>.

Human Resources v. Hibbs) and Coleman decision (Coleman v. Court of Appeals of Maryland).¹⁰ In particular, she explained the Hibbs decision was the first time the Supreme Court tackled the FMLA and its antidiscrimination protections. It reflected the reality that the issue of care is not a partisan issue because it touches so many people. In addition, she said, most cases are litigated at the local level, where changes will take place. She also noted that the pandemic has changed workers' expectations, and caregiving is a universal need.

Ms. Lee expressed hope, as seen in the PUMP for Nursing Mothers Act and Pregnant Workers Fairness Act that passed with support from both parties. Committee member Robert Phillips, Jr., M.D. (American Board of Family Medicine) noted a primary concern of railroad employees in a possible strike in late 2022 was with paid sick leave and asked about the role of unions in advancing policies, noting that STEMM labor usually organizes in different ways. Ms. Frye said the National Partnership supported the rail workers' demand for paid sick leave, but acknowledged the strike was a unique scenario because of its potential impact on the economy. However, because there was so much effort by rail workers in a traditionally male field to push for sick leave sent a message that this is a work and labor standards issue, and essential to the workplace. "The power of the union to drive this issue was an important marker," Ms. Frye asserted. "And it is a reminder to us all that these issues cut across race, gender, and class." Ms. Lee noted that some STEMM unions exist or are forming, and many in the new generation of STEMM are organizing with colleagues.

Mr. Resendez reminded the group of the data about who has access to existing leave policies with higher education (see Chapter 2), with faculty having the highest access. Graduate and medical students are starting to organize. Paid leave is inevitable, but it is important to see how comprehensive paid leave will be implemented and how attention is weighted to parental care. There is an opportunity to think expansively about who caregivers are, their needs, and the tools available to build pressure for comprehensive policies, including unions, he commented. An audience member commented that the variance in policies by position (faculty, residents, staff) represent a "ladder of leave privilege." Ms. Frye said the dynamic occurs outside of the academic workforce in which benefits for those at the

¹⁰ See Nevada Department of Human Resources, et al. v. William Hibbs, et al., 538 U.S. 721 (2003) at https://www.supremecourt.gov/oral_arguments/argument_transcripts/2002/01-1368.pdf and Daniel Coleman v. Court of Appeals of Maryland, et al., 132 U.S. 1327 (2012) at <https://www.law.cornell.edu/supremecourt/text/10-1016>.

corporate level do not extend to frontline workers. “This is an equity issue. This is a matter of discrimination. If you reinforce leave privilege, then you are reinforcing inequity that probably tracks other problems,” she said. As a practical matter, the data reinforce that a larger percentage of high-wage employees have access to paid family leave than do low-wage employees. Federal protections can avoid this disparity. She said her message to employers is that extending policies is about promoting equity, not handing out benefits to retain employees who are most likely to be hired elsewhere. Dr. Reinhard asserted the need to consider sick leave. Forty percent of workers have no sick leave, and most are lower-income workers. Ms. Frye noted from a business perspective, businesses are more productive and remain more intact when they have supports for workers to step out to care for family and come back to the workplace.

Regarding federal legislation, Ms. Lee said paid leave was available during the Families First Coronavirus Response Act (P.L. 116-127), which saved lives and livelihoods, and was very popular as a stopgap measure. Although movement for paid family and sick leave is strong on all sides, she did not think passage of permanent legislation would occur soon. Dr. Reinhard also pointed to pandemic-related public health waivers and flexibilities, as well as respite care in some states. States have 6 months after the end of the declared public health emergency to decide if they want to continue these policies. To Ms. Frye, a lesson learned is that these benefits occurred amid a devastating emergency. “Pandemic amnesia” is setting in, but it is important to remind people about what happened and that the need still exists. Mr. Resendez urged becoming fierce advocates for comprehensive leave for all caregivers.

In response to an audience member question about building a strong base of support for changes to policies for caregivers, Dr. Reinhard observed that younger caregivers are more ready to act through social media and other ways. Ms. Lee agreed that younger people take flexibility as a core workforce benefit. It is important to work across generations and for all caregivers, and not segment the movement, she said. Ms. Frye said that care cuts across every community and constituency. It disproportionately affects women, but it affects everyone. The economic case is compelling, as Secretary of the Treasury Yellin and business leaders have stated. It also concerns the health and well-being of families. “When we make that case collectively, we build support and momentum,” she concluded.

Organizational Policies Supporting Caregivers in STEMM

Committee member Hannah Valantine, M.D., M.B.B.S. (Stanford University) moderated a session on organizational policies supporting caregivers in science, technology, engineering, mathematics, and medicine (STEMM). Debra Lerner, Ph.D. (Tufts University) summarized her research on academic medical centers as employers. Kate Miller, Ph.D. (University of Pennsylvania) provided a broader workplace context, with specific reference to her research on U.S. Department of Veterans Affairs (VA) caregiver programs.

ACADEMIC MEDICINE AS AN EMPLOYER

Drawing from research conducted with the Rosalynn Carter Institute for Caregivers (Lerner, 2022), Dr. Lerner began by providing a baseline for what is known about caregiver employees, defined as “those providing mainly unpaid help to a family member needing assistance due to an illness, disability, and/or aging.”¹ Through a secondary analysis of the highest-quality data available, she said that an estimated 18 to 22 percent of the U.S. labor force take on this role, often transitioning in and out of caregiving roles. Most are employed full-time; thus, she referred to their unpaid caregiving responsibilities as “invisible overtime.” They are represented in all occupational,

¹For more information on the Rosalynn Carter Institute, see <https://www.rosalynncarter.org/>.

earnings/socioeconomic, racial, and ethnic groups. Caregiving services take an average 20 hours per week, with more hours in co-residing situations. The data show that caregivers find the work rewarding, but it is still a strain emotionally, physically, and financially. Although normative in terms of the numbers affected, she pointed out that caregiving is still stigmatized and treated as unusual. Moreover, work/family policies and programs do not always fit caregivers' specific needs.

Multiple sources of friction occur between caregiving roles and employment, Dr. Lerner reported. About 60 percent of caregiver employees reported that work, careers, and productivity have been disrupted by caregiving, and about one-third have voluntarily left a position because of their caregiving responsibilities. The Equal Employment Opportunity Commission (EEOC) has seen an increase in the volume of family responsibility discrimination cases in the past 10 years, and caregiving discrimination was the second most common category of claim. A national survey that she and colleagues conducted called the Caregiver Work Limitations Questionnaire (Lerner et al., 2020) found two kinds of functional influences on productivity: presenteeism and absenteeism. The average productivity loss due to presenteeism (having difficulty functioning at work, although showing up) per caregiving employee was 11 percent, and the average annualized at-work productivity cost per employee was \$5,281, assuming an hourly wage of \$25. In terms of absenteeism, caregivers reported they missed an average of 3.2 workdays in the prior month, with an estimated average productivity loss of 2.2 percent or \$1,123 per caregiving employee.

Dr. Lerner noted that academic medicine, like all workplaces, is a domain within a larger, interdependent ecosystem (see Figure 4-1). "We know that we have a community service system in disarray," she commented. "That creates all kinds of problems not only for individual employees and their families, but also for workplaces to put interventions into effect that will help their caregivers."

Academic medicine is in a unique place to find innovative solutions to support family caregivers, Dr. Lerner posited, and this innovation should be part of the academic medicine mission. The medical care system relies on unpaid family caregivers to complement the medical services that patients receive, so the importance of this role is well recognized. She suggested three directions for academic medicine: (1) lead by example as an employer that is committed to improve the quality of working life of employees and trainees, (2) engage and integrate family caregivers into patient care, and (3) leverage their unique position of power and influence to promote broader system and policy change.



FIGURE 4-1 The interdependent ecosystem affecting caregiving employees.
SOURCE: Debra Lerner, Workshop Presentation, February 27, 2023.

The research on interventions to support caregiving employees is spotty and characterized by different research questions, populations, and outcomes, Dr. Lerner said. Nonetheless, the evidence identifies five intervention types as promising for academic medicine and all employers to different degrees: (1) flexible work arrangements, (2) caregiver-friendly workplaces, (3) psychotherapy/counseling, (4) connection to formal services/care, and (5) engaging caregivers in decision-making about the care recipient's case and support.

Elaborating on these interventions, Dr. Lerner said flexible work arrangements are the most frequent strategy used by caregivers, either reducing their hours or changing their schedules. Results examining flexible arrangements suggest that caregivers utilizing these tend to be better at maintaining employment, though the research has not specifically examined potential differences between academic employment and other types, if there are any. She noted sparse research on outcomes of hybrid or remote work, although she is conducting a trial on this now. In studies of alternative arrangements, most caregivers prefer reduced hours versus compressed schedules or job sharing because the later arrangements tend to compress

demand into a shorter amount of time, rather than reducing demand. Dr. Lerner noted, however, that this creates a problem because part-time work or other ways of reducing hours risks lowering earnings and benefits.

As Dr. Lerner described it, a caregiver-friendly workplace is one that values caregiving through formal and informal means and, at a minimum, does not discriminate against caregivers; it also attempts to accommodate caregivers' needs related to protecting and providing for care recipients. The EEOC has some guidance and limited employer regulation, but she said evidence of accommodation barriers and effective practices is needed, as existing data on what works and does not work for particular types of employee caregivers is very poor. Creative solutions might include resource groups, voluntary shift exchange, and evaluation of structural and cultural bias. Systemic reviews have provided some evidence on the benefit of psychotherapy and counseling, with the best evidence for cognitive behavioral therapy to improve coping and communication. Education, when combined with these services, may improve outcomes, she added. The evidence suggests that education alone is insufficient but works best when combined with psychotherapy and counseling. Barriers to overcome include that caregivers often do not practice self-care or mental health care for themselves. In addition, many therapists and counselors have a poor understanding of caregiving challenges.

Connection to formal services can help caregivers and recipients. The evidence differentiates between care management (the patient's actual care) and case management (a broader array of needs), and Dr. Lerner said there is evidence that care management has positive effects for both caregivers and care recipients. In contrast, the evidence on case management does not suggest strong benefits from this, and the evidence on respite care is weak. This does not mean that respite care is necessarily ineffective, she clarified, but rather that the research has not at this point proven its effectiveness.

To engage caregivers in decision-making, Dr. Lerner cited a report (Friedman and Tong, 2020) that offers a framework to make the caregiver part of the recipient's care team, which was shown to benefit the caregiver and the recipient. The report identified steps to mitigate barriers to greater inclusion of caregivers, such as offering incentives for providers to engage with caregivers; encouraging investment in programs offering support services to caregivers; expanding access to and funding for care coordinators; implementing training programs for providers and caregivers to facilitate effective communication; and developing, testing, and improving caregiver

access to technologies that foster greater care integration and information sharing. She concluded that academic medicine can innovate and experiment to make things better for caregivers, care recipients, and employers.

WORKPLACE CONSIDERATIONS

As context, Dr. Miller noted that there are about 40 million unpaid caregivers in the United States, mostly women. They experience burnout and strain that affects not only them but care recipients as well, she said. An economic valuation of caregiving should encompass not only the cost of paid workers but also costs associated with unpaid caregivers and their employers, which is challenging to capture. The average effects of caregiving on caregiver outcomes are felt in terms of health and economic costs. Focusing on the economic costs, Dr. Miller noted the effects are mostly negative for the individual caregiver and can compound over time, related to such factors as unpaid time off work, lower wages, and debt accumulation (see Figure 4-2).

The RAISE Family Caregiving Advisory Council² put out a request for information (Nadash, Alberth et al., 2023) from caregivers through a survey and focus groups, Dr. Miller related. Key findings included support for expanding the Family and Medical Leave Act (FMLA; P.L. 103-3), access to paid time off and sick leave, flexible work arrangements, and supportive work environments. In a more in-depth look (Nadash, Tell et al., 2023), themes that emerged were the need for financial compensation, inability to maintain employment, concern about the availability and quality of care provided by nonfamily members, and concern about financial viability and fairness.

In addition to implementation of the federal and state policies discussed earlier (see Chapter 3), Dr. Miller said employers can implement policies including flexible schedules, family and medical leave policies, paid leave, and employee assistance programs to help address some of the financial costs of caregivers. Flexible arrangements benefit employers, too, she noted, because they retain more workers. The body of evidence about

² The RAISE Family Caregiving Advisory Council was created under the Recognize, Assist, Include, Support, and Engage (RAISE) Family Caregivers Act of 2017 (P.L. 115-119). As part of this act as well, public comment was solicited on the 2022 National Strategy to Support Family Caregivers. More information on the National Strategy and response to public comments can be found at <https://acl.gov/CaregiverStrategy>.




Average Effects	Citation
 Quitting work	Johnson Lo Sasso, 2006; Skira, 2015; VH, Coe, & Skira, 2013; Coe et al 2018; Truskinovsky and Maestas, 2018; Fahle & McGarry, 2017
 Unpaid time off work	Jacobs, Van Houtven, Tanelian, Ramchand, 2017
 Debt accumulation	Van Houtven et al., 2012; Van Houtven, Miller, et al in progress
 Retire early	Jacobs, 2014; Jacobs, Laporte, VH, & Coyte, 2014
 Hours of work if remain working	Van Houtven et al., 2013
 Wages for female caregivers	Van Houtven et al., 2013
 Earnings	Fahle and McGarry, 2017
  Work productivity	Maningbe Keita, 2022; Coe, Kolodziej, Van Houtven in progress
 Financial transfer from parents	Norton and Van Houtven 2006
 Interruptions in schooling	Jacobs, VH, Tanelian, Ramchand, 2017

FIGURE 4-2 Caregiving average causal effects: Economic costs.
 SOURCE: Kate Miller, Workshop Presentation, February 27, 2023.

employee assistance programs is not robust, but one key piece in some data suggests workers are not comfortable talking about their caregiving status at work. As a work-around, she noted that when Fannie Mae (Federal National Mortgage Association) offered a geriatric case manager to employees, the manager was not employed by Fannie Mae, which led to more successful uptake.

