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Faculty Service Loads and Gender: Are Women Taking Care of the Academic Family?

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Abstract This paper investigates the amount of academic service performed by female versus male faculty. We use 2014 data from a large national survey of faculty at more than 140 institutions as well as 2012 data from an online annual performance reporting system for tenured and tenure-track faculty at two campuses of a large public, Midwestern University. We find evidence in both data sources that, on average, women faculty perform significantly more service than men, controlling for rank, race/ethnicity, and field or department. Our analyses suggest that the male–female differential is driven more by internal service—i.e., service to the university, campus, or department—than external service—i.e., service to the local, national, and international communities—although significant heterogeneity exists across field and discipline in the way gender differentials play out.

Keywords Faculty · Academic service · Gender

Introduction

A number of studies have shown that women and men employed in academia experience their work environments differently—largely in ways that are less favorable to women. Research has indicated that women receive lower salaries (Carr et al. 2015; Toutkoushian and Conley 2005) and fewer resources such as research space (Chisholm et al. 1999). Moreover, women faculty do more housework at home than their male counterparts (Schiebinger and Gilmartin 2010) and experience more difficulty in achieving work-life balance (O’Laughlin and Bischoff 2005). In the past, women faculty were less likely to be

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promoted to the rank of full professor, even after controlling for productivity and human capital (Toutkoushian 1999; Perna 2001), though it is not known whether this imbalance has been redressed in recent years.

This study adds to the literature on gender differences in academia by investigating differences with respect to faculty service loads. The amount of service performed by women versus men is an issue that has not received much attention in the recent literature but that has an important impact on the careers academics. Service can be a time-consuming feature of the job but although it factors into performance reviews, it is generally ranked after research and teaching in importance (Ward 2003; Bird et al. 2004). In research intensive institutions, the publication of research is the primary vehicle for advancement for the vast majority of faculty, and, in non-doctoral granting institutions, teaching is emphasized more heavily (Street et al. 1993). In order to protect the career trajectories of junior faculty, tenured faculty usually perform more service than pre-tenured faculty, who are generally encouraged to focus more heavily on research (Neumann and Terosky 2007).

Service can be characterized according to two main categories generally referred to as internal and external service (Ward 2003). Internal service consists of service to one's department, school, or university in activities related to faculty governance, faculty recruitment, evaluation and promotion, student admissions and scholarships, program supervision, development and marketing, internal awards, etc. Individuals who undertake defined administrative roles, such as department chairs, deans, etc., are compensated for their service, but the vast majority of faculty receive no extra compensation for other internal service activities because contributing as good citizens to the academic community is part of their job. Uncompensated internal service is usually acknowledged and factored into annual performance reviews, but, as mentioned above, generally carries less weight than research or teaching, especially in promotion and tenure reviews.

External service consists of service outside of campus—to the profession and to the local, state, regional, national, and international communities (Ward 2003). In terms of career advancement, external service normally generates greater value to the individual faculty member, as it provides visibility and enhances his or her reputation among a broad group of peers. Such external recognition could result in better external job offers, which can be used either to move up in a different institution or to raise the salary or status of a faculty member in his or her home institution.

In this study, we use two large data sources—one from a national survey and one from two research intensive campuses of a multi-campus public university—to investigate the relative amounts and types of service performed by women and men in academia. We find that, on average, women, regardless of rank, discipline, or racial-ethnic category, report performing more service than their male counterparts.

The public university data contain more detail and allow us to investigate differences in types of service and possible institutional factors driving gender differences. When we investigate differences in internal versus external service, we find that women perform significantly more internal service than men, particularly in service to the campus. We find no statistically significant differences in the aggregate amount of external service performed, but do find, however, that women report performing more national and community service than men when we look at subcategories of external service. We also find variation in the amount of service reported by faculty in certain disciplines and schools and that organizational features, such as the proportion of women in a department and the gender of department chairs may drive some of the male–female service differential.

Background

Prior Research on Gender and Faculty Service

Several studies from prior decades have empirically investigated the gender-service connection at institutions of higher education. Early studies conducted using the 1988 National Study of Postsecondary Faculty (NSOPF) demonstrated that women faculty spent more time in teaching and service activities than did their male counterparts across all types of institutions (Russell et al. 1991) and especially at research universities (Singell et al. 1996). Studies using data from the first half of the 1990s, however, tended not to find statistically significant gender differences related to time spent on academic service. Bellas and Toutkoushian (1999), using data from the 1993 National Study of Postsecondary Faculty (NSOPF), found differences in time devoted to teaching (women higher) and research (men higher) but did not find significant differences in time spent in service activities. Olson et al. (1995) interviewed and surveyed an 11% sample of tenure-track faculty at a research university and found women reported lower levels of institutional support than men but did not report significantly more time spent on service.

In the late 1990s and beyond, however, gender differences associated with academic service were found in specific types of institutions and disciplines and according to different types of service. Antonio et al. (2000), in a 1996 national survey of more than 30,000 faculty, found that women faculty performed more community service than men faculty, along with higher levels of engagement with students around community service.

Porter (2007) employed data from the 1999 NSOPF to examine factors affecting the number of committees on which faculty served and the estimated time devoted to such service. His study also differentiated by types of committee, categorized as curriculum, governance, personnel, and other. After controlling for rank, age, and academic field, Porter found mixed effects for race and gender, depending on institutional type. Females at research universities were more likely to serve on governance committees while females at comprehensive universities served on fewer personnel committees, on average. The largest differences were found at doctoral universities and liberal arts colleges, where females served on 25% more committees than did their male counterparts.

Focusing specifically on faculty at research universities in science and engineering disciplines, Link et al. (2007) employed a stratified sample (equal numbers of males and females) using data from the 2004–2005 National Science Foundation Survey of Academic Researchers to examine the relationship of promotion, tenure and gender on faculty time allocation. After controlling for rank and tenure status, race, and years of experience, Link and his colleagues found that, using either mean hours or fraction of overall time, men devoted more time to research and less to service than their female counterparts.

In a more recent online commentary for the American Association of University Professors, Misra et al. (2011) discussed the results of a survey of 350 faculty at University of Massachusetts, Amherst focusing on time use. They found that at the associate professor level and in the STEM fields, women devoted more hours to service and fewer hours to research than men, a phenomenon they termed the “gendered gully of service.” Their survey also included perceptions of service and showed that women had no greater preference for service than men. Mitchell and Hesli (2013), in a survey of nearly 1400 faculty in political science departments, found that women performed more committee-related service than men, although they were less likely to chair those committees.

Our study contributes to the body of research on this topic by providing up-to-date, rigorous, and generalizable empirical evidence of imbalances in service loads by gender. In addition, it provides insight into the distribution of service activities by type. Given the persistence or apparent resurgence of these imbalances in the academic setting over the past few decades, it is important to document patterns and magnitudes of gender differences with both large scale and detailed data on types of service. Like the studies discussed above, our study is largely descriptive. We do go one step further, however, and investigate some specific reasons for the observed differences to the extent possible with our data. In the next section we discuss mechanisms that may explain gender-service differences and develop the hypotheses that can be explored with our data.

Mechanisms to Explain Gender Differences in Faculty Service

For a gender-service differential to exist, women are either choosing to respond to the service mission differently than men or being tasked with service—and possibly specific kinds of service—to a different degree than men. If the former, it may be that women are more likely to volunteer for service or that they are less likely to refuse requests to perform service. If the latter, women may be more likely than men to be asked to undertake service. Prior literature, both theoretical and empirical in nature, provides some guidance as to the manner in which these possibilities may play out.

