
Article

Giving Time: Examining Sector Differences in Volunteering Intensity

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Abstract

Sector differences in prosocial motivations and behaviors among workers receives a great deal of attention in public administration scholarship. Extant literature consistently finds public sector workers are more likely to engage in prosocial behaviors, such as volunteering, than their peers in the private sector. Less attention has been paid to the sector gap in volunteerism along the intensive margin. Using time-diary data, which accounts for potential social desirability bias, from a nationally representative sample, this study investigates the gap between public sector workers and their private sector counterparts. The results suggest that public sector workers spend more time, on an average day, volunteering than observably similar private sector peers, and the difference cannot be explained by other observable differences between public and private sector workers. The gap in volunteer intensity is largest at the local level and among teachers. The implications of these results for research and practice are discussed.

Introduction

Researchers in public management argue that public sector workers differ from their private sector peers in both theoretically and empirically important ways. Prosociality and public service motivation (PSM) provide conceptual frameworks for understanding one important difference between workers across sectors, and scholars generally posit that public service attracts and cultivates prosocially motivated individuals who seek to aid others in their communities (see Perry and Vandenabeele 2015; Ritz et al. 2016; Vandenabeele 2008 for discussions). The systematic difference in motivational base across sectors carries both theoretical implications for managing workers (Perry 2000; Perry and Wise 1990; Rainey 1982) and robust empirical support (Alonso and Lewis 2001; Belle 2013; Belle 2014; Brewer 2003; Clerkin and Coggburn 2012; Holt 2018a; Houston 2006; Lewis and Ng 2013; Marvel and Resh 2018; Vogel and Kroll 2016; Ward 2014;

Wright, Hassan, and Christensen 2015). In addition to providing better conceptual understanding of how to structure tasks and incentives to align with the distinct reward preferences of public servants for managers in the public sector (Anderfuhren-Biget et al. 2010; Belle 2013; Bellé 2014; Belle and Cantarelli 2015), prosocial motivation and PSM likely shape bureaucrats' behavior in socially important ways (Andersen, Heinesen, and HolmPedersen 2014; Esteve et al. 2016; Marvel and Resh 2018). Given the combination of legal authority and discretion given to many bureaucrats to enact and enforce public programs, services, and regulations, the promise of prosocial motivation and behavior research lies in identifying the characteristics of people who would wield that authority and public trust responsibly and to the community's benefit. This article examines sector differences in volunteering intensity, a prosocial behavior, using rich time-diary data to explore the social benefits produced by public sector workers, and provides new evidence that underscores

the important benefits of recruiting and cultivating a prosocially motivated public workforce.

Scholars studying sector differences in prosociality often use volunteering as a behavioral proxy for prosocial motivation (Brewer 2003; Crewson 1997; Houston 2006; Lee 2012; Piatak 2015; Rotolo and Wilson 2006), and this work generally finds that, consistent with PSM theory, public and nonprofit sector workers volunteer at higher rates than their private sector peers. Volunteering plays an important role in civic life and sustaining healthy civic institutions. Volunteer efforts reflect the production of goods and services for the benefit of others that would otherwise come with a cost to society, and fully understanding the role of the public and nonprofit sectors in that production aids in better understanding the true social benefits provided by the workers in those sectors. Previous research bears important limitations for understanding public sector volunteerism. First, much of the previous literature has focused on participation rates using survey reports of volunteering in the previous year (for a notable exception, see Piatak 2015). However, longer spells of time spent volunteering may be more socially beneficial and productive time than more frequent, but shorter, participation, and volunteering rates and intensity often diverge systematically across groups of people in important ways (Musick and Wilson 2008).

Second, previous work relying on conventional survey items has been constrained in thoroughly examining potential sector differences in the particular ways workers spend their volunteering time. Moreover, Piatak (2015) demonstrates that volunteering effort might be highest among those in lower levels of government. This suggests that volunteering gaps across sectors may reflect both sector differences in workers' commitment to helping their communities and a socially beneficial nonmonetary value-added created by public sector workers in their communities. More specifically, public sector workers operating at the street-level interface with the public in ways that may allow them to identify additional unmet needs in their communities. Thus, volunteering may reflect a combination of individual motivations and values, sector-specific socialization, and job-specific exposure to need and opportunity. Relying on self-reported survey inquiries about volunteer participation more broadly, previous work has been unable to measure this nonmonetary value created by public sector workers or examine the possibility that public sector workers' volunteering is a function of both values and knowledge of the community gained in their professional roles. Some volunteering activities, such as providing social or human services to others or providing administrative services to an organization, align more closely with street-level bureaucrats' specialized knowledge of

their communities than others, such as helping with a community play. Thus, examining the possibility that public sector workers' apply insights about community needs gleaned from their professional work on the front lines necessitates a better understanding of how public sectors workers distribute their volunteer labor.

This study aims to extend the literature on public sector workers' prosocial behavior and fill these gaps of knowledge about cross-sector differences in volunteering intensity and activities using data from the American Time Use Survey (ATUS) administered annually by the Bureau of Labor Statistics. The ATUS collects retrospective time diaries from a nationally representative sample of respondents that covers a 24-h period in 15-min increments. Importantly, time diary data allows for the examination of sector differences in volunteering intensity and provides detailed classifications of specific volunteering activities. Moreover, time diary data avoids possible social desirability bias inherent in traditional survey methods (Juster and Stafford 1991). Considering the clustering of prosocial values and motivations in the public sector workforce (Clerkin and Cogburn 2012; Holt 2018a; Vogel and Kroll 2016; Wright, Hassan, and Christensen 2015), conventional surveys may yield results in which volunteerism is systematically over-reported in the public sector.