Racial and ethnic disparities exist with access to unpaid leave and paid leave, which can further exacerbate inequities. For example, 7.0 percent of non-White employees reported needing to take unpaid leave but were unable to, compared with 3.4 percent of White employees (Klerman et al., 2014). Regarding access to paid leave, 26.4 percent of Hispanic and 42.8 percent of Black individuals had access to paid leave to care for an ill family member, compared with 49.4 percent of White non-Hispanic individuals (Bartel et al., 2019). Dr. Miller concluded by noting that the key policy she recommended to support family caregivers (flexible work schedules, family and medical leave policies, paid leave, and employee assistance programs), a strong focus on policies with economic supports are aligned with prior policy recommendations from the National Academies of Sciences, Engineering, and Medicine, including the 2016 report *Families Caring for an Aging America* (NASEM, 2016), and are aligned with the self-reported needs of caregivers. A key consideration for equitable access is ensuring not only that policies are in place and cover all workers but that all workers can access these policies.

DISCUSSION

Dr. Valantine asked about typical approaches that employers are adopting to support caregivers and the potential pitfalls of these policies and practices. Dr. Lerner said many employers assume caregiving is not a pressing issue among their employees, especially the need to care for an ill, disabled, or aging family member. She also said there is a tendency to want to manage the problem by “checking the box instead of moving the needle for change.” The programs are not fit-for-purpose or designed for the issues that many caregivers face. She also observed that some salaried and higher-paid positions are getting access to concierge services, which do not solve the long-term problem of a broken system. Anecdotally as well, the time necessary to manage the needs of caregivers who access these services has increased over time.

Dr. Miller said when designing programs, it is important to consider eligibility criteria to define family caregiving duties and relationships. It is also important that caregivers feel comfortable accessing available services, as they may be hesitant to disclose their status in the workplace for fear of discrimination. To explain the different needs of different groups and how to ensure equity among groups, Dr. Miller pointed to a literature review of international evidence (Ireson et al., 2016). One theme that emerged is that policies administered through human resources to employees at all levels of an organization, not just the upper levels, was a key component to addressing inequities and ensuring it was not only those in upper management who received support.

Dr. Lerner noted the potential to make progress because of increased attention on diversity, equity, and inclusion (DEI) in academic medicine, and the ways in which caregiving intersects with these concerns. “Sometimes we have policies in place that we think are helping people, but they are not really reaching the people who need them the most,” she observed. Looking at how caregiving policies are utilized should be part of an organization’s DEI efforts. She also called for changes in tenure and promotion, so that altering timelines, support, and criteria does not derail careers. Bridge and other specialized funding, leverage with grant sponsors so timelines are not so brutal, and other flexibility are important.

Regarding the discordance between policies and use of those policies, especially when the culture discourages using them, Dr. Miller reiterated that caregiving is normative yet remains stigmatized. Individuals often have low levels of awareness of the caregiving leave they can access, she added, citing a 2016 National Academies report (NASEM, 2016). Dr. Lerner referred to the “culture of sacrifice” among many health-care providers and other STEM workers. She suggested looking to organizational literature for lessons to apply to academic medicine. For example, to change culture, it is necessary to think of interventions at multiple levels: individual, work-group (departmental), leadership, and organizational. Changing the culture around caregiving requires more than “little tweaks,” such as developing a broad DEI plan. Caregivers often do not self-identify as such to their employers, but employee resource groups can be the eyes and ears of caregiving within a company to suggest interventions and policies. Employers that contract with vendors and suppliers can build in accountability for caregiving services in their requests for proposals, she suggested.

Dr. Miller described her research in the VA system that may apply to academic STEMM organizations, with particular focus on two programs.³ The first, the VA Caregiver Support Program, provides comprehensive assistance for family caregivers. She explained this is a clinical intervention written into law and supports for the caregiver may include a monthly stipend, insurance, mental health services, and access to a VA coordinator. The second is the Program of General Caregiver Support Services, in which caregivers do not get a financial stipend but do receive coordination and training support.⁴

She shared some lessons learned from the VA. When the Caregiver Support Program started, demand outstripped expectations. There was a lot of heterogeneity in how the program was implemented across the country, so developing clear, intentional guidelines on eligibility and activities was important. The VA's investment in resources and assessment processes could be a starting place for other organizations, she suggested. As part of the evaluation for the recipient, the VA has developed a set of measures on how to collect data and conduct reviews at multiple stages.

Dr. Lerner explained the Rosalynn Carter Institute for Caregivers' Working while Caring initiative.⁵ She is part of a team identifying groups of employers to form innovation labs to learn about caregiving and how it affects the workplace. A series of pilots will be implemented and aimed at improving the quality of working life for family caregivers. She noted that many of the employers are smaller to mid-sized companies, with a lot of frontline workers and minoritized populations. They range in the benefits they offer from excellent to very little, and all have shortages of employees.

Dr. Valentine asked about key policy areas that need improvement especially in academic STEMM. Dr. Lerner stressed not only looking inside an organization but also developing policies with external stakeholders. Academic medical centers and universities must build up community resources.

³The Department of Veterans Affairs Caregiver Support Program is not a direct comparison to STEMM organizations, as this office provides support for caregivers of veterans as part of the VA health-care system rather than providing support to caregivers in the VA workforce. It is included here as an exemplar given the many programs that have been built out with caregivers in mind, that might be applied in a different setting for STEMM organizations looking to support their own workforces.

⁴For more information on the VA Caregiver Support Program, see <https://www.caregiver.va.gov>. For information on the Program of General Caregiver Support Services, see https://www.caregiver.va.gov/Care_Caregivers.asp.

⁵More on the Working While Caring initiative can be found at <https://rosalynncarter.org/working-while-caring/>.

Dr. Miller urged thinking of unintended consequences. For example, by giving caregiving supports, higher health-care use might increase costs.

Dr. Masur commented on the need for flexibility within the academic system, such as how many years are prescribed for each step on the career pathway. She asked about the ramifications of removing these restrictions. Dr. Lerner said changes to grants and promotion changes should be evaluated through a data-driven approach. While academic medicine is a privileged group, she commented, they do shift work, they are frontline workers, and they have high demands placed on them. In external organizational literature, she commented, these are seen as problems that reduce autonomy and flexibility. Alternatives to scheduling and shift work may come into play at different points in employees' careers and caregiving journeys. She pointed to caregiving passports or registries used in the United Kingdom and Canada in which people register in a centralized portal to access services.

Kathleen Christensen, Ph.D., commented that to provide career flexibility over time might require structural changes. Dr. Lerner said examples include credit for community engagement, rather than being locked into publications and grants as a measure of success. Organizational research provides other examples to introduce flexibility, such as bringing in administrative or other support. Dr. Valentine noted that in academic medicine, people are in teams with different trajectories, stages of career, and focus areas, which may provide an opportunity for flexibility. Dr. Christensen commented on some movement in the private sector to negotiate on a team basis, in which everyone buys into the vision and normalizes flexibility. Dr. Kossek noted that she helped 30 corporate organizations redesign job descriptions within teams. In addition to adjusting workloads, these changes provided other opportunities for organizations, such as training junior members. She mentioned an early academic article on caregiving decisions (Kossek et al., 2001) in which she found that organizations do not know how to deal with different types of care needs, such as caring for children versus caring for dying parents. She also commented on intersectionality, in that different racial/ethnic groups and nationalities have different needs. Dr. Lerner and Dr. Miller agreed that research is needed in these areas. Dr. Lerner said she is conducting randomized controlled trials; in addition to psychological coping techniques, employees are provided with ideas and techniques about how to modify their jobs to function more effectively.

An audience member asked how to convince institutions to invest funds in caregivers. Dr. Lerner stressed the need to make the business case for intervention. Employers cannot afford not to address the issue because of the magnitude of the population and the impact on the organization, she said. Dr. Valentine agreed, although she observed that often organizations are presented with the business case and still will not change. Dr. Lerner said sometimes what they see as their most pressing issues rise to the top. It is important to stress that caregiving affects all workers to raise its importance for attention.

Stigma persists, with some supervisors seeing parenthood as a choice, an audience member commented. Dr. Miller said a multipronged approach to shift culture is required. Dr. Lerner called for interventions at all levels to understand the stigma and how it operates. As an analogy, the stigma around mental health has been dealt with most successfully by engaging leadership, bringing forth personal stories, and putting money behind the effort, she said. Dr. Valentine added that faculty internalize the stigma, with concern that one is seen as not committed or as putting extra burden on colleagues. She said one model at Stanford was a system in which people contribute and draw on leave as needed.

Some policies are well meaning yet seem not to work, and Dr. Valentine asked the presenters for examples. Dr. Lerner said she did not have complete information, but employee assistance programs (EAP) may be an example that has low utilization, perhaps because of cultural and stigma issues or perhaps because employees are not sure to whom they will be talking. They may also consider dealing with the EAP another source of strain that takes time, rather than adds value. As another example of a well-meaning policy that has challenges in implementation, FMLA is often not used out of fear of retribution. She suggested conducting dissemination and implementation research to understand issues around uptake. Dr. Miller added that FMLA results in inequitable access since it is unpaid leave. Dr. Valentine said another unintended consequence of parental leave is how some female and male faculty use the leave differently, which can widen the gap when men use it to enhance their careers, as noted earlier.

As strong exemplars to support caregivers, Dr. Miller called attention to the VA programs she mentioned, as well as the Family Resource Center at the University of Pennsylvania.⁶ Dr. Lerner suggested looking at other areas, such as the system to return to work after an employee's injury or disability.

⁶ For more information, see <https://familycenter.upenn.edu/>.

Research in this area shows the positive effect of streamlined services to reenter the workforce and personal contacts, such as when supervisors call employees to remind them about their value to the workplace.

To fold caregiving into DEI frameworks and funding, Dr. Lerner suggested looking for bias against caregivers and finding ways for caregivers to report any problems to generate action. Understanding cultural differences in families and their preferences in caregiving is needed. Academic medical centers should build in a way to assess what individuals' preferences are, she suggested—for example, how long someone needs to take a leave and the role they will be playing in providing care. Many institutions have significant numbers of international faculty who are living far from their families and who have different types of caregiving situations. Dr. Miller noted a paper by the Diverse Elders Coalition with guidelines for these situations (DEC, 2021). Dr. Valentine underscored that caregiving and DEI are intertwined and urged each institution to undergo an inquiry into the needs for its constituency, then use creative approaches and design thinking to meet those needs.

Research on Different Types of Caregivers

At the start of the second session of the national symposium on supporting family caregivers working in science, engineering, and medicine (SEM), Ellen Ernst Kossek, Ph.D. (Purdue University) underscored the value of the discussions to date. She reminded participants that the consensus study being undertaken by an ad hoc committee convened by the Committee on Women in Science, Engineering, and Medicine was motivated by continued barriers that all genders in science, technology, engineering, mathematics, and medicine (STEMM) face as caregivers. And, she noted, while individuals face obstacles in their career advancement, institutions and the nation risk losing out on their expertise.

In a series of individual presentations, Tracy Dumas, Ph.D. (Ohio State University) discussed caregiving for adults, as revealed in a survey of 763 female faculty; Djin Tay, Ph.D. (University of Utah) focused on the needs of those caring for family members at the end of their lives or with serious illnesses; and Lisa Wolf-Wendel, Ph.D. (University of Kansas) shared research on caregivers among faculty, with a focus on non-tenure-track and international faculty.

UNIQUE CHALLENGES FOR CAREGIVERS

Dr. Dumas drew on data compiled for a qualitative study about challenges facing academic women during the COVID-19 pandemic, conducted in collaboration with Dr. Kossek, Matthew Piszczek, and Tammy

D. Allen. Some of the data were used in a National Academies of Sciences, Engineering, and Medicine consensus study on the challenges faced by women in academic STEMM during the pandemic (NASEM, 2021). Dr. Dumas said she delved into the existing data for new insights for this presentation. She reviewed the open-ended responses from more than 760 women to shine greater light on caregivers in different types of situations.

OVERLOOKED CHALLENGES IN CARING FOR ADULTS

Dr. Dumas said her return to the data revealed tension between caregiving and professional responsibilities, overlaid by the perceived notion that women feel they are not seen as a fit for careers in science. For example, Dr. Dumas shared, an assistant professor commented that being told that she can shift her priorities to care for a family member “doesn’t feel right. . . . [T]elling me to shift and refocus my priorities is devaluing my identity and my sense of self in many ways.” Dr. Dumas explained that the study took place during the pandemic, but respondents stressed that the challenges had existed before. A broader theme, Dr. Dumas said, is caregivers do not feel they are getting the support they need to enact both their roles, as caregiver and as academic, fully. This sense is heightened in nonnuclear family structures or for those with caregiving responsibilities outside the present U.S. norm largely focused on childcare. Of the 763 respondents, 58.20 percent were involved with childcare, 10.40 percent with eldercare, and 3.9 percent with what the researchers called “sandwiched care,” or care of both a younger child and an aging adult/parent. Her quantitative data could not provide insight into other forms of care, but Dr. Dumas acknowledged that missing from this was non-elder adult care, or care for an adult who is not aging but may have significant mental or physical health needs. Here she provided greater context through quoting the lived experiences of some of her respondents who were not captured in the survey responses. For example, one stated, “It’s not eldercare, but care of my adult developmentally disabled son. His care is more difficult because there are not as many services.” Another overlooked category, especially for adult and eldercare, are caregivers who live a geographic distance away from their care recipient. She provided quotes on the lived experience of those who lived a far distance from those that they cared for to highlight the challenges these individuals face. One respondent noted, “My father is terminally ill in another state. I cannot fly, so the drive is 8 hours each way. Trying to manage care, his affairs, and the constant travelling is exhausting.”