The broader literature on gender difference, going back to Gilligan's (1982) seminal feminist critique of Kohlberg's theory of moral development (Kohlberg 1958; Kohlberg and Hersh 1977), supports the notion that socialization processes reinforce societal stereotypes of women as caretakers and men as leaders and task-masters, with the result that women respond differently than men to particular tasks. She argued that women's notions of morality focus on interpersonal connections and responsibility to others whereas men organize social relationships hierarchically and view justice in relation to individual rights. In a meta-analysis of empirical research related Gilligan's assertions, however, Jaffee and Hyde (2000) found that such differences were small and subject to context-specific variation. Focusing on behavior in the organizational context, Kanter (1977a, b) proposed that gender differences (and group differences more generally) were impacted primarily by proportional representation. She described a spectrum of group types, anchored at both ends by uniform (e.g., single sex) groups, and ranging in between from "token" to "minority," "potential subgroup," "majority," and "dominant" representations of a target group. According to her research, women's actions, typically in their role as tokens, had greater visibility and created polarization between groups, exaggerating within group commonalities and between group differences.

Eagly and Johnson (1990), in a meta-analysis of studies related to gender differences in leadership styles, found that behavior in organizational settings was more likely guided by selection according to organizationally-relevant criteria and organizationally-specific socialization processes than gender, a finding consistent with Kanter's (1977b) structural interpretation. They found that controlling for organization status, group proportionality, and other such organizational factors reduced the size of observed gender differences, although did not completely remove them. Also, consistent with Gilligan's broader societal stereotypes, they found consistent gender differences with respect to decision-making style, with women more likely to adopt a participative (democratic) and men a more directive (autocratic) style.

While dynamics stemming from group composition may influence gender-service imbalances, research on the act of negotiation suggests that the one-on-one interaction

between a faculty member and an authority figure, such as a department chair, requesting service may also play a role in promoting imbalance. Babcock and Laschever (2003) found that in job negotiations women tended to negotiate less frequently or forcefully than men. Similarly, Bowles et al. (2007) demonstrated, through a series of experiments about compensation negotiation, that women were more likely than men to face negative social consequences in the process. Women were more heavily penalized for negotiating, were less likely to negotiate when their evaluator was male, and experienced greater feelings of nervousness with male evaluators.

Although our study is situated in academia rather than the more hierarchical organizational settings studied above, these considerations are likely still relevant. If organizational norms (for example rank and disciplinary differences) and structural factors (proportional representation of women within disciplines) are taken into account, gender differences might be less apparent. However, there may still exist spillover gender effects that impact both behaviors and expectations regarding behavior among women and men faculty. We might expect these differences to be more evident in uncompensated internal service activities, where the incentives for behavior may be more dependent on concern for the collective effort than for individual gain.

In line with the proportional hypotheses of Kanter (1977a, b), Pyke (2011) argues that women are unable to refuse service requests due to the structure of gender inequity in academia. Since women are underrepresented on many faculties, saying “no” tends to shift the burden of service to the small number of other female faculty. For female faculty, refusing service may engender resentment from other female faculty, whereas male faculty feel less structural pressure to serve and are instead likely to face criticism for too much rather than too little service from their male peers. This explanation hinges, in large part, on an underrepresentation of women in academia and would play a role if smaller proportions of women in a field encouraged more caretaking of the existing few. While the precise motivations for an individual to perform service are not explicit in our data, the role of proportionality is a hypothesis that we are able to investigate.

On the other hand, the aforementioned work of Bowles et al. (2007), which shows that discomfort and fears of retaliation may play a role in interactions with individuals in an evaluator-type role, provides a different basis for hypothesizing that women are less likely to refuse service requests, particularly if their department chairs are male. While we cannot examine requests for service with our data, we can look at whether the gender match between faculty member and department chair appears to affect the amount of service women perform. We can also disaggregate by field to understand whether heterogeneity in the way women relate to male chairs exists according to different disciplinary norms.

In addition to explanations based on organizational structure and negotiation dynamics, there is some support in the literature for the notion that that women volunteer for more service than men. Vesterlund et al. (2011) analyzed responses to an email solicitation from the chair of the faculty senate at a large public university asking faculty to volunteer for several faculty senate committees. They found that women faculty at the associate and full professor levels were significantly more likely to volunteer for these committee assignments than male faculty and that the difference was greater at the associate level than the full level. Although these committees represent only a segment of academic service, these responses do suggest some support for the notion that volunteerism is higher among women. One could imagine several motives for this. Bird et al. (2004) note that institutional initiatives to redress inequities often involve the creation of task forces and study groups, predominantly comprised of women faculty, to conduct rigorous, time-consuming studies. They refer to such work as “...’institutional housekeeping’ because it represents

the invisible and supportive labor of women to improve women's situation within the institution" (p. 195). They note with irony how such opportunities, although disruptive of disciplinary research, enable women faculty to connect with each other in meaningful ways. Conversely, male faculty members find community among male colleagues with similar research-oriented career trajectories. However, in contrast to the findings of Vesterlund et al., Mitchell and Hesli (2013) found no significant difference in reported volunteerism for service in their study of political science faculty.

Following up on the Vesterlund et al. (2011) study that demonstrated women faculty were more likely to volunteer for service on faculty governance committees, Babcock et al. (2017) conducted a series of five experimental manipulations to explore whether and why women are more likely to volunteer for activities that benefit the organization but are not likely to contribute to career advancement. Their overall findings confirm that "relative to men, women are more likely to volunteer, more likely to be asked to volunteer, and more likely to accept direct requests to volunteer" (p. 744). However, their results discount gender differences in both preferences for performing such tasks and in propensity toward altruistic behaviors. Instead, their results suggest that both men and women faculty expect women to volunteer more than men and, relatedly, women are asked to volunteer more frequently than are men.

It may also be that by volunteering for campus-related service, women feel more able to control the type of service they provide and ensure a positive evaluation for service in merit reviews. A potentially related reason for this might be a heightened perception on the part of women of the presence of an "internal" track into administration. In other words, women may be more likely than men to pursue opportunities within their institutions to advance into paid administrative roles. Investigation into the hypothesis of an internal track is, to a limited degree, possible with our data.

Data

In this study, we use two data sets to investigate the relative amounts of service performed by women and men. The first is a national data set comprised of respondents to a survey of faculty at a large number of institutions of higher education. The other is specific to a particular university system and contains detail regarding the type of service performed. The use of two different data sources increases the generalizability of our study. It is also helpful in drawing an overall picture of gender differences in service that one source provides data on time spent on service, while the other addresses the number of service activities in which a faculty member engages. We describe these data sets below.

FSSE Data

The first source of data for the study is the Faculty Survey of Student Engagement (FSSE) from 2014, a web-based survey designed to complement the National Survey of Student Engagement (NSSE). We use these data to provide a broad brush picture of faculty time spent on service across many institutions nationally.

The primary purpose of the FSSE survey is to measure faculty members' perceptions and experiences of student engagement. However, the survey also includes responses from faculty as to how they spend their time across types of professorial activities (teaching, student advising, research, and service) The 2014 FSSE survey includes responses from nearly 19,000 faculty representing 143 bachelor's-degree granting

institutions, primarily located in the U.S. (three were in Canada, and one was an American university located abroad). Contact information is provided to FSSE, which administers the survey online.¹

For the present analysis, we obtained FSSE data for full-time tenured and tenure-track faculty ranked assistant, associate, or full professor in four-year colleges and universities. About 40 % of FSSE respondents satisfied these criteria,² yielding an initial sample of 7398 tenured and tenure-track faculty, among which 6875 (93 %) have a reported value for gender, with 42% women and 58% men. With regard to institutional representation, 67 % of the sample are affiliated with public universities and 33 % with private, non-profit institutions. This reflects a slight over-representation of public institutions, which employed 63 % of full-time tenured or tenure track faculty in Fall 2014.³ Our sample also diverges somewhat in institutional categorizations based on the 2010 basic Carnegie Classification: it over-represents Master's Colleges and Universities (55 % of the sample vs 29 % nationally) and Baccalaureate Colleges (20 vs 10 % nationally) and under-represents Doctorate-Granting Research Universities (24 vs 55 % nationally).

Service was reported as a categorical variable estimating the average number of hours per week with the following possible responses: 0, 1–4, 5–8, 9–12, 13–16, 17–20, 20–30, and more than 30. To facilitate the interpretation of our analyses, we constructed a “continuous” outcome variable from these responses, we assigned the value 0 to the first category, the value 35 to the highest category, and took the midpoint of each category in between. However, we also used the original categorical variable in an ordered logit, as reported in the results section below, with no substantive difference in the findings.

The first table in the appendix provides descriptive information on the FSSE sample. It is important to note that the service data reported in the FSSE are time estimates, which can be subject to measurement error, and that there are no stakes attached to the reports on this survey, which may further limit their accuracy. As mentioned above, these data are used to provide a broad portrait of time spent on service by men and women faculty nationally but do not have the detail available to investigate differences in the types of service or the organizational characteristics of the departments to which faculty belong.

FYAR Data

The second and more detailed source of data for this study comes from online faculty yearly activity reports, which we will henceforth refer to as FYAR, at two large research-

¹ The response rate to the survey was 41 percent overall, and the institutional response rate was 48%. Although response rate by gender is not directly available, the survey administrators note that FSSE respondents are 51% male and 49% female, compared to the benchmark of faculty at all U.S. bachelor's degree granting institutions that is 54% male and 46% female. The difference between these two distributions may be due to the sample selection or to higher response rates among female faculty. That information is not available to the researchers. The following is a link to information on the 2014 FSSE: http://fsse.indiana.edu/pdf/FSSE_IR_2014/FSSE%202014%20Overview.pdf.

² The full FSSE sample contained 18,860 faculty. After selecting for faculty who provided classroom instruction on-campus, the sample fell to 13,819. After selecting for US-based institutions, the sample became 13,581. After selecting for full-time faculty, then non-adjuncts, the sample fell to 10,650 and 10,077, respectively. After selecting for faculty with ranks and then tenure track, the sample fell to 8,629 and 7398, respectively.

³ Comparative institutional control and basic Carnegie Classification statistics were derived from data extracted from the National Center for Education Statistics data center for all full-time tenured or tenure track faculty employed at Title IV eligible institutions classified as four-year, excluding predominantly associates institutions reported for the 2014–2015 cycle.

intensive campuses of a large, Midwestern public multi-campus university.⁴ The larger of the two campuses is a traditional research intensive campus, which we refer to as the flagship campus, and the other is an urban campus.

The annual reports are required and are used in yearly faculty evaluations. Salary increases are predominantly based on a merit evaluation based on the activity reports, thus an incentive exists on the part of faculty to list all research, teaching, and service activities performed during the year. The reports are carefully monitored by department chairs and other faculty, and thus any incentive to exaggerate is strongly curtailed.

We use data from 2012 for full-time tenure-track faculty. The full sample consists of 1715 faculty. However, we exclude 337 faculty who hold administrative positions, such as deans, associate deans, assistant deans, department chairs, etc., since these service activities are generally compensated with position pay or decreased teaching responsibilities. After these exclusions, the total number of faculty is 1378. Of these, 37 % are female. The breakdown across the two campuses is 71 % in the flagship campus and 29 % in the urban campus.

Included in the data are demographic characteristics such as gender and race–ethnicity as well as rank (assistant, associate, or full professor), department, school, and campus.

Reporting of service activities is broken down into several subcategories, which we aggregate into “internal” and “external.” In reporting each service activity performed, faculty choose a “type” of service from a pull-down list in addition to providing a detailed explanation of the specific activity. We used the pre-set categories to determine whether service was internal or external. Service activities reported in categories labeled department, school, campus, and university were classified as internal service. Service activities reported in categories labeled community, economic development, professional organizations, life sciences, regional, state, national, and international were classified as external service. Service activities must be classified as belonging to one of these categories and cannot be double-counted or jointly classified. It is important to note that these data report numbers of activities and do not get at time spent on these activities.

Table 11 in Appendix describes the FYAR data. It is important to note that internal service is more frequent than external service. Internal service is somewhat balanced between service to the department and to the school, campus, and university. Service to professional organizations, international service, and national service are the three largest categories of external service. STEM, social science, and liberal arts are the three largest among the aggregate school/departmental categorizations that we use, and we later investigate these groups in detail. A fine-grained departmental variable consisting of 78 distinct categories is also used in several analyses. For example, we use this fine-grained categorical variable to compute the proportion of women in a particular department, and we also use these detailed categorizations as controls in place of school fixed effects in a sensitivity analysis.

Table 12 in Appendix shows the breakdown of different types of service activities by gender. As the table shows, on average, women report doing more service than men more or less across the board, regardless of the type of service.

⁴ The researchers were granted access to the faculty annual report data through a request to the chief academic affairs officers of the university and the two participating campuses. Access was granted under the proviso that the researchers report the results to those officers to support their own efforts to monitor equity in faculty workload.

Methods

We investigate service load differences, first examining raw differences and then controlling for rank and other variables, such as race/ethnicity and school or discipline. We use the following multiple regression model to investigate our question:

$$S_i = \beta_0 + \beta_1 \text{Female}_i + \beta_2 \bar{\text{Rank}}_i + \beta_3 \bar{\text{Race/ethnicity}}_i + \beta_4 \bar{\text{School/field}}_i + \varepsilon_i,$$

where S_i is a dependent variable measuring the amount of service that faculty member i reports having engaged in, rank is a vector composed of indicators for associate and full professor status (omitted category is assistant), race–ethnicity is a vector composed of indicators for Black, Hispanic, Asian, and other (omitted category is White), and school/field is a vector composed of indicators for different schools and field areas within the university (omitted category is “Arts and Humanities” in the case of the FSSE data and “Liberal Arts” in the case of the FYAR data).

In the FSSE data, we ran an ordered logit specification using the original categorical variable as the dependent variable and also ran an OLS regression using the recoded “continuous” variable as the dependent variable to enable us to have some sense of the magnitude of time differences. We also included institution-level indicator variables in the FSSE regressions to control for differences in the characteristics of institutions, such as research intensity or public–private status, and we clustered the standard errors at the institutional level, as well.

In some specifications, we entered interactions between the female variable and the other variables in the model to assess whether the gender differential was more concentrated at particular ranks, among particular racial–ethnic groups, or in particular schools.