Caring for older adults presents a set of psychological, emotional, and logistics issues that differ from childcare, and there are fewer established organizational responses to acknowledge the role, develop policies, and consider cultural differences, Dr. Dumas noted (Bernstein and Gallo, 2019). For example, the conventional thinking in raising children that the role will conclude in a few years with a “happy ending” may not be the case in caring for adults. Dr. Dumas said that Anne Bardoel found rates of depression are higher among those caring for spouses, parents, or other adults, often because they experience social isolation (see Bernstein and Gallo, 2019).¹ Dr. Dumas also pointed to emerging research on cultural differences related to caregiving expectations. While researchers have seen increasing sharing of responsibilities by men in caring for children, they see less gender parity in elder and other adult care, including for the husband’s parents (Grigoryeva, 2017).

FRAMEWORK FOR SUPPORT AND DEMANDS

Dr. Dumas shared a framework for caregivers’ work demands and support that she and colleagues developed from the research (see Figure 5-1). This figure presents a two-by-two table. Along the bottom are nonwork demands and along the side are work demands, both either showing an increase in demands/no support or a decrease in demands/having support. In instances where one set of demands are decreasing/supported, the other can compensate (e.g., quadrants 2 and 3, family compensates and work compensates). In instances where both are decreasing/supported, people flourish (e.g., quadrant 4). But in instances where both are increasing/not supported, people are overwhelmed (e.g., quadrant 1).

WORK DEMANDS	Increase or No Support	Overwhelmed	Family Compensates
	Decrease or Have Support	Work Compensates	Flourishing
		Increase and/or No Support	Decrease or Have Support

NON-WORK DEMANDS

FIGURE 5-1 Framework of work and nonwork demands.
 SOURCE: Tracy Dumas, Symposium Presentation, March 27, 2023.

¹ This work was discussed on a *Harvard Business Review* podcast, “Women at Work,” hosted by Amy Bernstein and Amy Gallo.

Referring to the graphic, Dr. Dumas said, “We want to see people flourishing in the bottom-right.” Conversely, people with decreased or no support, and with high demands, feel overwhelmed, and many exit their career path, which exacerbates gender disparities. Respondents addressing adult care or eldercare are more likely to be in more senior positions than those responding about childcare. While they may be established in their careers and have tenure, Dr. Dumas pointed out that because of additional sets of demands, they may not be advancing to leadership positions where they can make change. They may also not be able to mentor and advise junior women, which is a loss to the field, she commented.

In summarizing some of the broader issues, Dr. Dumas said caregivers need to manage expectations about their identity and image. A key theme was that most are concealing their challenges, although some said they became more transparent when they felt overwhelmed. Concealing behavior was exemplified by a participant she quoted as saying, “Research leaders do not acknowledge anything has changed with timetables and expectations. If you can’t keep up, people who have fewer responsibilities at home will be able to do it. So, I do not talk about it.” In contrast, revealing behaviors were adopted by another respondent who noted, “I am more transparent than usual about how my family roles contribute to distraction or lack of availability.” Respondents also often traded off priorities, engaged in psychological role withdrawal, or exited one or the other of their behavioral roles. While most exit their career roles if they must choose, some stated they sacrificed their family lives, including a respondent who accepted that her ex-spouse should have primary custody for their children because of her professional responsibilities. This respondent shared, “The expectations were so high that I had to agree to my children leaving my home to be at their father’s home. I have sacrificed my family for work.”

RESPONDENTS’ RECOMMENDATIONS

Dr. Dumas reported that recommendations from respondents included structural support for their tasks at work and social support from leaders and others in their organizations. “The silver lining, perhaps, is that people are intentional about advocating for change. Many said they tried to fit the ideal worker template but are now intentionally sharing their situations to advocate for others,” she said. Organizational interventions to support caregiving included administrative support, emergency and “as needed” responses, and flexibility. She urged a focus on essential deliverables,

shedding those things that informally have become part of a job but are not needed. Seeing people in leadership positions who model healthy patterns of managing work and caregiving responsibilities is also important.

DISCUSSION

Dr. Kossek asked about any findings related to virtual work. Dr. Dumas responded that virtual work alone is not the solution, especially when caring for people with additional needs and without additional workload management. Robert Phillips, Jr., M.D. (American Board of Family Medicine) commented on the heartbreaking choices that some respondents have made. He asked about policies that the committee could put forward to support caregivers. Dr. Dumas said some helpful policies were to adjust workloads either temporarily or long term, set up different timelines, and provide additional technology or other support. The challenge is overall policies do not address the needs of everyone. Managers and leaders must interface individually with workers and be able to support what they need, which she acknowledged is challenging from a policy level. The ability to customize, although challenging, is what emerges from the data, with a focus on outcomes. Dr. Kossek underscored that size matters, and customization is easier in more nimble organizations.

Sandra Masur, Ph.D. (Icahn School of Medicine at Mount Sinai) commented that organizations cannot change external conditions but must change within. One example, she said, is the decrease of support staff in universities. Providing more support would help everyone, not just those with caregiving needs. She also underscored the need for flexibility. Kathleen Christensen, Ph.D. (Boston College) commented on the need to normalize organizational responses. She pointed to Deloitte's Career Customization Model and to Stanford University School of Medicine, both of which have normalized different ways to advance in a career. Rather than individuals having to ask for "a deal," these models provide a structural response for all, she said.

An audience member asked about the survey respondents in the study who stated they chose to shift to advocacy. Dr. Dumas said many were fed up with expectations to continue with business as usual in difficult situations. An audience member brought up that expectations of caregiving depend on cultural background. Often, the caregivers themselves perceive they must care for family members because of cultural norms. Dr. Dumas said this is an example of a psychological and emotional challenge that may benefit from counseling and therapy.

EMOTIONAL AND HEALTH IMPACTS OF END-OF-LIFE CAREGIVING AND BEREAVEMENT

Dr. Tay began with a personal story in her role as a “distance caregiver.” While she was in the final stages of her Ph.D. program in Utah, her grandmother passed away in Singapore. Her father suffered a pulmonary embolism 2 weeks later, and both he and Dr. Tay’s mother experienced other health challenges. As the only member of the family with health-care training, Dr. Tay is called upon for advice and assistance, although she acknowledged an additional stress when family members pay more heed to information online rather than her information. As a caregiver at a distance, she explained, she provides care coordination, as well as emotional and financial support. She is also navigating the early phase of a tenure-track position and is the single parent of three children. “I don’t tend to share information about my personal life, but I recognize these experiences shape who I am and have shaped my research interests,” she said.

Dr. Tay highlighted research on end-of-life caregiving, bereavement, and spousal cancer caregiving, which she has studied with several teams. The findings are similar to other aspects of caregiving, but they may have a more intense context than caregiving for people with more chronic conditions or for diseases with a slower trajectory of decline, she posited.

CANCER CAREGIVING

Globally, the prevalence of depression is 4.4 percent, and the prevalence of anxiety is about 3.6 percent. Among cancer caregivers, both rates are substantially larger—42.3 percent with depression and 46.55 percent with anxiety. In a study of caregivers of patients with advanced cancers who had received immunotherapy treatments, caregivers had lower optimism and more anxiety about the outcomes than the patients themselves.

Certain phases of cancer caregiving are more burdensome. In a hospice study in which she was involved (Tay, Iacob et al., 2022), caregiving burden was associated with anxiety and depression. Younger caregivers experienced greater anxiety and caregivers with lower financial and social support experienced greater depression. This is particularly significant for student caregivers. These students are disproportionately women, enrolled part-time, graduate students, and receiving financial aid. Seven in 10 say that caregiving affects their academic achievement and that they experience anxiety and depression. Potential strategies to improve support include

more frequent assessment, understanding, and flexibility from mentors, as well as wellness support. Two innovative strategies at her institution are a student hardship fund (led by students for students in need) and scholarships targeted to family caregivers.

TIME STRAIN

While the time spent caring for family members at the end of life can be meaningful, it also imposes a strain on caregivers. A study of self-care among caregivers with a family member in hospice (Tay, Reblin et al., 2023) found that almost one-half reported they did not have time to exercise, rest, or slow down when sick, and about one-third reported they had missed at least one of their own physician appointments in the past 6 months. Better mental health is associated with taking the time for these self-care behaviors, Dr. Tay commented. In the models constructed related to caregiving and activities of daily living, the researchers found men hospice caregivers had lower odds of being able to rest when they were sick than did women. Although this is just one study, she said this finding suggests that the implications of gender may be nuanced. Reasons to explore in further research may be that these men caregivers are less aware of the need for self-care, have smaller support networks, or have greater competing demands at work.

Dr. Tay highlighted research (Xu et al., 2023) about the effects of employment on family caregivers. Working during end-of-life caregiving served as a moderator for caregivers' health, but these workers also had lower productivity. "These juxtaposing findings suggest that role diversity may help individuals cope with some of the challenges of caregiving, but it affects their work," she said. She noted research on caregivers in STEM during the pandemic found that women spent less time on research than they had planned; had more difficulty than men in doing highly cognitive work such as analyzing data, writing grants, and managing their time; and had to balance household, work, and family responsibilities (Skinner et al., 2021). Interventions to support caregivers in these instances include those that reduce time burden, such as telehealth; alleviate the caregiving burden, such as respite care and financial support; and improve ability to monitor and manage care, such as remote monitoring. She reported on strategies to support caregiving STEM professionals including those to reduce the time burden, such as remote work or course reduction; alleviate the caregiving burden, such as dependent care benefits or support for dependent care to attend conferences; and improve the ability to be productive, such

as writing and teaching groups and no-cost extensions for grants. She noted that it is important to ensure that students, adjunct faculty, and others also have access to these types of support.

POPULATION HEALTH OUTCOMES

Dr. Tay has worked with Katherine Ornstein, Ph.D., on an end-of-life study using population datasets from Denmark and Utah. Using Denmark population registers, members of Ornstein's team characterized family networks and the effect of bereavement such as in the use of antidepressant drugs and psychological services. Dr. Tay built on this work with a focus on those who previously had experienced mental illness (Tay, Ornstein et al., 2022). Across these studies, the data showed that spouses and partners are at the greatest risk, especially in the first 3 months after the death of a partner. She pointed out that mental health is a serious and underaddressed issue in academia, and bereavement can be an acute stressor that can exacerbate preexisting mental health conditions.

The Denmark study paved the way for a population-level perspective in the United States using the Utah Caregiving in Population Science (Utah C-Pops) database. One of the first papers from this study looked at how family structure affects end-of-life outcomes (Tay, Ornstein et al., 2022), and other papers are under review. Building on this research, she and colleagues are establishing a cohort of cancer patients and spouses. One of the goals is to figure out how to support cancer caregivers' physical and mental health.

IMPLICATIONS FOR ACADEMIA

Dr. Tay noted that while more women have doctoral degrees compared with men, they are less likely to get tenure and promotions. Extending the tenure clock became a more visible option with COVID-19, but she noted the downstream implications include negative effects on income, promotion, and career progression, as well as opportunities for leadership and grants. Pausing the tenure clock may reduce the pool of tenured women faculty and increase the pool of tenured men faculty. She also noted equity implications, such as the needs of non-tenure-track faculty, including minoritized women who are most likely to be in these positions.

Dr. Tay identified technologies and strategies that can be helpful (see Figure 5-2), but they will not change the culture of academia, which is not

- Reduce time burden**
 - Telehealth
- Alleviate caregiving burden**
 - Respite care
 - Home healthcare
 - Homemaker services
 - Financial caregiving support
- Improve ability to monitor and manage care**
 - Remote monitoring/ sensor technologies
 - Electronic health record sharing
- Reduce Time burden**
 - Part-time enrollment for caregiving students¹⁰
 - Remote work arrangements, including teaching¹¹
 - "Helping hand" grants, editorial/manuscript support
 - Course reduction, research leave, sabbaticals, flexibility in workload^{11,12}
- Alleviate caregiving burden**
 - Institutional: Dependent care Benefits, compassionate leave, FMLA, and paid time off benefits
 - Emergency funds for caregiving assistance, including childcare and eldercare¹³
 - Professional: Conference stipends/grants for dependent travel/care
- Improve ability to be productive and further career**
 - Writing and teaching groups¹¹
 - No cost extensions¹¹
 - National: Grants and NOSIs to support re-entry¹¹

FIGURE 5-2 Technologies and strategies to support caregiving STEM professionals.