Results

The raw difference in the mean amount of service performed by women versus men in academia is approximately half an hour more per week in the FSSE and 1.5 more activities per year in the FYAR, and the difference is statistically significant in both cases. Of course, since this could simply reflect gender differences in rank or field, multiple regression results are far more informative.

Results from the FSSE Analysis

We begin with the FSSE analysis and then proceed to the more detailed analysis of the FYAR data. Table 1 displays the results of the FSSE analysis. Women faculty report, on average, 0.6 h more per week on service activities than men, controlling for rank, race–ethnicity, and school or discipline. As a robustness check, we ran an ordered logit using the original categorical variable as the outcome, and the results were qualitatively the same.

Interacting the covariates with the female indicator did not yield insights, with one exception relating to rank. In these data, female full professors report significantly more time spent on service than male full professors. The main effect for the female indicator lost significance but the joint test of the indicator and all interactions was significant.

With regard to other covariates in the regression, we find that the rank variables exhibit an expected pattern, with full professors spending the most time on service overall. In addition, faculty in fields of business and various sciences appeared to devote fewer hours to service than those in arts and humanities.

Table 1 Regression of service hours per week on female and controls. *Source:* FSSE, 2014

	Service hours per week
Female	0.60 (0.22)***
Rank (assistant as reference group)	
Associate	2.45 (0.19)***
Full	3.84 (0.26)***
Race/ethnicity (Caucasian as reference group)	
Native American	1.93 (1.06)*
Asian/Asian American	-0.76 (0.34)**
Black	0.67 (0.55)
Hispanic	0.51 (0.53)
Pacific Islander	0.53 (1.43)
Other minority	-0.50 (0.56)
Disciplinary area (arts and humanities as reference group)	
Biological sciences	-1.14 (0.35)***
Physical sciences	-1.42 (0.25)***
Social sciences	-0.71 (0.27)***
Business	-0.73 (0.36)**
Communications	0.80 (0.51)
Education	0.66 (0.41)
Engineering	-1.19 (0.46)**
Health	0.10 (0.45)
Social services	0.28 (0.71)
Other	1.23 (0.56)**
Constant	6.80 (0.25)***
R^2	0.09
N	6727

Institution fixed effects included. Standard errors presented below estimates are clustered at the institution level

* $p < 0.1$; ** $p < 0.05$;

*** $p < 0.01$

Results from the FYAR Analysis

Table 2 presents the results of the multiple regression analysis using the FYAR data controlling for rank, race/ethnicity, department, and campus. These results strongly mirror those obtained using the FSSE data. They show that, when controlling for these other factors, female faculty reported performing, on average, 1.4 more service activities per year than male faculty and that this difference is driven largely by internal service activities. Women perform approximately one more full internal service activity annually than men.

With regard to other covariates, we find that associates report performing more internal service than assistants or even full professors. Full professors exceed those in other ranks in external service. The disciplinary area showed stark differences in service activities, with faculty in business, law, fine arts, and the STEM fields reporting less service and public policy more service than those in the liberal arts.

To investigate gender differences further, we included interactions between the female variable and the various sets of other types of covariates. We investigated specifications with different sets of interactions and one that contained all interactions. These interactions yielded some additional information. There was some evidence to suggest that that Asian female faculty performed more service than Asian male faculty and that women in various fields performed differently than their male counterparts. Women in the public policy

Table 2 Regression of total, internal, and external service activities on female and controls. *Source:* FYAR, 2012

Variables	Total	Internal	External
Female	1.40 (0.59)**	1.01 (0.39)**	0.39 (0.28)
Rank (assistant as reference group)			
Associate	2.40 (0.56)***	1.79 (0.34)***	0.62 (0.33)*
Full	2.16 (0.73)***	0.81 (0.45)*	1.35 (0.38)***
Race/ethnicity (Caucasian as reference group)			
Black	-1.76 (0.81)**	-0.96 (0.53)*	-0.79 (0.41)*
Hispanic	1.39 (1.17)	0.83 (0.67)	0.56 (0.70)
Asian	-1.20 (0.56)**	-1.37 (0.41)***	0.17 (0.34)
Other non-Caucasian	0.12 (1.29)	0.38 (0.83)	-0.26 (0.76)
General discipline (liberal arts as reference group)			
Education	2.04 (0.66)***	-0.02 (0.35)	2.07 (0.44)***
Business	-2.05 (0.64)***	-2.11 (0.34)***	0.06 (0.45)
Law	-3.39 (0.72)***	-1.91 (0.40)***	-1.48 (0.49)***
Public policy	5.32 (0.65)***	3.74 (0.34)***	1.58 (0.44)***
Fine arts	-2.71 (0.80)***	-0.64 (0.44)	-2.07 (0.55)***
Social science	-1.21 (0.89)	-1.30 (0.44)***	0.09 (0.60)
STEM	-0.44 (1.19)	-0.92 (0.60)	0.48 (0.75)
Health	1.22 (1.18)	-0.37 (0.68)	1.59 (0.71)**
Media	4.29 (2.00)**	1.16 (0.71)	3.13 (1.46)**
Sports/events mgmt	2.07 (1.65)	0.10 (0.66)	1.97 (1.51)
Flagship campus	0.38 (0.61)	-0.21 (0.39)	0.59 (0.32)*
Constant	9.46 (0.92)***	6.16 (0.50)***	3.30 (0.57)***
R^2	0.08	0.08	0.08
N	1378	1378	1378

Standard errors are clustered by department and shown below estimates

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

faculty performed significantly more service than men on that faculty, and women in law and, to a lesser degree, education performed less.

In addition, we conducted the regression analysis separately by individual service type. Tables 3, 4 and 5 present the results for the various internal and external service activities, respectively. Table 3 shows that women faculty report significantly more activity than their male counterparts in the “campus” service category and marginally significantly more in the university category service (recall that the two institutions included in the data form part of a university system, thus “university” refers to service to the combined university system as opposed to one’s own campus), thus these particular areas of service, rather than departmental, or school service appear to be the area driving the imbalance. Examples of campus service activities might be participation on campus-wide committees, faculty councils, task forces, projects, etc.

Tables 4 and 5 display the service regressions for the external service categories. We find that women reportedly perform more service than men in two categories: community service and national service. National service here is distinct from service to professional

Table 3 Regressions of specific internal service activity categories on female and controls. *Source:* FYAR, 2012

	Department	School/college	Campus	University
Female	0.17 (0.19)	0.05 (0.19)	0.65 (0.15)***	0.15 (0.08)*
Rank (assistant as reference group)				
Associate	0.30 (0.19)	0.48 (0.18)**	0.84 (0.15)***	0.17 (0.09)*
Full	-0.31 (0.23)	0.23 (0.18)	0.74 (0.21)***	0.15 (0.11)
Race/Ethnicity (Caucasian as reference group)				
Black	-0.74 (0.35)**	0.10 (0.25)	-0.27 (0.25)	-0.05 (0.13)
Hispanic	-0.66 (0.34)*	0.83 (0.40)**	0.48 (0.34)	0.17 (0.23)
Asian	-0.43 (0.24)*	-0.35 (0.16)**	-0.53 (0.16)***	-0.05 (0.10)
Other non-Caucasian	-0.09 (0.37)	0.18 (0.53)	0.46 (0.36)	-0.17 (0.16)
General discipline (liberal arts as reference group)				
Education	-1.73 (0.23)***	1.94 (0.13)***	-0.85 (0.20)***	0.62 (0.09)***
Business	-2.48 (0.21)***	1.64 (0.13)***	-0.92 (0.19)***	-0.35 (0.08)***
Law	-2.44 (0.23)***	1.76 (0.17)***	-0.84 (0.21)***	-0.39 (0.09)***
Public policy	-2.90 (0.22)***	6.11 (0.13)***	0.08 (0.19)	0.45 (0.08)***
Fine arts	-1.32 (0.48)***	1.77 (0.62)***	-0.85 (0.32)***	-0.23 (0.09)**
Social science	-0.76 (0.34)**	-0.19 (0.16)	-0.37 (0.24)	0.03 (0.14)
STEM	-0.57 (0.42)	0.19 (0.33)	-0.37 (0.26)	-0.17 (0.12)
Health	-1.41 (0.58)**	1.72 (0.39)***	-0.47 (0.36)	-0.21 (0.11)*
Media	-1.44 (0.92)	1.58 (1.00)	0.91 (0.50)*	0.10 (0.14)
Sports/events mgmt	-0.86 (0.61)	1.39 (0.37)***	0.01 (0.28)	-0.44 (0.11)***
Flagship campus	0.71 (0.23)***	-0.82 (0.23)***	-0.30 (0.17)*	0.20 (0.09)**
Constant	3.29 (0.33)***	1.19 (0.24)***	1.29 (0.26)***	0.39 (0.11)***
R ²	0.10	0.21	0.08	0.04
N	1378	1378	1378	1378

Standard errors are clustered by department and shown below estimates

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

organizations (a service activity may not be counted in more than one category), and might thus consist of activities such as participation on review panels.

Testing Hypotheses About Factors Driving the Gender Difference in Service

Finally, we investigate our research questions and some specific hypotheses about possible causes of gender differentials within the three largest disciplinary categories separately: liberal arts, STEM, and social science. The Ns for STEM, social science, and liberal arts are 305, 251, and 198, respectively. Variation across departments within the larger umbrella disciplinary categories allows us to test the hypotheses related to the proportion of women in the department and whether the departmental leadership is male or female. The number of departments housed within the general category of STEM is 19, the largest of which is mathematics. Within social science, there are 10 departments, with history and psychology being the largest. Within liberal arts there are 18 departments, with English being the largest although its number is exceeded by all of the foreign language departments combined.

Table 4 Regressions of specific external service activity categories on female and controls. *Source:* FYAR, 2012

	Local	State	Regional	National
Female	0.22 (0.10)**	0.01 (0.02)	-0.02 (0.02)	0.30 (0.09)***
Rank (assistant as reference group)				
Associate	0.14 (0.10)	0.01 (0.02)	-0.01 (0.02)	0.03 (0.11)
Full	0.05 (0.10)	0.03 (0.03)	-0.02 (0.02)	0.35 (0.12)***
Race/ethnicity (Caucasian as reference group)				
Black	0.06 (0.12)	-0.05 (0.04)	-0.04 (0.02)**	0.08 (0.22)
Hispanic	-0.09 (0.20)	0.09 (0.12)	-0.03 (0.02)	0.05 (0.22)
Asian	-0.13 (0.12)	-0.05 (0.03)**	-0.04 (0.02)**	0.11 (0.13)
Other non-Caucasian	-0.29 (0.22)	0.02 (0.10)	-0.07 (0.01)***	-0.18 (0.26)
General discipline (liberal arts as reference group)				
Education	0.12 (0.10)	0.18 (0.01)***	0.01 (0.01)	0.65 (0.16)***
Business	0.05 (0.12)	-0.01 (0.01)	-0.01 (0.01)	-0.69 (0.17)***
Law	0.01 (0.11)	0.04 (0.02)**	0.06 (0.01)***	-0.35 (0.21)
Public policy	0.98 (0.11)***	0.19 (0.01)***	0.03 (0.01)**	-0.38 (0.16)**
Fine arts	0.27 (0.12)**	0.08 (0.02)***	0.11 (0.04)***	-0.61 (0.26)**
Social science	0.11 (0.14)	-0.01 (0.02)	0.01 (0.02)	-0.30 (0.20)
STEM	-0.05 (0.15)	0.05 (0.02)**	-0.00 (0.02)	-0.27 (0.19)
Health	0.24 (0.17)	0.23 (0.08)***	-0.00 (0.03)	0.35 (0.22)
Media	-0.04 (0.19)	0.05 (0.06)	0.03 (0.06)	-0.05 (0.21)
Sports/events mgmt	-0.28 (0.19)	0.06 (0.07)	0.14 (0.12)	-0.03 (0.19)
Flagship campus	-0.13 (0.08)	-0.10 (0.03)***	-0.05 (0.02)***	0.12 (0.08)
Constant	0.49 (0.15)***	0.09 (0.02)***	0.11 (0.03)***	0.65 (0.17)***
R^2	0.03	0.05	0.03	0.07
N	1378	1378	1378	1378

Standard errors are clustered by department and shown below estimates

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

To investigate the proportionality hypothesis—i.e., that the smaller the proportion of women in an organizational unit the more service they will be called upon to do—we augment the original specifications to include variables relating to the proportion of women in the department and the proportion of chairs who are women. The proportionality hypothesis would be supported if the interaction between the proportion of women in a department and the female indicator were negative and significant.

We simultaneously investigate the importance of the gender of the departmental leadership by augmenting the specification further with a variable representing the proportion of chairs in the department who are female⁵ and a variable that interacts this proportion with the female faculty indicator. The gender-leadership matching hypothesis—i.e., that

⁵ We use the proportion of chairs in the department who are female rather than an indicator variable for whether or not the department chair is female because there are a small number of departments that have more than one person listed as chair. For example, the anthropology department lists four chairs, two of whom are women, thus the value for this variable is .5. By and large, however, this proportion ends up being a 0 or a 1—thus it behaves like an indicator variable in most cases and like a dosage variable in a few select cases.

Table 5 Regressions of specific external service activity categories on female and controls. *Source:* FYAR, 2012

	International	Economic development	Life sciences	Professional organizations
Female	-0.16 (0.16)	0.00 (0.01)	-0.03 (0.03)	0.06 (0.20)
Rank (assistant as reference group)				
Associate	0.13 (0.19)	0.01 (0.01)	-0.05 (0.03)*	0.35 (0.23)
Full	0.66 (0.19)***	0.02 (0.01)**	-0.06 (0.05)	0.31 (0.23)
Race/ethnicity (Caucasian as reference group)				
Black	-0.06 (0.22)	-0.01 (0.01)*	-0.04 (0.03)	-0.74 (0.22)***
Hispanic	1.16 (0.53)**	-0.01 (0.00)**	-0.02 (0.05)	-0.59 (0.28)**
Asian	0.18 (0.24)	-0.01 (0.01)	-0.05 (0.03)	0.17 (0.28)
Other non-Caucasian	0.04 (0.37)	0.23 (0.24)	-0.04 (0.05)	0.03 (0.57)
General discipline (liberal arts as reference group)				
Education	-0.11 (0.29)	0.00 (0.00)	-0.01 (0.01)	1.22 (0.24)***
Business	-0.92 (0.29)***	0.07 (0.00)***	0.06 (0.01)***	1.51 (0.24)***
Law	-0.83 (0.31)***	-0.02 (0.01)	0.00 (0.01)	-0.40 (0.24)
Public policy	-0.98 (0.29)***	0.02 (0.01)**	0.09 (0.01)***	1.62 (0.24)***
Fine arts	-0.89 (0.34)***	0.01 (0.01)	-0.01 (0.01)	-1.03 (0.26)***
Social science	-0.04 (0.42)	-0.00 (0.01)	0.06 (0.03)*	0.27 (0.33)
STEM	-0.05 (0.40)	0.01 (0.01)	0.16 (0.09)*	0.63 (0.47)
Health	0.01 (0.54)	0.02 (0.02)	0.08 (0.05)	0.67 (0.36)*
Media	1.89 (1.39)	0.02 (0.02)	0.03 (0.04)	1.20 (0.64)*
Sports/events mgmt	1.42 (1.50)	0.00 (0.01)	-0.01 (0.02)	0.67 (0.30)**
Flagship campus	0.21 (0.20)	-0.02 (0.02)	-0.04 (0.05)	0.61 (0.22)***
Constant	0.82 (0.35)**	0.00 (0.01)	0.10 (0.07)	1.03 (0.33)***
R^2	0.06	0.04	0.02	0.06
N	1378	1378	1378	1378