SOURCE: Djin Tay, Workshop Presentation, March 27, 2023.

set up to support family caregivers. She said it is important to change the culture to attract and retain talent in STEMM. Trainees are looking at those already working in the field as they decide whether to pursue a career in academic STEMM. She noted in one study of engineering and computer science doctoral students and graduates who did not pursue an academic career, 69 percent said it was because of the stress they perceived (McGee et al., 2019). Dr. Tay urged acknowledging and addressing gender bias, as well as increasing the visibility of caregiving and distributing professional responsibilities more fairly.

Dr. Tay shared a quote from Rosalynn Carter: “There are only four kinds of people in the world. Those who have been caregivers, those who are currently caregivers, those who will be caregivers, and those who will need a caregiver.” Dr. Tay concluded that she still regrets not having returned to Singapore for her grandmother’s illness and funeral in 2016. She was in her final year of her Ph.D. program and did not travel because of the costs but also her concern that her U.S. visa would not be extended if she needed more time to complete her doctoral work. Others, especially those with international backgrounds, share these pressures. “I hope as a field we can change the culture and practice the principles that we preach—diversity, inclusion, and flexibility when it comes to caregiving,” she said.

DISCUSSION

Dr. Kossek began the discussion by noting the number of foreign-born faculty in STEMM. Already juggling institutional and family pressures, the uncertainty around immigration is added, and she asked Dr. Tay what could be done. Dr. Tay concurred that living in another country adds a level of complexity to navigate. Some people “tough it out” to achieve, but if the environment is not supportive, some will leave and find jobs closer to home. Joan Williams, M.A., J.D. (University of California, San Francisco) echoed that hearing about personal experiences and data brings home the human toll. She recalled a qualitative study she conducted about 12 years ago on science professors who are women of color and found the parents of many Chinese professors came to help with childcare, but many also need to receive care as they age. Ms. Williams also posited that the finding in Dr. Tay’s study that men hospice caregivers do not take leave when they are sick may in part be because men in general tend not to take time off when sick.

Dr. Christensen asked how funders could help support caregivers from other countries, especially those caring for people at the end of life. Dr.

Tay suggested an in-depth awareness of the visa concerns of international trainees would be helpful. For grants, a more holistic view of the challenges is needed, especially for unsupported caregivers, which disproportionately affects women. Reflecting on remote work and flexible scheduling, Dr. Tay said those with needs to work remotely should be heard. She also suggested being cognizant of when meetings are scheduled and how long they last. Lastly, she noted that even if a person has money to pay for a caregiver for respite or temporary care (such as a babysitter), such a person may not be found.

An audience member in a tenure-track position at an R1 university commented that when they bring up caregiving challenges, their supervisor minimizes the situation. Dr. Tay stressed that more needs to be done to acknowledge the value of caregivers in academia and the benefit of lived experience to the institution. She added that caregiving must be seen as an aspect of inclusion because it affects everyone. Hard data, such as how caregiving affects grades or retention, are important to get leadership buy-in, she concluded.

MANAGING ACADEMIC CAREERS AND CAREGIVING

Dr. Wolf-Wendel shared research with a focus on the needs of international and contingent faculty, and possible systemic fixes.

TERMINOLOGY AND BASIC CONCEPTS

Commenting on terminology, Dr. Wolf-Wendel said that she does not use the term work-life “balance” because, to her, this sets up an ideal worker norm. She instead uses the terms “integration” or “management.” Similarly, she uses the term “work-life” rather than “work-family” because all faculty are entitled to a satisfying life outside of work. Reflecting the different people who may need care, she uses “caregiver” rather than “parent,” and noted that while women are more likely to be primary caregivers, men also face problematic norms. Finally, she stressed the need to change norms and policies, not people. When you have a leaky pipeline, fix the pipe, not the water, she asserted.

Understanding academic life requires understanding such frames of reference as ideal worker norms and entrenched gender roles, Dr. Wolf-Wendel continued. She said her research focuses on a life-course perspective, not just a focus on the period when a parent is giving birth or adopting a child. A

challenge is the neoliberal university structure, she asserted, in which budgets are determined by things that can be counted, like grants and student numbers, with a culture of doing more with less, an orientation to deal with crises, and historical exclusiveness.

Work/life integration encompasses diverse circumstances and considerations, related to career, family structure, and a range of needs, Dr. Wolf-Wendel said. “We enter into caregiving with different constructions but also differences in identity and the way we navigate work and life,” she said. In addition, the academic institution makes a difference, such as whether a caregiver is working at a 2- or 4-year institution, their discipline, and their career stage.

Those in tenure-track positions follow an “academic career life cycle” that begins in graduate school, she said. Women earn about 50 percent of STEM doctorates with the expectation that students will go on to a postdoc position, then enter a tenure-track position. However, women are only about 25 percent of STEM tenure-track faculty. To understand the changes over time, Dr. Wolf-Wendel interviewed 120 pre-tenure women, then interviewed them at 7-year intervals through their early, mid, and late careers. The early career is characterized by the biological and tenure-track clocks. In addition to the challenges, Dr. Wolf-Wendel stressed that respondents also talked about the joys of being an academic mother. She observed the need to discuss these benefits, not just the hardships. Early-career women need mentorship and sponsors, and supportive policies and practices, Dr. Wolf-Wendel said. At mid-career, the points often raised were about scheduling, because many were involved in research, teaching, service, and caregiving. For this reason, some said they were hesitant to go up for promotion to full professorship, but they have a feeling of being stuck. Not all STEM faculty work is the same, Dr. Wolf-Wendel commented, such as if one is managing a lab versus doing field work. Extra layers are added in managing grants and in clinical work for those in academic medicine. Dr. Wolf-Wendel commented that some STEM fields have more options for employment outside the academy.

INTERNATIONAL, DUAL-CAREER, AND CONTINGENT ACADEMIC CAREGIVERS

According to Dr. Wolf-Wendel, about 20 percent of STEM faculty are foreign-born and they represent one-third of all new hires, a higher number than women or underrepresented minorities. The exact number

is hard to determine because of different types of visas and immigration status. To try to understand international faculty needs, Dr. Wolf-Wendel and a colleague used a survey conducted by the Collaborative on Academic Careers in Higher Education, or COACHE, survey 2012–2018, which covers 67,000 faculty from 164 universities.² It does not completely disaggregate by nationality, but it does compare U.S. (88 percent of the total) and non-U.S. citizens. Ten percent of all respondents were caregivers for adults. International faculty were more likely to be married with children. Related to work/life characteristics, international faculty were less satisfied, but more productive; by contrast, there was a correlation between satisfaction and productivity for U.S. faculty. International faculty were less mobile and less likely to hold leadership positions. Although not addressed in the survey, Dr. Wolf-Wendel noted that many international faculty are concerned about racial and ethnic targeting and feeling invisible or misunderstood.

A high percentage of women in STEM are part of dual-career couples, which affects mobility and the likelihood of a tenure-track job. Women, including international women, are more likely to accompany spouses and opt for non-tenure-track positions if necessary. Among international tenure-track faculty, two patterns emerged: either a mother or mother-in-law lives with the family to assist in caregiving, or the faculty member lives far away from all family members.

Dr. Wolf-Wendel commented on non-tenure-track faculty, whom she termed the “fast-food workers of the academy.” While some part-time faculty are retired or work elsewhere, others are trying to piece various positions together to earn their living. Full-time, non-tenure-track faculty also include research scientists and teaching faculty, as well as those working on grants or short-term contracts. Non-tenure-track positions now represent two-thirds of all faculty, she said. They are not spread evenly across institutions, with more at community colleges, but they are also replacing full-time, tenure-track positions at many 4-year universities. Women and underrepresented minorities are more likely to fill these positions, which Dr. Wolf-Wendel referred to as the “Glass Wall.” They are paid less, work more, have marginalized status, and have no work/life recognition or benefits. They are often cut off from rejoining the tenure-track career ladder. The irony is that some choose this role to care for families because of the potential flexibility in work, but no policies cover their caregiving roles, that is, when they don’t work, they don’t get paid.

² For more information on COACHE, see <https://www.facultydiversity.org/home>.

Dr. Wolf-Wendel said recognition by institutions is slowly growing of the needs of full-time, non-tenure-track faculty. Examples include development of career ladders, such as the Delphi Project at the University of Southern California, as well as paid family leave and career development, some brought about by unions.³ She also called attention to “vampirism”: in a dual-academic family in which the husband is on the tenure track and the wife is in a contingent position, the wife contributes to the husband’s research, but he publishes under his name. Permeable boundaries between the public and private spheres were revealed during COVID-19, as was the inequitable division of labor among heterosexual couples.

DISCUSSION

Elena Fuentes-Afflick, M.D., M.P.H. (University of California, San Francisco) brought up the lens of academic medicine. Productivity is emphasized, with every minute accounted for, which brings distinct pressures. She also noted that only 9 percent of the 4,200 faculty at her institution are on the tenure track. Dr. Wolf-Wendel said she learned of innovations in academic medicine at Stanford, with different foci at different stages of one’s career. She noted that she conducts a coaching circle of mid-career faculty, and some delay going up for promotion because their institutions have asked them to take on other service responsibilities.

Ms. Williams commented that some argue that stopping the tenure clock hurts women under the assumption that they would otherwise continue on an accelerated path. However, she said, empirically, some might drop out completely without this option and asked about data on tenure-clock decisions. Dr. Wolf-Wendel commented that these policies are not as widely used as she expected, often because department chairs and deans do not know about them. She said the policies must be regularized so they do not simply exist but are used, as well as compensate for salary differentials. Dr. Christensen urged rethinking the tenure system. “We have to think outside the box, not that existing policies are the only way to do things,” she said. Dr. Wolf-Wendel agreed with the need to look at alternatives but warned that some might use this focus to eliminate tenure, which would affect academic freedom and shared governance.

Dr. Masur commented on the needs at early, mid, and later careers, and pointed to the falloff at mid-career. Dr. Wolf-Wendel said she recently did a

³For more information on the Delphi Project, see <https://pullias.usc.edu/delphi/>.

study of gender differences in who becomes a department chair. Women are more likely to be appointed as chairs when they are associate professors and men as full professors. Among 17 measures of work/life satisfaction, 13 were statistically significant between men and women chairs. Mid-career women may be brought in to take on leadership roles in precarious situations, and some may derail their careers as a result, especially for women of color. She urged career development so that women achieve full professorship before they take on these types of positions for the good of their own careers. Moreover, the longer a person stays at the associate rank, the less likely they are to become a full professor. She also noted that at mid-career, women are more likely to wait to be asked to “go up” for promotion, while men tend to take the initiative themselves. Perhaps mentoring across institutions within disciplines can help, she suggested. She noted more research and interventions for mid-career, such as National Science Foundation ADVANCE grants, research on mid-career faculty by Vicki Baker at Albion College, and development resources from the National Center for Faculty Development and Diversity, or NCFDD.⁴

⁴ For information on National Science Foundation ADVANCE, see <https://www.nsf.gov/crssprgm/advance/>. For information on Dr. Baker’s publications, see <https://www.albion.edu/faculty-story/faculty-profile-vicki-baker/>. For information on NCFDD, see <https://www.facultydiversity.org/home>.

Federal Responses to Address Caregiving

The symposium turned to new and long-standing policies and programs within the federal government and at federal agencies. To highlight one of the newest responses, Kylie Patterson (CHIPS for America) explained why and how the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act of 2022 (CHIPS Act; P.L. 117-167) includes guidelines for applicants to address childcare as part of their proposal to access funding through the act. A roundtable of representatives from four federal agencies, NASA, National Institutes of Health (NIH), National Institute of Standards and Technology (NIST), and National Science Foundation (NSF), with policies and programs that affect the scientific workforce concluded the symposium.

CHILCARE PROVISIONS IN THE CHIPS ACT

The CHIPS Act boosts U.S. semiconductor research and manufacturing to fulfill a three-pronged vision to achieve economic security, national security, and future innovation, according to Ms. Patterson, the senior advisor for opportunity and inclusion of the CHIPS for America team. The pandemic made clear that chokeholds in the supply chain for semiconductor chips must be solved by building domestic capacity, she pointed out.

BACKGROUND ON THE CHIPS ACT

One objective of the CHIPS Incentives Program is to promote the inclusion of economically disadvantaged individuals and small businesses in the semiconductor market.¹ As Ms. Patterson explained, the childcare provision under the act is intended to remove a barrier to this inclusion. The act provides \$50 billion in federal grants. Of that amount, \$39 billion will be invested in manufacturing to attract large-scale investments in advanced technologies and incentivize expansion of manufacturing capacity for mature and other types of semiconductors. An additional \$11 billion will be invested in research and development. Several funding opportunities (called Notice of Funding Opportunities, or NOFO) have been or will soon be released. Proposals will be evaluated across six program priorities: (1) economic and national security objectives, (2) commercial viability, (3) financial strength, (4) technical feasibility and readiness, (5) workforce development, and (6) broader impacts. An important aspect of workforce development is to recruit, hire, train, and retain a diverse and skilled construction and manufacturing workforce, Ms. Patterson explained. “To that end, we think childcare is a key component,” she said.

Ms. Patterson reported that the *CHIPS for America Workforce Development Planning Guide* was released the day of the symposium (CHIPS Program Office, 2023). Applicants applying for more than \$150 million in funding are required to provide a plan for access to childcare with access for both facility and construction workers. Those applying for less than \$150 million are “strongly encouraged” to do so. The guide includes possible ways that applicants can meet the childcare requirements (see Figure 6-1).² Applicants are expected to devise solutions that are responsive to the specific needs of their workers. For example, they may work outside the typical 9 a.m. to 5 p.m. workday. Priorities are that the childcare is affordable, accessible, and of high quality. There is no one-size-fits-all solution, but the guide describes options for onsite/near-site and offsite care.