Standard errors are clustered by department and shown below estimates

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

women with male supervisors will do more service—would be supported if the interaction between having female chairs in a department and the female indicator were negative and significant.

Tables 6, 7, and 8 display our results. We find some possible evidence to support the proportionality hypothesis and the gender-leadership hypothesis but that substantial heterogeneity exists across the umbrella fields of STEM, social science, and liberal arts.

Within STEM (see Table 6), the inclusion of the proportionality and chair-gender variables serves to strengthen large main female effect, but they themselves are not significant, with the exception of highly significant and positive coefficient on having a female department chair in the regression with external service as the dependent variable. Drilling down to the individual service categories, however, we do find that having a female chair significantly decreases service to the department, although the interaction with female is not significant.⁶ The significance of having a female chair on external

⁶ Data for the separate regressions of each service category are not shown but are available upon request.

Table 6 Regression of total, internal and external service activities on female and controls with gender proportions and chair gender—STEM. *Source:* FYAR, 2012

Variables	Total	Internal	External	Total	Internal	External
Female	3.06 (1.39)**	2.12 (0.67)***	0.94 (0.89)	7.98 (3.56)**	5.47 (2.27)**	2.51 (1.96)
Rank (assistant as reference group)						
Associate	1.86 (0.90)*	0.99 (0.65)	0.87 (0.57)	1.97 (0.86)**	1.09 (0.65)	0.88 (0.55)
Full	3.85 (1.27)***	1.71 (1.02)	2.14 (0.68)***	4.32 (1.19)***	1.96 (1.13)	2.36 (0.61)***
Race/Ethnicity (Caucasian as reference group)						
Black	-2.21 (2.61)	-1.28 (2.03)	-0.93 (1.77)	-2.49 (2.64)	-1.22 (2.01)	-1.27 (1.33)
Hispanic	3.07 (4.12)	0.27 (1.51)	2.79 (2.70)	4.11 (4.22)	0.75 (1.56)	3.35 (2.73)
Asian	-1.62 (1.09)	-1.82 (0.79)**	0.20 (0.48)	-1.42 (1.05)	-1.66 (0.79)*	0.24 (0.47)
Other non-Caucasian	1.85 (1.57)	-0.93 (1.12)	2.78 (0.63)***	1.69 (1.68)	-1.08 (1.36)	2.77 (0.42)***
Flagship campus	-0.54 (1.06)	-0.80 (0.83)	0.26 (0.64)	-0.56 (1.13)	-0.69 (0.84)	0.14 (0.57)
Proportion female				14.98 (11.25)	9.90 (9.95)	5.08 (3.00)
Prop. female × female				-25.14 (14.86)	-16.89 (12.50)	-8.26 (5.85)
Female chair				2.46 (1.96)	-0.80 (1.43)	3.26 (0.75)***
Female chair × female				3.12 (2.91)	1.17 (1.40)	1.94 (2.17)
Constant	8.77 (1.14)***	5.37 (0.90)***	3.40 (0.51)***	5.40 (1.81)***	3.41 (1.76)*	1.99 (0.59)***
R^2	0.06	0.06	0.04	0.10	0.08	0.10
N	305	305	305	304	304	304

Standard errors are clustered by department and shown below estimates

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

service seems primarily driven by service to professional organizations and the international community. While the changes in the female main effects suggest that gender-related organizational features play a role in the amount of service performed by women faculty in STEM, the lack of significance of the proportionality and chair interactions make it difficult to attribute the variation to the hypotheses previously discussed.

Within social science, however, we do find support for the hypothesis that women interacting with male chairs will end up performing more service. Table 7 shows that, although the female main effect is not significant either with or without the proportionality and chair variables, having a female chair is associated with greater service but the interaction of having a female chair with being a female faculty member is negative and more than large enough to outweigh the effect of the gender of the chair. When we look at regressions of individual service categories, we find that this phenomenon is localized

Table 7 Regression of total, internal and external service activities on female and controls with gender proportions and chair gender—social sciences. *Source:* FYAR, 2012

Variables	Total	Internal	External	Total	Internal	External
Female	0.56 (1.58)	0.35 (1.02)	0.21 (0.72)	0.85 (2.81)	0.75 (1.83)	0.11 (1.94)
Rank (assistant as reference group)						
Associate	4.10 (0.89)***	2.87 (0.44)***	1.23 (0.62)*	4.04 (0.96)***	2.69 (0.46)***	1.35 (0.68)*
Full	4.56 (1.36)***	2.19 (0.86)**	2.38 (0.66)***	4.22 (1.47)**	1.92 (0.94)*	2.30 (0.71)**
Race/ethnicity (Caucasian as reference group)						
Black	-6.02 (1.47)***	-2.51 (1.05)**	-3.51 (0.75)***	-5.50 (1.62)***	-2.23 (1.07)*	-3.27 (0.88)***
Hispanic	1.72 (1.62)	1.68 (1.59)	0.04 (1.59)	2.13 (1.86)	2.01 (1.48)	0.12 (1.79)
Asian	-1.43 (1.53)	-0.34 (0.73)	-1.09 (0.93)	-1.78 (1.67)	-0.59 (0.85)	-1.19 (0.97)
Other non-Caucasian	3.66 (2.58)	2.62 (0.74)***	1.04 (1.91)	3.63 (2.49)	2.42 (0.69)***	1.21 (1.86)
Flagship campus	-1.89 (1.02)*	-1.53 (0.67)**	-0.36 (0.44)	-2.40 (1.26)*	-1.88 (0.76)**	-0.52 (0.57)
Proportion female				0.31 (7.52)	1.47 (3.16)	-1.16 (4.50)
Prop. female × female				7.28 (7.81)	4.40 (3.81)	2.88 (5.07)
Female chair				4.83 (1.19)***	2.42 (0.50)***	2.41 (0.74)***
Female chair × female				-8.29 (1.16)***	-5.65 (1.09)***	-2.64 (1.16)**
Constant	8.64 (1.97)***	4.99 (1.21)***	3.66 (0.80)***	7.14 (2.11)***	3.93 (1.10)***	3.21 (1.19)**
R ²	0.07	0.07	0.07	0.11	0.11	0.09
N	251	251	251	251	251	251

Standard errors are clustered by department and shown below estimates

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

primarily within service to the department which is not surprising, given that this is the area of service over which departmental chairs have authority, and, to a lesser degree, in service to the university and international service.