Ms. Patterson said these models provide flexibility and creativity, including for facilities located in exurban and rural environments. The

¹ For more information about the legislation, see CHIPS.gov. For a White House briefing on the childcare provision, see <https://www.whitehouse.gov/briefing-room/statements-releases/2023/03/08/icymi-experts-agree-chips-manufacturing-and-national-security-bolstered-by-childcare/>.

² For more information, see the CHIPS for America Workforce Development Planning Guide Webinar at https://www.nist.gov/system/files/documents/2023/04/04/3.30.23-CHIPS-Workforce_Development_Guide_Webinar.pdf.



FIGURE 6-1 Models of care suggested through the CHIPS for America’s Funding Opportunities.
 SOURCE: National Institute of Standards and Technology.

hope is that the childcare opportunities can be sustained and expanded for other workers in other industries. She noted that the *Workforce Development Guide* provides resources that are useful to a wider audience as well, beyond funding applicants.

DISCUSSION

In answer to a question from Kathleen Christensen, Ph.D. (Boston College) about who will be covered, Ms. Patterson said the childcare provisions cover all workers at a facility, including support staff and janitorial staff, although most are expected to be technicians. Ellen Ernst Kossek, Ph.D. (Purdue University) commented that some manufacturers are hesitant about the expense, but Ms. Patterson said the childcare provisions are intended to meet the overall goals of the CHIPS program, which requires a robust workforce. She noted creativity is allowed in the regulations, so solutions are reflective of local environments. Dr. Kossek suggested the potential of community-based childcare through partnerships across employers, rather than providing vouchers to employees to find the childcare on their own.

Ashley Bear, Ph.D. (the National Academies) commented on the significance of the childcare provision in this federal act, and Joan Williams, M.A., J.D. (University of California, San Francisco) echoed the ground-breaking nature of conceptualizing childcare as part of industrial infrastructure. Ms. Patterson underscored the need for 100,000 additional technical employees and 1 million construction employees. Childcare is imperative to meet the ambitions of the program and to provide opportunities for well-paying jobs to women, especially women of color. Dr. Christensen commented on a historic precedent, when childcare was provided during World War II to get women into the workforce. In response to a question from Jeff Gillis-Davis, Ph.D. (Washington University in St. Louis), Ms. Patterson clarified that consideration of caregiving for adults, such as eldercare, is not required in the act, but applicants are requested to identify all potential barriers to meeting their workforce targets, which may include the need for other types of care besides childcare. She also stressed this is a long-term effort and hopes that research can be undertaken to evaluate the effects, while respecting privacy concerns.

FEDERAL AGENCIES' ROUNDTABLE

To open the federal agency panel, Ms. Williams expressed appreciation for the funding from federal agencies to undertake the committee's consensus study on caregiving and commented that the agencies have a profound influence on academic institutions to change policies. She moderated a session with Janine Clayton, M.D. (NIH), Jessie DeAro, Ph.D. (NSF), Christopher Szakal, Ph.D. (NIST), and Maggie Yancey (NASA).

OVERVIEW OF PROGRAMS

Ms. Williams first asked the presenters to explain their agency's interest in family caregivers who are working at the agencies or are funded by their programs.

Dr. Clayton explained that the NIH Office of Research on Women's Health, of which she is associate director, has three mission areas: expand women's health research, ensure women are included in NIH-supported clinical research, and advance women in science, technology, engineering, mathematics, and medicine (STEMM).³ Related to this third area, Dr. Clayton commented on the number of women leaving academia and medicine. She noted the pipeline in life sciences and medicine is about 50 percent women, but this percentage is not reflected in leadership positions. The mid-career years are critical. "We invest substantially in the development of scientists," she said, "If we cannot see the full benefit of those investments that the American people are paying for and we are not promoting an inclusive STEMM workforce, we will not be competitive in the future."

Dr. DeAro is the program officer for NSF's ADVANCE program, which promotes equity for STEMM faculty across all identities to achieve a more diverse workforce.⁴ She explained that NSF became interested in the consensus study to follow up with the unusual opportunity that the pandemic presented. "We learned quite a few things about how to be inclusive and flexible and still be productive and produce new knowledge," she observed. She expressed hope that some of the lessons learned can be translated into long-term policies by funding agencies and institutions of higher education. "We are interested in updating the understanding of what 'normal' is, not just what it was," she commented.

³For more information on the NIH Office of Research on Women's Health, see <https://orwh.od.nih.gov/>.

⁴For more information on ADVANCE, see <https://www.nsf.gov/crssprgm/advance/>.

Dr. Szakal said NIST is engaged with diversity, equity, and inclusion across the organization as part of a commitment to provide staff what they need to do their jobs most effectively. To fulfill this commitment, staff express what they need and help drive solutions. The earliest example is an onsite childcare center, which began more than 40 years ago. An eldercare support group and lactation support group have also formed. One change after COVID-19 was more flexibility about telework when dependents are in the home during the workday. He said one reason NIST is interested in the consensus study is to understand the future of hybrid work.

Ms. Yancey supports entrepreneurship in academia at NASA and has been involved in the implementation and evaluation of programs that work to promote equity and well-being of inclusive innovation systems, including those involving family caregivers. Calling attention to President Biden's Executive Order 13985 on advancing racial equity, she said one way to fulfill that order is through better caregiving policies and supports.⁵ E.O. 13985 and other administration policies provide a whole-of-government approach for the science and technology community and the framework to address systemic inequalities. "Serious efforts to accommodate how granting agencies may support caregivers who are also researchers are paramount," she said.

FEDERAL EFFORTS TO SUPPORT CAREGIVERS

Ms. Williams noted that federal agencies can generate support for caregivers by building out requirements and policies as a condition to receive funding, and asked how caregiving in academia is reflected in each agency's funding programs.

Dr. DeAro said NSF has a Career-Life Balance Initiative in place, which started during the Obama administration. It has synthesized all regulations about how federal dollars can be spent and identified flexibilities that could help in situations of family leave, such as the delayed start of a grant or a no-cost extension. Supplements are available at up to \$30,000 each to hire temporary technical support if people on the grant are on leave, without the requirement to share personal information about the reason for the

⁵ The text of Advancing Racial Equity and Support for Underserved Communities Through the Federal Government, Executive Order 13985, January 20, 2021, is available at <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/>.

supplement with NSF. Over the past few years, the funds requested under these supplements ranged from \$600,000 to \$2.2 million per year. Dr. DeAro said the supplements and policy clarifications have been institutionalized as permanent, rather than articulated in “Dear Colleague letters” that might be temporary. An NSF priority goal is to increase the diversity of individuals getting grants, but she acknowledged that policy change in the federal government is slow.

Dr. Clayton discussed several recent and long-standing programs. NIH now provides stipends for National Research Service Award (NRSA) trainees and fellows for up to 8 weeks of paid leave for adoption or birth of a child. Childcare cost support is provided to full-time predoctoral and postdoctoral researchers appointed on NRSA institutional training awards. A long-standing reentry program provides funding for individuals who have left the workforce, often to care for children, and need an on-ramp back to the research arena. The program has been expanded to cover reintegration for people who had been working in an unsafe environment, including those who experienced harassment or discrimination. Two continuity supplements have recently been developed through the NIH Working Group on Women in Biomedical Careers: one for K awardees to continue research if they need to scale or step back, and the other for first-time Research Program Grant recipients. She noted these two points were chosen because they are where women tend to leave the field.

Flexibility outcomes have been built into other aspects of NIH programming, Dr. Clayton continued. Conference grants (R-13) must address the resources available at the location for family care, including eldercare. The biosketch guidelines for grant applications have been expanded to allow applicants to explain breaks due to family circumstances. NIH has ramped up efforts to combat bias and harassment, in particular, gender harassment. NIH now disaggregates data to track these areas for extramural and intramural scientists. NIH is encouraging early-stage investigators (ESI) to inform the agency if they need to extend their ESI status, which may be because of caregiving responsibilities. A Request for Information is now out for public input to simplify peer review criteria, which might point to issues related to caregiving. A series of postdoc listening sessions included one on childcare. Several surveys were conducted to understand the impact of COVID-19 on the research workforce, with data disaggregated by race and gender, and the findings have been published.

Ms. Yancey pointed out that across government, several key regulations that guide grants allow for flexibility. She noted the need to raise awareness

about these flexibilities within academic institutions so that everyone understands what is allowable and destigmatizes using them.

Dr. Szakal said NIST is primarily intramural, but its best practices can be shared beyond the agency, including the childcare provisions in the CHIPS Act (see above), family-friendly leave, and telework. The Lactation Support Group is a grassroots group that launched an effort that resulted in an NIST-wide directive that formalizes lactation policy. Another grassroots initiative resulted in a recently announced childcare subsidy program that provides \$5,000 annually, with income restrictions. He also noted attention to writing policies in gender-neutral language, for example, related to caregiving.

BARRIERS TO BETTER SUPPORT UNPAID CAREGIVERS

To accelerate progress, Ms. Yancey said more data are needed to creatively support programs. She also urged using evidence from existing case studies, such as those collected by Mothers in Science as part of the group's action plan for federal funding agencies (Torres et al., 2023). Examples of solutions range from less burdensome grant requirements to taking a global vantage point to learn from other organizations.

Dr. Clayton commented that policies can be established, but implementation is challenging given the culture of STEMM. For example, pregnant postdocs and faculty report they are sometimes discouraged from taking advantage of existing policies based on the concern they would be seen as less serious scientists. Policy and cultural change must work together, she stressed. Cost is also a barrier, and organizations that receive funding from different sources may find they have to navigate different requirements and allowances across these sources. Postdocs in particular face uncertain status when they are considered neither employees nor students. The main question to answer is, Dr. Clayton said, "Whose problem is it?" She underscored that caregiving touches everyone, which is why NIH is very interested in cross-sector approaches.

Dr. DeAro reiterated the points made by Ms. Yancey and Dr. Clayton, including dealing with the variation in policies and regulations of different funding sources. In terms of Dr. Clayton's point about who owns the problem and can encourage change, she said the expectations in the CHIPS Act are exciting, and she expressed hope they will become a model. She urged

learning from Federal Demonstration Partnership projects.⁶ More broadly, she urged a rethinking of tenure and promotion processes so that people can advance while also dealing with child, elder, or other care. The current mechanisms reward the so-called ideal worker with no gaps in their CV.

Dr. Szakal suggested communications can help bridge policy and culture. Even with good policies in place, he expressed concern about what he termed the “inequity of adoption.” It is important to determine who is getting information about a policy or program—whether the information is readily available or whether individuals must seek it out. Supervisors are critical. The language supervisors employ to discuss these policies can make a difference (for example, welcoming usage or discouraging it), as they are the barrier or advocate for promotion. The big lesson learned is to ensure equitable communication so that employees understand they all have access to the available policies.

Dr. Clayton pointed to surveys of federal workers for valuable data on work/life matters. This year, offices had to develop a detailed action plan to respond to the findings. She noted respondents raised concerns about the need for emergency backup care, the cost of childcare, and flexible work schedules. Supervisor awareness is important, she agreed, and training on caregiving policies is now required. Equity elements are now part of all NIH institutes’ and centers’ directors’ plans, and how they are advancing equity is part of their performance evaluations.

Dr. DeAro said implicit bias training alone is not enough to achieve change. Some people become aware of their biases but will still act on them, she said. She agreed that structures must be built into the system to mitigate the effects of bias, such as leadership accountability. Ms. Yancey added another lesson learned is that demand for flexibility is strong (such as for NASA’s augmentation and extension provisions), but the awareness among leadership must be there to tap into them.

UNINTENDED IMPACTS OF WELL-INTENTIONED POLICIES

In considering how policies that are intended to help people, including caregivers, can negatively affect careers, Ms. Yancey brought up the need to fully understand the cumulative effect when participating in conferences

⁶ For more information, see the Federal Demonstration Partnership website: <https://thefdp.org/default/>.

and meetings virtually, rather than in person. Dr. Clayton brought up tenure stop-the-clock policies. Although she said she did not have data, she noted some women feel this process just extends the process without making them more likely to get tenure. She suggested deeper study with data. Dr. DeAro agreed that the policy is well-intentioned, but it could be functionally implemented in a way that causes problems. She also noted ADVANCE has shown the need to spend time on those who are not the primary target—not just women or people of color but the majority faculty. She suggested flipping the focus of an intervention to understand why the current system benefits only some individuals. “Do we need to have a super-competitive system?” she posed. “Is there another model for how we support and identify scientific research and teaching?” Dr. Szakal called attention to expectations management, noting it takes time to implement a new policy or program. Today’s postdocs may be working to enact a policy that they themselves may not benefit from, as the timing is sometimes drawn out.

DISCUSSION

Sandra Masur, Ph.D. (Icahn School of Medicine at Mount Sinai) urged the agencies to make their resources more available to others, noting the information is superb but sometimes hard to find. Dr. Szakal said NIST provides the information internally but has realized that sharing it more publicly would inform employment seekers and others. Dr. Christensen suggested that NIH or NSF support long-term, organizational intervention trials to test out different models of tenure. Dr. Clayton agreed with the value, noting a previous study on causal factors and interventions was extremely effective, and she shared the findings with NIH leadership at the time to make the case for the next version. Although it was not funded, she continues to push for it. She added that it is helpful to know there are people ready to implement such an experiment if funding were available. Not all Institutes and Centers (ICs) see women in careers as a priority issue, but Dr. Clayton makes the case to them that it is a workforce issue. Dr. DeAro suggested ADVANCE, as well as the Sea Change initiative at the American Association for the Advancement of Science, as possible other routes to study the effect of changes to the tenure and promotion structure. Ms. Williams cautioned that opening up tenure may create problems in the current political climate, as reflected in statements by the American Association of University Professors and other organizations.