Within liberal arts (see Table 8), the main effects for being female are reduced and lose significance when the proportionality and chair variables are included. Interestingly, in the liberal arts, we find that the interaction between female and female chair is positive and significant—a finding that would go against the hypothesis that women are asked to do more service or less likely to refuse requests by male chairs. This finding suggests that the matching of women faculty to women leaders in liberal arts disciplines may promote rather than discourage gender service imbalances. Drilling down to the finer-grained service categories as dependent variables, we again find that this phenomenon—the opposite of the one seen for the social sciences—resides primarily in service to the department, suggesting that women chairs in the liberal arts may be disproportionately tapping other women for service.

Table 8 Regression of total, internal and external service activities on female and controls with gender proportions and chair gender—liberal arts. *Source:* FYAR, 2012

Variables	Total	Internal	External	Total	Internal	External
Female	1.81 (1.15)	1.97 (0.79)**	-0.16 (0.60)	1.34 (3.94)	1.31 (3.16)	0.03 (1.75)
Rank (assistant as reference group)						
Associate	4.96 (1.08)***	3.24 (0.68)***	1.72 (0.56)***	5.04 (1.06)***	3.32 (0.70)***	1.72 (0.52)***
Full	3.40 (1.20)**	0.62 (0.58)	2.78 (0.76)***	3.34 (1.12)***	0.77 (0.67)	2.57 (0.65)***
Race/ethnicity (Caucasian as reference group)						
Black	-1.38 (1.03)	-0.78 (0.82)	-0.60 (0.75)	-0.90 (1.00)	-0.59 (0.82)	-0.31 (0.71)
Hispanic	3.59 (2.83)	2.43 (1.64)	1.16 (1.47)	3.75 (2.34)	2.26 (1.27)*	1.49 (1.36)
Asian	0.66 (1.85)	0.53 (1.34)	0.14 (0.77)	0.84 (1.90)	0.87 (1.42)	-0.03 (0.73)
Other non-Caucasian	-1.81 (2.54)	-1.62 (1.44)	-0.20 (1.15)	-2.06 (2.96)	-1.12 (1.46)	-0.93 (1.58)
Flagship campus	0.20 (2.33)	-0.29 (1.21)	0.48 (1.29)	0.10 (2.36)	-0.05 (1.16)	0.15 (1.37)
Proportion female				-0.95 (4.67)	3.61 (2.33)	-4.56 (2.68)
Prop. female × female				-2.34 (9.13)	-1.48 (7.59)	-0.87 (3.42)
Female chair				-2.11 (1.87)	-1.63 (1.07)	-0.48 (1.08)
Female chair × female				5.19 (2.30)**	3.36 (1.82)*	1.83 (1.01)*
Constant	7.61 (1.61)***	4.94 (0.77)***	2.67 (0.96)**	8.64 (2.88)***	3.67 (1.48)**	4.97 (1.64)***
R^2	0.11	0.16	0.07	0.14	0.18	0.11
N	198	198	198	198	198	198

Standard errors are clustered by department and shown below estimates

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

In summary, the inclusion of organizational variables related to gender do affect our results, but particular hypotheses regarding the nature of gender interactions and power structures may operate differently in different fields. Our findings suggest that cultural forces play a role in determining gender differences in services, but it is difficult to pin down the precise nature of the role without understanding specific disciplinary areas and norms.

As a further sensitivity analysis, we looked within departments by including fine-grained departmental indicator variables rather than the aggregate school indicators that were included in the original model. The use of indicator variables renders the findings robust to variation across departments in their specific contextual characteristics. We did this on the subsamples of STEM, social science, and liberal arts, on the larger subsample of

all schools that contained multiple departments within them, and on the full sample, which includes all schools with multiple departments and those without departments (i.e., education, law, business, and public policy). Table 9 shows the female coefficients for the regressions using each of these samples. These findings show clearly that there is a robust significant difference in women's and men's reported service loads even after controlling for departmental characteristics, including the proportion of women and the gender of the chair, with the sole exception being in the social sciences. No gender-related differences existed within the subgroup of social science departments in any models other than those discussed above in Table 7 that explicitly included the chair's gender and its interaction with faculty gender.

In our last investigation, we explore the hypothesis that women might have a heightened perception of the presence of an "internal" track into administration via internal service. In other words, women may be more likely than men to pursue opportunities within their institutions to advance into paid administrative roles. With the FYAR, we were able to explore this additional hypothesis to a limited extent. In our analysis thus far, we have excluded deans, directors, and department chairs in order to focus on uncompensated service. For this analysis, we used the full data set without these exclusions to examine whether women were more likely than men to hold administrative positions.. We ran a logistic regression to predict the likelihood that women held the position of chair, controlling for the umbrella school or disciplinary category. We found that women were no more or less likely than men to hold such positions. Looking within schools, we find that women were disproportionately underrepresented among chairs in two schools with several chairs—i.e., liberal arts and fine arts—and equally represented in STEM and social science. Thus, the FYAR data, at least in the cross-sectional snapshot that we use, do not suggest that such opportunities are greater for women than men. Therefore, unless women are using service to even their chances of gaining compensated service positions, the internal service track, as a potential explanation for a gender-service imbalance, does not appear to be supported by the data, given the limitations of those data.

One final explanation for our findings—a gender difference in self-report bias—is difficult to assess with our data. An argument against this explanation is that we use two different sources of data that corroborate one another despite the fact that they have very different stakes attached to them. The national data have no stakes attached, whereas the university-specific data are used in performance reviews and linked to merit pay. It seems unlikely that a tendency to under-report service on the part of male faculty or over-report

Table 9 Female coefficients in regressions of total, internal and external service activities on female and controls with departmental fixed effects, for various subsamples. *Source:* FYAR, 2012

	Total	Internal	External	N
Full sample	1.47 (0.48)***	0.94 (0.32)***	0.52 (0.28)*	1378
Schools with multiple departments	1.63 (0.56)***	1.09 (0.36)***	0.55 (0.32)*	1040
STEM fields	3.01 (1.17)**	1.97 (1.17)**	1.04 (0.75)	305
Social sciences	0.30 (1.15)	0.16 (0.72)	0.14 (0.63)	251
Liberal arts	2.47 (0.98)**	1.96 (0.70)***	0.51 (0.58)	198

All regressions include controls for rank, race–ethnicity, and campus. Standard errors are clustered by department and shown below estimates

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

on the part of female faculty would transcend both contexts. Our inability to assess report bias in a direct manner remains, however, a limitation of our study.

Conclusions and Implications

The FYAR results, closely corroborated by the FSSE results, leave little doubt as to the existence of a gender imbalance in faculty service loads. Both in the number of activities—as revealed in the FYAR—and in the amount of time spent on such activities—as revealed in the FSSE—women report doing more, on average. We find strong evidence that, on average, women faculty perform more service than male faculty in academia, and that the service differential is driven particularly by participation in internal rather than external service. Thus, one might generalize that women faculty are shouldering a disproportionately large part of the burden of “taking care of the academic family,” so to speak. We also find, however, that substantial heterogeneity exists across fields and disciplines in both the overall performance of service and the existence of gender-related differences. Within various subfields, service expectations appear to differ along gender lines. In some fields, having men as department chairs appears to induce more service on the part of women, and, in other fields, women may be more likely to engage in service if the department chair is a woman. Overall, however, when we look within departments—controlling for any type of organizational or cultural factor that is department specific—we still find large significant differences in the service loads of women versus men. This points to a pervasive gender effect, transcending departmental context, suggestive of a deeper sociological difference between men and women in relation to service tasks or simply the effects of discrimination.