Referring to Dr. DeAro's earlier comment about implicit bias training, Dr. Christensen commented that a recent book (Dobbin and Kalev, 2022) cites data showing the countereffects of this training. Ms. Williams clarified that the studies were conducted from 1997 to 2004. She pointed to more recent randomized control trials from University of Wisconsin researchers that showed significant effects with implicit bias training (Devine et al., 2017; Carnes et al., 2015). There are many other experiments going on in the field, including early results from her own trial on the effect of training on service burden for women.

Dr. Kossek commented on the many policies highlighted by the presenters and asked for ideas on how to study improved implementation and prevention of biases. As an analogy, she noted that occupational health interventions are designed to prevent problems, not just react and deal with the exceptions. Dr. Clayton stressed cross-sector communication and programming. For example, a new program in the National Institute of Arthritis and Musculoskeletal and Skin Diseases targets mid-career scientists to provide support as they explore data science. As another example, Leadership Development Scholars is a coordinated, concerted effort across sectors.⁷ NIH also offered the Enhancing Faculty Gender Diversity in Biomedical and Behavioral Science Prize to institutions in 2021, using the challenge.gov mechanism, and hopes to offer it again.⁸ As Dr. Clayton noted, it is important to know people are ready to be creative and do things differently.

⁷ For more information on NIH leadership programs, see <https://hr.nih.gov/training-center/leadership/nih-continuum-leadership>.

⁸ For more information, see <https://orwh.od.nih.gov/career-development-education/prize-competition>.

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Appendix A

Public Meeting Agendas

COMMITTEE ON POLICIES AND PRACTICES FOR SUPPORTING FAMILY CAREGIVERS WORKING IN SCIENCE, ENGINEERING, AND MEDICINE

FEBRUARY 27, 2023
VIRTUAL SYMPOSIUM

SESSION 1—OPEN CAREGIVING CHALLENGES

- | | |
|-------------|---|
| 12:00–12:20 | Welcoming Remarks
Elena Fuentes-Afflick , Committee Chair |
| 12:20–1:20 | Outlining the Challenges Facing Caregivers in STEMM
Christina Mangurian , University of California, San Francisco |
| 1:20–1:35 | Break |

**SESSION 2—OPEN
FEDERAL AND STATE POLICIES**

- 1:35–3:05 Understanding the Federal and State Policy Landscape
for Caregiving
Jocelyn Frye, National Partnership for Women and
Families
Jessica Lee, WorkLife Law
Susan Reinhard, AARP
- 3:05–3:20 Break

**SESSION 3—OPEN
ORGANIZATIONAL POLICIES**

- 3:20–4:50 Organizational Policies Supporting Caregivers in
STEMM: Examining Academic Medicine
Debra Lerner, Tufts University
Kate Miller, University of Pennsylvania
- 4:50–5:00 Closing Remarks

**COMMITTEE ON POLICIES AND PRACTICES FOR
SUPPORTING FAMILY CAREGIVERS WORKING IN
SCIENCE, ENGINEERING, AND MEDICINE**

National Academy of Sciences
2101 Constitution Ave NW, Washington DC 20418

**MARCH 27, 2023
ROOM 120**

- 11:45–12:00 Light Refreshments

**SESSION 1—OPEN
UNIQUE CAREGIVING CHALLENGES**

- 12:00–12:05 Welcoming Remarks
Ellen Ernst Kossek, Committee Member
- 12:05–1:05 Unique Challenges for Caregivers
Tracy Dumas, The Ohio State University

- 1:05–2:05 Emotional and Health Impacts of End-of-Life Caregiving and Bereavement
Djin Tay, University of Utah
- 2:05–2:10 Break
- 2:10–3:10 Managing Academic Careers and Caretaking in STEMM
Lisa Wolf-Wendel, University of Kansas
- 3:10–3:15 Break

**SESSION 2—OPEN
CHIPS FOR AMERICA**

- 3:15–3:50 CHIPS and Science Act Childcare Provision
Kylie Patterson, CHIPS for America

**SESSION 3—OPEN
FEDERAL AGENCY POLICIES**

- 3:50–4:55 Federal Agency Panel
Janine Clayton, NIH
Jessie DeAro, NSF
Christopher Szakal, NIST
Maggie Yancey, NASA
- 4:55–5:00 Closing Remarks

Appendix B

Biographical Sketches of Planning Committee Members and Speakers

WORKSHOP PLANNING COMMITTEE

Elena Fuentes-Afflick (*Chair*) is professor of pediatrics and vice dean for the UCSF School of Medicine at Zuckerberg San Francisco General Hospital at the University of California, San Francisco (UCSF). Throughout her career, Dr. Fuentes-Afflick has personally managed and mentored faculty and staff on a range of caregiving issues in the context of academic medicine. In 2010, she was elected to membership in the National Academy of Medicine and has served on numerous consensus committees, the Membership Committee, and the Diversity Committee; was elected to the Governing Council and the Executive Committee of Council; and was elected Home Secretary. In 2020, she was elected to the American Academy of Arts and Sciences. Dr. Fuentes-Afflick obtained her undergraduate and medical degrees at the University of Michigan and a master's degree in public health (epidemiology) from the University of California, Berkeley. She completed her pediatric residency and chief residency at UCSF, followed by a research fellowship at the Phillip R. Lee Institute for Health Policy Studies at UCSF.

Marianne Bertrand is the Chris P. Dialynas Distinguished Service Professor of Economics at the University of Chicago Booth School of Business. Born in Belgium, Professor Bertrand received a bachelor's degree in economics from Belgium's Université Libre de Bruxelles in 1991, followed by a master's degree in econometrics from the same institution the next year. She

earned a Ph.D. in economics from Harvard University in 1998. She was a faculty member in the Department of Economics at Princeton University for 2 years before joining Chicago Booth in 2000. Professor Bertrand is an applied microeconomist whose research covers the fields of labor economics, corporate finance, political economy, and development economics. Her research in these areas has been published widely, including numerous research articles in the *Quarterly Journal of Economics*, the *Journal of Political Economy*, the *American Economic Review*, and the *Review of Economic Studies*. Professor Bertrand is a co-director of Chicago Booth's Rustandy Center for Social Sector Innovation and the director of the Inclusive Economy Lab at the University of Chicago Urban Labs. She also served as co-editor of the *American Economic Review*. She has received several awards and honors, including the 2004 Elaine Bennett Research Prize, awarded by the American Economic Association to recognize and honor outstanding research in any field of economics by a woman at the beginning of her career, and the 2012 Society of Labor Economists' Rosen Prize for Outstanding Contributions to Labor Economics. Professor Bertrand is a research fellow at the National Bureau of Economic Research, the Center for Economic Policy Research, and the Institute for the Study of Labor. She is also a fellow of the American Academy of Arts and Sciences and of the Econometric Society, and a member of the National Academy of Sciences.

Mary Blair-Loy is professor of sociology at UC San Diego. She uses multiple methods to study gender, work, and family. Much scholarship emphasizes individuals' strategic trade-offs or implicit biases. In contrast, Professor Blair-Loy analyzes normative cultural models of a worthwhile life, including the "work devotion schema" (which defines professional work as a calling that penalizes involved caregiving) and the "schema of scientific excellence" (which defines scholarly excellence in terms of culturally masculine traits such as assertive self-promotion). Her 2022 book *Misconceiving Merit* with Erin Cech uses multiple types of evidence to show that these cultural schemas are broadly embraced yet harm scientists and science. A 2022 article in *Science* shows how hiring rubrics can devalue women academic engineers. A 2019 *Proceedings of the National Academy of Sciences* article with Cech uses longitudinal data to show substantial attrition of new mothers from STEM and was recognized as a Top 10 PNAS Article of 2019 to make a "large impact on the public understanding of science." Professor Blair-Loy has been recognized as a "Top Ten Extraordinary Contributor" in the "Landmark Contributions" category in the international field of work-family

research. She holds a B.A. and Ph.D. from the University of Chicago and an M.Div. from Harvard University.

Kathleen Christensen is a faculty fellow at Boston College's Center for Social Innovation. She is a pioneering leader in research and policy on the work and family needs of the U.S. workforce. At the center, she co-directs Work Equity, a major new initiative to address and mitigate the gender, racial, and stage-in-life inequities that are baked into the structure of work. She previously served as program director at the Alfred P. Sloan Foundation, consulting research scholar at Stanford University, and professor of psychology at the Graduate Center, City University of New York. Over two decades with the Alfred P. Sloan Foundation, she led innovative and multidisciplinary programs that inspired, accelerated, and produced lasting impact. Her expertise in working with academic, governmental, and business communities fostered innovation and built research capacity through programs and networks. Her accomplishments include the establishment of programs that were ahead of their times, focused on work-family, workplace flexibility, faculty career flexibility, aging and work, and the impacts of outsourcing on the U.S. workforce. Recognized for her expertise on job design, career flexibility, and caregiving, Dr. Christensen worked closely with the White House on its 2010 Forum on Workplace Flexibility and its 2014 Summit on Working Families. She has been recognized as one of the "Seven Wonders" of the work-life field. Her academic honors include Danforth, Mellon, and National Endowment for the Humanities fellowships, and she is the author/editor of seven books. Dr. Christensen received her Ph.D. from Pennsylvania State University in geography and philosophy of science and her B.S., *summa cum laude*, from the University of Wisconsin–Green Bay in urban studies and psychology.

J. Nicholas Dionne-Odom is an associate professor in the School of Nursing at the University of Alabama at Birmingham (UAB) and co-director of caregiver and bereavement support services in the UAB Center for Palliative and Supportive Care. Dr. Dionne-Odom is board-certified in hospice and palliative care advanced practice nursing with more than 10 years clinical experience in critical care and 10 years in telehealth palliative care coaching. He is a nationally and internationally recognized expert in developing and testing early palliative interventions for family caregivers of individuals with serious illness, focusing particularly on historically underresourced populations. Dr. Dionne-Odom's research has totaled \$9 million from

the National Institute of Nursing Research, National Cancer Institute, the National Palliative Care Research Center, the Gordon and Betty Moore Foundation, the Cambia Health Foundation, Sigma Theta Tau International, the American Association of Critical Care Nursing, and the UAB Center for Palliative and Supportive Care. In 2020, he received the Protégé Award from the Friends of the National Institute of Nursing Research and was inducted as a fellow in the American Academy of Nursing. Dr. Dionne-Odom acquired his B.S.N. from Florida State University (2002), an M.A. in philosophy and education from Teachers College, Columbia University (2006), an M.S.N. in nursing at Boston College (2010), and his Ph.D. in nursing at Boston College (2013).

Mignon Duffy is a professor of sociology at the University of Massachusetts, Lowell. Her primary research interests center on care work—the work (paid and unpaid) of taking care of others, including children and those who are elderly, ill, or disabled. She is particularly interested in how the social organization of care intersects with gender, race, class, and other systems of inequality. Her most recent project is an edited volume (co-edited with Amy Armenia and Kim Price-Glynn) that is forthcoming from Rutgers University Press, entitled *From Crisis to Catastrophe: Care, COVID, and Pathways to Change*. She is also the co-editor of *Caring on the Clock: The Complexities and Contradictions of Paid Care* (2015) and the author of *Making Care Count: One Hundred Years of Gender, Race, and Paid Care Work* (2011). Dr. Duffy is also a longtime leader (currently serving as past chair) of the Carework Network, an international organization of care work researchers and advocates. Her research has appeared in peer-reviewed journals such as *Gender & Society* and *Social Problems*. Committed to connecting her research to policy, Dr. Duffy has worked in collaboration with policy organizations such as the United Nations, the International Labor Organization, and the World Economic Forum.

Jeff Gillis-Davis is a professor of physics at Washington University in St. Louis. Previously, he was faculty at the University of Hawai'i at Mānoa (2003–2018). Dr. Gillis-Davis combines experiments, remote sensing, and sample analysis to study the geology of the Moon, Mercury, and asteroids. His primary research area centers on a process known as space weathering. To study space weathering in the lab, he uses lasers to replicate the impact of dust-sized particles on the surfaces of these airless bodies. The intense impact energy of these dust-sized particles transforms minerals into glass,

can destroy polar ice deposits, or lead to intriguing chemical processes. Dr. Gillis-Davis leads a team of researchers who study the complex processes and environments that determine where ice will be, how it may be modified, how water was delivered to the Moon, and its active water cycle. This team is called the Interdisciplinary Consortium for Evaluating Volatile Origins (ICE Five-O), one of NASA's Solar System Exploration Research Virtual Institute (SSERVI). He has also participated as a science team member in three NASA missions: Clementine, Lunar Reconnaissance Orbiter Miniature Radio-Frequency team, and MESSENGER.

Reshma Jagsi is chair of the Department of Radiation Oncology at Emory University and Winship Cancer Institute. A graduate of Harvard College, Harvard Medical School, and the University of Oxford, where she studied as a British Marshall Scholar, she completed her residency training and an ethics fellowship at Harvard before joining the faculty of the University of Michigan, where she served as the director of its Center for Bioethics and Social Sciences in Medicine. Gender equity in academic medicine has been a key area of her scholarly focus, a subject to which she brings her perspective as a physician and social scientist, to promote evidence-based intervention. Author of more than 400 articles in peer-reviewed journals, including multiple high-impact studies in journals such as the *New England Journal of Medicine*, the *Lancet*, and *JAMA*, her research to promote gender equity has been funded by R01 grants from the National Institutes of Health as well as large independent grants from the Doris Duke Foundation and several other philanthropic foundations. Her Doris Duke Foundation grant has focused specifically on the development and evaluation of programs intended to support academic medical faculty with family caregiving demands, including an initiative that began well before the outbreak of the COVID-19 pandemic and a new program inspired by the pandemic and the National Academies of Sciences, Engineering, and Medicine report on COVID and women. She has mentored dozens of others in research investigating women's underrepresentation in senior positions in academic medicine and the mechanisms that must be targeted to promote equity. Active in organized medicine, she has served on the Steering Committee of the Association of American Medical Colleges (AAMC) Group on Women in Medicine in Science. She now serves on the National Academies Committee on Women in Science, Engineering, and Medicine and the Advisory Committee for Research on Women's Health for the National Institutes of Health. She was part of the *Lancet's* advisory committee for its theme

issue on women in science, medicine, and global health, which served to foster additional research. An internationally recognized clinical trialist and health services researcher in breast cancer, her work is frequently featured in the popular media, including coverage by the *New York Times*, *Wall Street Journal*, and NPR. Her contributions have been recognized with her election to the American Society for Clinical Investigation and Association of American Physicians, the Leadership Award of the AAMC's Group on Women in Medicine and Science, LEAD Oncology's Woman of the Year Award, American Medical Women's Association's Woman in Science Award, and American Medical Student Association's Women Leaders Award. She is a fellow of the American Society of Clinical Oncology, American Society for Radiation Oncology, American Association for Women in Radiology, American Association for the Advancement of Science, and the Hastings Center.

Ellen Ernst Kossek is the Basil S. Turner Distinguished Professor in the Krannert School of Management at Purdue University. Prior to joining Purdue, she was University Distinguished Professor at Michigan State University. Dr. Kossek is the first elected president of the Work-Family Researchers Network and has won dozens of awards for research and service excellence related to advancing the organizational work and family research stream in the field of management. She is an internationally recognized researcher who studies how employment policies and practices to support positive work-family-life relationships affect gender equality and diversity, equity, and inclusion. She designs and conducts field experiments to help organizations and leaders implement work-life flexibility, work-life cultural change, and gender and diversity equality initiatives. Dr. Kossek is a fellow in the Academy of Management, the Society for Industrial and Organizational Psychology, and the American Psychological Association. She holds a Ph.D. in organizational behavior from the Yale School of Management, an M.B.A. from the University of Michigan, and a B.A. with honors in psychology from Mount Holyoke College. She led in writing a report for the National Academy of Sciences on the effects of COVID-19 on the work-life boundaries and domestic labor of women in academic science, technology, engineering, mathematics, and medicine.

Lindsey Malcom-Piqueux is the assistant vice president for diversity, equity, inclusion, and assessment and the chief institutional research officer at the California Institute of Technology (Caltech). In this role, she develops

and implements research-informed, metrics-driven institutional efforts to ensure that Caltech is a diverse, equitable, and inclusive environment for all community members. She also oversees all areas of institutional research in support of the institute's planning and decision-making processes. Her scholarly research focuses on understanding the institutional conditions that advance racial and gender equity in STEM fields. Prior to joining Caltech, she served as the associate director of research and policy at the Center for Urban Education at the University of Southern California and was a research associate professor in the USC Rossier School of Education. She has also held faculty positions at the George Washington University and the University of California, Riverside. Dr. Malcom-Piqueux earned her Ph.D. in urban education with an emphasis in higher education from the University of Southern California, her M.S. in planetary science from Caltech, and her S.B. in planetary science from the Massachusetts Institute of Technology. She has previously served on the National Academies' study committees on Increasing Diversity and Inclusion in the Leadership of Competed Space Missions and Developing Indicators for Undergraduate STEM Education.

Sandra Kazahn Masur is a basic scientist and an activist for women in science and medicine at the Icahn School of Medicine at Mount Sinai in New York where she is professor of ophthalmology and of pharmacological sciences and director of its Office for Women's Careers within the Office for Gender Equity in Science and Medicine. Her National Institutes of Health (NIH)-funded research explored the cell biology of membrane transport and of corneal wound healing. In active support of scientists, she chaired the Women in Cell Biology (WICB) Committee of the American Society for Cell Biology (ASCB) and was co-director of the National Eye Institute's "Fundamental issues in Vision Research" at the Marine Biology Laboratory, Woods Hole, Massachusetts. She was a participant in the NIH Office for Research in Women's Health strategic planning for Women in Science. The Sandra K. Masur Senior Leadership Award was established by the ASCB to honor individuals with exemplary achievements in cell biology who are also outstanding mentors. She received the Women in Medicine Silver Achievement Award from the Association of American Medical Colleges and the Outstanding Woman Scientist of the Association for Women in Science, and is an elected fellow of the American Society for Cell Biology.

Maria (Mia) Ong is a senior research scientist at TERC, a research and development organization dedicated to STEM education that is based in Cambridge, Massachusetts. Prior to working at TERC, Dr. Ong served on faculty at Swarthmore College, Wellesley College, and Harvard University Graduate School of Education. For nearly three decades, she has researched the experiences of women of color and members of other marginalized groups in computer science, engineering, physics, and general STEM higher education and professions, with emphases on qualitative studies and literature synthesis projects. She has led or co-led numerous projects funded by the U.S. Department of Education, the National Institutes of Health, and the National Science Foundation (NSF). She has solo- or co-authored more than 40 publications on equity and inclusion topics, including career-life balance, caregiving, counterspaces, and changing cultural norms in STEM. Dr. Ong has served on several national committees and task forces, including the NSF Committee on Equal Opportunities in Science and Engineering (2008–2014), the Social Science Advisory Board of the National Center for Women & Information Technology (2008–2022; chair 2017–2018), the American Institute of Physics National Task Force to Eliminate African American Underrepresentation in Physics and Astronomy (TEAM-UP, 2017–2020), and the National Academies Committee to Address the Underrepresentation of Women of Color in Tech (2019–2022). She is a co-recipient of a Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring (1998) and a co-recipient of the Excellence in Physics Education Award from the American Physical Society (2022). Dr. Ong holds a Ph.D. in social and cultural studies in education from the University of California, Berkeley.

Robert L. Phillips Jr. is the founding executive director of the Center for Professionalism & Value in Health Care in Washington, D.C. He is a practicing family physician with training in health services and primary care research. His research seeks to inform clinical care and policies that support it. He leads a national primary care registry with related research on social determinants of health, rural health, and changes in primary care practice. Dr. Phillips has often served the Department of Health and Human Services including as vice-chair of the Council on Graduate Medical Education, co-chair of the Subcommittee on Population Health of the National Committee on Vital and Health Statistics, and on the Negotiated Rule-Making Committee on Shortage Designation. Dr. Phillips was elected to the National Academy of Medicine (NAM) in 2010. He was a Fulbright

Specialist to the Netherlands and New Zealand. He completed medical school at the University of Florida, where he graduated with honors for special distinction, and trained clinically in family medicine at the University of Missouri, where he completed a National Research Service Award fellowship. Dr Phillips currently serves as the chair of the NAM Membership Committee and has served on multiple consensus studies, contributed to several workshops, and served as a reviewer.

Jason Resendez is the president and CEO of the National Alliance for Caregiving (NAC), where he leads research, policy, and innovation initiatives to build health, wealth, and equity for America's 53 million family caregivers. He is a nationally recognized expert on family care, aging, and the science of inclusion in research. In 2020, he was named one of America's top influencers in aging by PBS's *Next Avenue* alongside Michael J. Fox and Surgeon General Dr. Vivek Murthy. Prior to joining NAC, Mr. Resendez was the founding executive director of the UsAgainstAlzheimer's Center for Brain Health Equity and was the principal investigator of a Healthy Brain Initiative cooperative agreement with the Centers for Disease Control and Prevention (CDC). While at UsAgainstAlzheimer's, he pioneered the concept of Brain Health Equity through peer-reviewed research, public health partnerships, and public policy. Mr. Resendez has been quoted by the *Washington Post*, the *Wall Street Journal*, *STAT News*, *Time*, *Newsweek*, and *Univision* on health equity issues and has received the Service Award for Caregiving from the National Hispanic Council on Aging (NHCOA); the LULAC Presidential Medal of Honor; and the HerMANO Award from MANA, A National Latina Organization, for his advocacy on behalf of the Latino community.

Hannah Valantine received her M.B.B.S. degree from London University, cardiology fellowship at Stanford University, and doctor of medicine from London University. She was appointed assistant professor of medicine, rising to full professor of medicine in 2000, and becoming the inaugural senior associate dean for diversity and leadership in 2004. She pursued a data-driven transformative approach to this work, receiving the National Institutes of Health director's pathfinder award. Dr. Francis Collins, NIH director, recruited her in 2014 as the inaugural NIH chief officer for scientific workforce diversity, and as a tenured investigator in the National Heart, Lung, and Blood Institute's intramural research program, where she established the laboratory of transplantation genomics. Dr. Valantine

is a nationally recognized pioneer in her field, with more than 200 peer-reviewed publications, patents, and sustained NIH funding. She was elected to the National Academy of Medicine in 2020 for both her pioneering research in organ transplantation and workforce diversity.

Joan Williams is the Sullivan Professor of Law and founding director of the Center for WorkLife Law at University of California College of the Law, San Francisco. Ms. Williams has played a central role in reshaping the conversation about work, gender, and class over the past quarter century. Her path-breaking work helped create the field of work-family studies and modern workplace flexibility policies. She is one of the most cited scholars in her field and is the author of 11 books and over 100 academic articles. Her many honors include the President's Award, Society of Women Engineers, 2019; Top Ten Extraordinary Contributors to Work and Family Research Award, Work and Family Researchers Network, 2018; Work Life Legacy Award, Families and Work Institute, 2014; Outstanding Scholar Award, Fellows of the American Bar Foundation, 2012. Ms. Williams received her J.D. from Harvard Law School, and an M.A. from Massachusetts Institute of Technology.

WORKSHOP SPEAKERS

Janine Austin Clayton is associate director for research on women's health and director of the Office of Research on Women's Health (ORWH) at the National Institutes of Health (NIH). She is the architect of the NIH policy requiring scientists to consider sex as a biological variable across the research spectrum. This policy is part of NIH's initiative to enhance research reproducibility through rigor and transparency. As co-chair of the NIH Working Group on Women in Biomedical Careers, with NIH director Francis Collins, she also leads NIH's efforts to advance women in science careers. Prior to joining ORWH, she was the deputy clinical director of the NIH's National Eye Institute. A board-certified ophthalmologist, her research interests include autoimmune ocular diseases and the role of sex and gender in health and disease. She is the author of more than 120 scientific publications, journal articles, and book chapters. She received her undergraduate degree with honors from Johns Hopkins University and her medical degree from Howard University College of Medicine. She has received numerous awards, including the Senior Achievement Award from the Board of Trustees of the American Academy of Ophthalmology and the European Uveitis

Patient Interest Association Clinical Uveitis Research Award. She is also the recipient of a 2010 silver fellow by the Association for Research in Vision and Ophthalmology, the American Medical Women's Association Lila A. Wallis Women's Health Award and the Wenger Award for Excellence in Public Service, and the Bernadine Healy Award for Visionary Leadership in Women's Health. She was an honoree for the Woman's Day Red Dress Awards and the American Medical Association's Dr. Nathan Davis Awards for Outstanding Government Service.

Jessie DeAro is lead program director of ADVANCE at the National Science Foundation (NSF). Her career with federal education and diversity programs started in 1999 after earning her doctorate in physical chemistry from the University of California, Santa Barbara, studying the mesoscale optical properties of thin organic polymer films. She was selected as a Presidential Management Fellow (PMF) and recruited by the U.S. Department of Education to manage a relatively new Hispanic-Serving Institutions (HSIs) capacity-building program. In this position, she worked with HSIs to strengthen educational programs as well as the administrative and fiscal capacity of the institutions. In 2002 she became the special assistant to the director of institutional development and undergraduate education services (IDUES) and developed a web-based performance monitoring instrument to link grantee outcomes to statutory program goals. She then worked as a science program officer for the Fund for the Improvement of Postsecondary Education (FIPSE). In 2003 she was recruited to the NSF to become the program director for the Historically Black Colleges and Universities-Undergraduate Program (HBCU-UP). During this time, she worked with HBCUs to strengthen their undergraduate science and engineering education and research programs as well as encourage more STEM education research at HBCUs with the addition of a broadening participation research track in the program. In 2007 she was asked to take on the management of the ADVANCE program which is an NSF-wide program to increase the participation and advancement of women in STEM academic careers. In 2010 she was detailed to the White House Office of Science and Technology Policy, where she worked on STEM education and workforce diversity policy as a senior policy analyst. She returned to the NSF to work on broadening participation in STEM graduate education, postdoctoral training, and academic careers, as program director for the Alliances for Graduate Education and the Professoriate (AGEP) program. In addition, Dr. DeAro served as the team lead for the Presidential Awards for Excellence

in Science, Mathematics, and Engineering Mentoring (PAESMEM) for 1 year. In 2013 she was asked to serve as acting deputy division director in the Division of Human Resource Development, where she served for 6 months and then served 8 months as acting deputy division director of the Division of Research on Learning in Formal and Informal Settings. After these management details, she returned to manage the ADVANCE program as lead program officer as well as serve as a human resource development program officer on the EHR Core Research (ECR) program focusing on broadening participation in STEM research and the EHR representative to the Science and Technology Centers (STC) program.