In the effort to achieve greater gender equity in academia, service has often been overlooked as a factor in the quest for parity, yet it merits close attention. It is an area of inequity that can be addressed relatively easily within institutions hoping to improve gender balance. Requests for service participation could be monitored and, if needed, allocated differently. Women faculty could be mentored to show more selectivity in their service-related choices and cultivate their ability to say “no” to requests. Department chairs and deans could be made to be more fully aware of how service assignments are being meted out. A simple increase in overall awareness of this issue may improve overall attitudes toward service loads, remove traces of gender bias from service expectations, and enable both women and men to accept or decline service requests with equal ease and impunity.

In addition, careful attention should be paid to differences in service activities across academic units. We have shown that the proportion of women in a unit as well as the gender match between faculty members and their department chairs may play a role in determining the amount of service women perform. We have also shown that unit norms differ, however, and that proportionality and the gender of leadership affect service may operate differently in different fields. Thus, it would be helpful for institutions of higher education to conduct a detailed analysis of service differentials both across and within departments.

Future research with more detailed data may also provide important information to help redress imbalances. For example, a study using longitudinal data could detect how gender difference in service loads link to tenure, promotion, and churn.

Service loads likely have an impact on productivity in other areas of faculty effort such as research and teaching, and these latter activities can lead directly to salary differentials and overall success in academia. Thus, in the urgency to redress not only differences in

time use but compensation imbalances as well, the service imbalance is one that deserves to rise to the forefront of the discussion. Successful faculty are key to promoting overall success and a positive climate in institutions of higher education.

Appendix: FSSE and FYAR Data Descriptive Statistics

See Tables 10, 11 and 12.

Table 10 Summary of variables for full-time tenured or tenure-track faculty with a reported value for gender in the FSSE, 2014. *Source:* FSSE, 2014

Variable	Obs	Mean	Std. Dev.	Min	Max
Service hours per week	6817	8.91	7.32	0	35
Female	6875	0.42	0.49	0	1
Rank					
Assistant professor	6875	0.29	0.46	0	1
Associate professor	6875	0.34	0.47	0	1
Full professor	6875	0.37	0.48	0	1
Race/ethnicity					
White	6811	0.77	0.42	0	1
Asian/Asian American	6811	0.07	0.25	0	1
Black/African American	6811	0.06	0.23	0	1
Hispanic/Latino/Latina	6811	0.04	0.19	0	1
Alaskan/Native American	6811	0.01	0.11	0	1
Pacific Islander	6811	0.00	0.05	0	1
Other race	6811	0.02	0.15	0	1
Disciplinary area					
Arts and humanities	6841	0.28	0.45	0	1
Biological sciences	6841	0.10	0.30	0	1
Physical sciences	6841	0.14	0.35	0	1
Social science	6841	0.15	0.35	0	1
Business	6841	0.07	0.26	0	1
Communications	6841	0.03	0.18	0	1
Education	6841	0.07	0.25	0	1
Engineering	6841	0.05	0.22	0	1
Health	6841	0.05	0.22	0	1
Social services	6841	0.02	0.15	0	1
Other	6841	0.04	0.19	0	1
Institution type					
Research 1	6875	0.24	0.43	0	1

Table 11 Summary of variables for full-time tenured or tenure-track faculty in the FYAR, 2012. *Source:* FYAR, 2012

Variable	Obs	Mean	SDs	Min	Max
Number of service activities					
Total service	1378	11.44	8.35	0	78
Internal service	1378	6.52	5.46	0	48
Service to department	1378	2.64	2.90	0	30
Service to school	1378	1.81	2.91	0	32
Service to campus	1378	1.43	2.29	0	22
Service to university	1378	0.65	1.48	0	24
External service	1378	4.91	4.86	0	34
Service to community	1378	0.62	1.36	0	13
Service to state	1378	0.09	0.41	0	5
Service to region	1378	0.05	0.28	0	3
National service	1378	0.82	1.60	0	13
International service	1378	1.10	2.70	0	29
Service for economic development	1378	0.01	0.18	0	5
Service to life sciences	1378	0.07	0.55	0	10
Service to professional org	1378	2.14	3.26	0	26
Gender					
Female	1378	0.37	0.48	0	1
Rank					
Assistant professor	1378	0.26	0.44	0	1
Associate professor	1378	0.36	0.48	0	1
Full professor	1378	0.38	0.48	0	1
Race/ethnicity					
White	1378	0.77	0.42	0	1
Black/African American	1378	0.05	0.23	0	1
Hispanic/Latino/Latina	1378	0.03	0.18	0	1
Asian/Asian American	1378	0.13	0.33	0	1
Other race	1378	0.02	0.12	0	1
School/field					
Liberal arts	1378	0.14	0.35	0	1
Education	1378	0.08	0.27	0	1
Business	1378	0.09	0.28	0	1
Law	1378	0.03	0.17	0	1
Public policy	1378	0.03	0.18	0	1
Fine arts	1378	0.11	0.31	0	1
Social science	1378	0.18	0.39	0	1
STEM (natural sciences/math)	1378	0.22	0.42	0	1
Health	1378	0.07	0.25	0	1
Communications/journalism	1378	0.03	0.18	0	1
Tourism/philanthropy	1378	0.02	0.13	0	1

Table 11 continued

Variable	Obs	Mean	SDs	Min	Max
Campus					
Flagship traditional research	1378	0.71	0.45	0	1
Departmental variables					
Proportion of women in department	1378	0.35	0.17	0	1
Has woman chair	1249	0.32	0.36	0	1

Table 12 Summary of service activities by gender for full-time tenured or tenure-track faculty in the FYAR, 2012. *Source:* FYAR, 2012

Variable	Men					Women				
	Obs	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max
Number of service activities										
Total service	875	10.9	8.1	0	78	503	12.4	8.7	0	59
Internal service	875	6.1	5.3	0	48	503	7.3	5.7	0	46
Service to department	875	2.5	3.0	0	30	503	2.8	2.8	0	18
Service to school	875	1.8	2.8	0	26	503	1.9	3.1	0	32
Service to campus	875	1.2	2.0	0	16	503	1.8	2.6	0	22
Service to university	875	0.6	1.4	0	24	503	0.8	1.5	0	14
External service	875	4.8	4.9	0	34	503	5.1	4.8	0	30
Service to community	875	0.5	1.3	0	13	503	0.8	1.4	0	10
Service to state	875	0.1	0.4	0	4	503	0.1	0.5	0	5
Service to region	875	0.1	0.3	0	3	503	0.0	0.2	0	2
National service	875	0.7	1.5	0	13	503	1.1	1.8	0	10
International service	875	1.2	2.9	0	29	503	1.0	2.4	0	28
Service for economic development	875	0.0	0.2	0	5	503	0.0	0.1	0	2
Service to life sciences	875	0.1	0.6	0	10	503	0.0	0.4	0	7
Service to professional org	875	2.2	3.4	0	26	503	2.1	3.1	0	20
Other service	875	0.5	1.6	0	23	503	0.4	1.3	0	17

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