Tracy L. Dumas, associate professor, earned her Ph.D. in management and organizations from the Kellogg School of Management at Northwestern University. She also holds an M.S. in industrial relations from Loyola University Chicago, and a B.S. from Northwestern University. Dr. Dumas' research addresses the interface between employees' personal and professional lives with a focus on understanding how management practices can help employees to excel at work while also engaging meaningfully in their communities. Her research is published in leading outlets including *Academy of Management Annals*, *Academy of Management Journal*, *Academy of Management Review*, *Journal of Applied Psychology*, *Organization Science*, *Personnel Psychology*, *Harvard Business Review*, *Research on Managing Groups and Teams*, and *Duke Journal of Gender Law & Policy*. Prior to joining Fisher, Dr. Dumas was a visiting assistant professor at Emory University's Goizueta Business School, and an assistant professor of organizational sciences at George Washington University. Prior to entering academia, she managed client projects for a Chicago-based consulting and research firm specializing in workforce issues.

Jocelyn Frye is president of the National Partnership for Women and Families. Under her leadership, the organization is focused on advancing economic justice, affordable and equitable health care, civil rights, and reproductive freedom for women who face the steepest barriers. Prior to taking the helm of the National Partnership, Ms. Frye was a senior fellow at the Center for American Progress (CAP), one of the country's foremost progressive think tanks. In that role, she shaped policy development for CAP's Women's Initiative. Before joining CAP, she served in the White House during the administration of Barack Obama. As deputy assistant to the President and director of policy and special projects for the First

Lady, she oversaw a broad-issue portfolio focused on improving the lives of women and families. She helped lead the two signature initiatives of then-First Lady Michelle Obama: tackling childhood obesity and supporting military families. Ms. Frye began her career at Crowell and Moring. She received her J.D. from Harvard Law School and her undergraduate degree from the University of Michigan.

Jessica Lee is a senior staff attorney at the Center for WorkLife Law and director of the center's Pregnant Scholar Initiative, the nationwide legal resource center for pregnant and parenting students. Ms. Lee's research and advocacy advances gender and racial equity in the workplace and in education, and she is a nationally recognized expert on the laws at the intersection of employment, education, and maternal and infant health. She provides a wide scope of partner organizations with know-your-rights training and strategic tools. Model legislation she co-drafted has been introduced in Congress and at the state level, she regularly advises state and local enforcement agencies, and she has guided dozens of educational institutions through drafting and implementing family-responsive policies. She also provides know-your-rights resources and trainings to educate parents and changemakers on the legal rights of caregivers in the workplace and in education—translating complicated legal issues into approachable and useful tools for thousands of nonlawyers. During the COVID-19 crisis, Ms. Lee has used her expertise to advance pandemic-related policies to support parents and other caregivers, and she manages the Center for WorkLife Law's free legal helpline. Her work has been covered by a variety of press, from the *New York Times* to the BBC, and her writing has appeared in publications ranging from *Harvard Business Review* and the *Chronicle of Higher Education* to law reviews and medical journals.

Debra Lerner is associate director of organizational impact for Tufts CTSI, director and founder of the Program on Health, Work and Productivity, Institute for Clinical Research and Health Policy Studies, Tufts Medical Center, and professor in the Departments of Medicine and Psychiatry of Tufts University School of Medicine and Tufts Graduate School of Biomedical Sciences. She has dedicated her career to reducing the human and economic burden of illness and disability, and translating research results into evidence-based workplace policies and practices that enable all adults to remain productive throughout their lives. She is a national thought leader on health and work productivity improvement as well as workplace

mental health. Her major accomplishments include developing the Be Well at Work program, which improves the functional performance and mental health of employees with depression, and the well-known Work Limitations Questionnaire, which is used in research and evaluation worldwide. As an expert in workplace mental health and in employee health and work productivity, she has been principal investigator on studies to develop employer and employee strategies to purchase high-value, patient-centered health care; improve workplace and community supports for family caregivers; leverage the workplace to improve employee and family mental health; and promote the labor market participation of persons with disabilities. She co-leads a large initiative for the Rosalynn Carter Institute for Caregivers, which is engaging employers to address the needs of their employee caregivers. She authored a widely cited white paper, “Invisible Overtime: What Employers Need to Know about Caregivers,” published in 2022.

Christina Mangurian is a professor of clinical psychiatry at the University of California San Francisco School of Medicine and the UCSF Department of Psychiatry’s vice chair for diversity and health equity. She founded and directs the UCSF Program of Research on Mental Health Integration among Underserved and Minority populations (PReMIUM) which is based at UCSF’s Center for Vulnerable Populations. Dr. Mangurian is a community psychiatrist whose National Institutes of Health–funded research program focuses on improving diabetes screening and HIV care of people with severe mental illness (e.g., schizophrenia, bipolar disorder), particularly among underserved minority populations. In addition to her research experience, Dr. Mangurian is the director and co-founder of the UCSF Public Psychiatry Fellowship at San Francisco General Hospital. Dr. Mangurian also serves as the chair of the American Psychiatric Association’s Council on Minority Mental Health and Health Disparities. Dr. Mangurian received her B.A. in biology from Reed College. She graduated AOA from the UCSF School of Medicine and completed her psychiatry residency and chief residency at Columbia University. She also completed the Columbia University Public Psychiatry Fellowship. Dr. Mangurian joined the faculty at UCSF Department of Psychiatry at Zuckerberg San Francisco General Hospital in 2009. She joined the faculty of the UCSF Center for Vulnerable Populations in 2014 and the faculty of the Philip R. Lee Institute for Health Policy Studies in 2018. She received a UCSF master’s degree in clinical research, with implementation science track coursework, in 2015.

Katherine Miller is a postdoctoral researcher in the Department of Medical Ethics and Health Policy at the University of Pennsylvania. Her research interests include access to health care in rural communities and the intersection of aging and health policy evaluation as informed by health economics. Her dissertation evaluated the impact of a federal program for family caregivers of post-9/11 veterans on caregiver health and employment outcomes. Her recent research also includes examining access to care after rural hospital closures. She holds a Ph.D. in health policy and management from the Gillings School of Global Public Health at the University of North Carolina at Chapel Hill.

Kylie Patterson is a senior advisor for CHIPS for America in the U.S. Department of Commerce. She is an accomplished programs director, consultant, writer, researcher, and public policy leader with expertise in economic, small business, and workforce development. Her commitment to economic equity and drive led to her current appointment as director of diversity and inclusion for the U.S. House of Representatives Financial Services Committee, where she researches and drafts legislation to support Black, Indigenous, and People of Color (BIPOC), women, veterans, those with disabilities, and those in underserved and rural areas. Prior to her appointment to the U.S. House of Representatives, Ms. Patterson served as professional staff member for the U.S. Senate Committee on Small Business and Entrepreneurship. She also served as the inaugural director of economic inclusion at Johns Hopkins University and Health System where she led HopkinsLocal, BLocal, and the Goldman Sachs 10,000 Small Businesses program. Ms. Patterson graduated from Temple University, where she earned a B.A. degree in African American studies and political science, was inducted into Phi Beta Kappa, and was selected as a Harry S. Truman Scholar from Pennsylvania. She holds a master's degree in public policy from the Hubert H. Humphrey School of Public Affairs at the University of Minnesota, Twin Cities.

Susan C. Reinhard is a senior vice president at AARP, directing its Public Policy Institute (PPI), the focal point for public policy research and analysis at the state, federal, and international levels. She leads PPI's Family Caregiving Initiatives and serves as the chief strategist for the Center to Champion Nursing in America, a national resource center created to ensure that America has the highly skilled nurses it needs to provide care in the future. Dr. Reinhard is a nationally recognized expert in health and long-term care

policy, with extensive experience in conducting, directing, and translating research into action to promote policy change. Previously, she served as professor and co-director of Rutgers Center for State Health Policy, where she directed several national initiatives with states to help people of all ages with disabilities live in their communities. As deputy commissioner of the New Jersey Department of Health and Senior Services, she led the development of policies and nationally recognized programs for family caregiving, consumer choice, and community-based care options. She is a former faculty member at the Rutgers College of Nursing, and a fellow of the American Academy of Nursing, the Gerontological Society of America, and the Salzburg Global Forum. Dr. Reinhard holds many governance positions, including on the boards of the *International Journal of Care and Caring* and the RWJBarnabas Health System. She has received many honors, including awards from the Family Caregiver Alliance, New York University, the College of New Jersey, the New Jersey State Nurses Association, ADvancing States, the Gerontological Society of America, the National Association of School Nurses, the National Academy for State Health Policy, the American Association of Colleges of Nursing, and the American Association of Nurse Practitioners. She holds a master's degree in nursing from the University of Cincinnati and a Ph.D. in sociology from Rutgers University.

Christopher Szakal is chief of staff for the Material Measurement Laboratory headquarters at the National Institute of Standards and Technology (NIST). Previously, he was a research chemist in the Materials Measurement Science Division at NIST since 2006. His professional background is in mass spectrometry, with an emphasis in surface analysis by secondary ion mass spectrometry (SIMS). His research involves a wide range of topics, including the imaging and quantification of select signatures within individual mammalian and bacterial cells, surface analysis of nanoparticle aggregates as a function of environmental stimuli, inorganic microparticle analysis, and standard method development. In addition to SIMS approaches to characterize the topic areas above, Dr. Szakal has employed ambient ionization mass spectrometry tools to further expand the chemical information that can be obtained from these systems. These tools include multiple atmospheric pressure-based MS methodologies, such as desorption electrospray ionization and atmospheric pressure matrix-assisted laser desorption ionization, and advanced instruments containing triple quadrupole and quad-time-of-flight mass analyzers.

Djin Tay is an assistant professor at the College of Nursing and a licensed registered nurse with a background in home health nursing. Her research focuses on the implications of emerging treatments on caregiving, decision-making, palliative care, and end-of-life in the context of the family. Currently, she is using the Utah Population Database, electronic health record data, and patient reported outcome measures to study how palliative care delivery can be optimized for cancer patients receiving immunotherapy, and the influence of racial/ethnic, socioeconomic, and geographical disparities on survival, end-of-life health-care utilization, and spousal cancer caregiver health outcomes. Dr. Tay is a 2021–2022 University of Utah Vice President’s Clinical and Translational Research scholar, a Family Caregiving Collaborative Scholar, and a program associate member of the Huntsman Cancer Institute Cancer Center Cancer Control and Population Sciences program. She is a co-investigator on Dr. Ellington’s multisite hospice R01 study, “Cancer Caregiver Interactions with the Hospice Team: Implications for End of Life and Bereavement Outcomes”, and a co-principal investigator on the University of Utah Consortium for Families and Health Research grant “1U for Population-Based Caregiving Science: Strengthening Partnerships, Leveraging Expertise, and Building the Pipeline of Population-Based Caregiving Research”. She leads the Immunotherapy, Palliative, End-of-Life Treatment Utilization and Spousal Outcomes (ImmPETUS) study, a population-based study that facilitates the examination of survival, palliative care, and spousal comorbidity outcomes associated with cancer immunotherapy receipt. ImmPETUS consists of data from Utah cancer patients diagnosed between 2013 and 2019 with lung, colorectal, breast, melanoma, bladder, and head and neck cancers and their spouses, using data from the UPDB, the Utah All Payers Claims Database, and the Utah Cancer Registry. Dr. Tay contributes to population-based family caregiving research through collaborations within the university and across institutions, being an active collaborator with studies examining end-of-life outcomes using population registers in Utah and Denmark.

Lisa Wolf-Wendel is a professor of higher education in the Department of Educational Leadership and Policy Studies. She is also the associate dean for research and graduate studies in the School of Education. Dr. Wolf-Wendel joined the faculty of the University of Kansas in 1995. She earned her undergraduate degree in psychology and communications from Stanford University in 1987. She earned her doctorate in higher education from the Claremont Graduate University in 1995. Dr. Wolf-Wendel is the author

of numerous books and refereed journal articles on topics related to equity issues in higher education. Her research focuses on faculty issues including studies of the academic labor market, the needs of international faculty and faculty from historically underrepresented groups, and several recent research projects pertaining to the policy response of academic institutions in the wake of demands for dual-career couple accommodations and work/family balance. She is an editor of the ASHE Higher Education Monograph Series and serves on the editorial board of many publications in higher education, including *Research in Higher Education*, the *Journal of College Student Development*, and the *Journal of Student Affairs Research and Practice*.

Maggie Yancey is on a federal detail at NASA as the entrepreneur development lead for NASA's Science Mission Directorate and the Space Technology Mission Directorate. She is working to advance commercialization opportunities for current and future NASA entrepreneurs in academia. Her home agency is at the U.S. Department of Energy in the Wind Energy Technologies Office and has been leading the Community Impacts Research and Outreach portfolio working on climate change challenges connecting small businesses, entrepreneurs, and communities to wind energy innovation opportunities on both land and water for the United States. She started her federal career as a 2015 Presidential Management fellow.