The remainder of the article will review the relevant literature on sector differences in prosocial values and behaviors, describe the data and empirical strategy for identifying sector differences in volunteering intensity, and conclude with a discussion of the empirical and practical implications of the results.

Literature Review

Ensuring the socially beneficial exercise of discretion inherent to public service occupations remains a central question and concern in public administration scholarship and practice, a concern driven by the distinct public authority and trust bestowed upon public servants. In a position of legal authority, self-interested actors may abuse their position to the detriment of broader public interests. Perry and Wise (1990) argued that people enter public service with a variety of potential motivations, pursuit of self-interest only reflecting one motivating factor. Other motivating factors include concern for the broader community, a commitment to context specific public values and the public interest, and a willingness to prioritize others' needs and concerns, yielding the multidimensional underlying factor of PSM (Perry 2000; Perry and Wise 1990; Ritz et al. 2016). Debate concerning the conceptual scope and definition of PSM persists, with some scholars suggesting PSM pertains particularly to public institutions

(e.g., Perry 1997; Perry and Hondeghem 2008) and others arguing for a more general prosociality or “other orientation” (e.g., Bozeman and Su 2015; Wright, Christensen, and Pandey 2013). Regardless of scope, however, PSM positively shapes job performance (Andersen, Heinesen, and HolmPedersen 2014; Belle 2013; Bellé 2014), satisfaction (Bright 2008; Kim 2005; Kjeldsen and Jacobsen 2013), and prosocial behavior (Clerkin, Paynter, and Taylor 2009; Esteve et al. 2016; Piatak 2016a; Wright, Hassan, and Park 2016, although see Christensen and Wright 2018 for potentially countervailing evidence).

Using survey data from the nationally representative American National Election Study (NES) in 1996, and guided by social capital and PSM theory, Brewer (2003) constructed an index of 20 types of civic association, including participation in and donation to nonpolitical organization, and found public servants’ conditional average civic participation was significantly higher than others. Houston (2006) built on Brewer’s analysis using the 2002 General Social Survey by looking at blood and monetary donations and volunteering across sectors. Again, consistent with PSM theory, Houston found government workers volunteer and donate blood at higher rates than their private sector peers. Work following these studies has replicated these results using different survey samples (Clerkin, Paynter, and Taylor 2009; Ertas 2014; Lee 2012; Lee and Wilkins 2011; Piatak 2015). Generally speaking, in a variety of national samples, self-reported survey results demonstrate consistently that workers in the public sector are more likely to volunteer and participate in nonpolitical civic life than their private sector counterparts.

Since PSM theoretically explains, at least in part, the sector gap in volunteerism and civic participation, more recent scholarship has looked to link PSM directly to volunteering, regardless of employment sector (Holt 2018b; Huang and Feeney 2016; Piatak 2016a; Tsai, Stritch, and Christensen 2016). For instance, using survey data from about 843 local government employees, Tsai, Stritch, and Christensen (2016) found a positive relationship between PSM and volunteering for environmental goals. More directly, Piatak (2016b) found a positive association between PSM and volunteering rates among a sample of graduate students. Finally, Holt (2018b) uses a nationally representative sample of high school sophomores and finds that PSM-related values observed in high school predicts participation in volunteering both later in adolescence and into early adulthood. Again, these results suggest that nonpecuniary, intrinsic motivations to enter public service, such as PSM, likely also motivate other prosocial behaviors, leading to concentrations of high PSM workers in the public sector continuing to pursue additional service opportunities

outside of work. Collectively, this suggests that public sector workers likely volunteer more than the private sector peers, producing additional public goods and services beyond their workdays.

H1: Public sector workers volunteer at a higher rate than their private sector peers.

As previously noted, the literature on sector differences in volunteerism rely on self-reported survey instruments to derive comparisons. In addition to the possibility for social desirability bias (Bednarczuk 2016; Juster and Stafford 1991), self-reported survey items typically provide limited opportunities for researchers to investigate sector differences in volunteering intensity. In a notable exception, Piatak (2015) uses self-reported hours over the course of a year from the Current Population Survey Volunteer Supplement from 2011. Generally, her findings show little significant difference across sectors in time spent volunteering, either descriptively or in conditional estimates. Moreover, the point estimates she reports show public sector workers may actually volunteer less time annually than their private sector peers. However, she does find local-level government workers report more volunteering hours than others, particularly if they work on a full-time basis. Of course, given the limitations of self-reported annual time spent on a given activity, it is possible that either public or private sector workers over-reported their volunteering hours due to unconscious bias. Still, if PSM drives both sector selection and prosocial behaviors geared toward service to others, workers in the public sector would be expected to contribute more of their time to volunteering than private sector workers.

H2: Public sector workers volunteer for more time than their private sector peers.

Scholars studying differences across sectors in prosocial behaviors have paid less attention to the theoretical implications of both the nature of the volunteering activities and the level of government in which a public worker is employed. The first to examine volunteerism by level of government, Piatak (2015), finds differences across levels of government at both the extensive and intensive margins of volunteering and highlights the potential importance of these differences, particularly as citizens report more trust in local government than higher levels. In a related line of research, scholars have begun examining differences between public and private sector workers in the types of organizations to which they contribute their volunteer time, and generally find public sector workers allocate their volunteering to religious organizations, charities, or educational organizations (Coursey et al. 2011; Lee 2012; Leisink, Knies, and van Loon 2018). Generally, work examining the organizational context of volunteering focuses on the

prosocial mission of different classes of organizations to verify that public sector workers or high PSM individuals contribute their volunteering to prosocial missions, as PSM theory suggests.

Bridging these two streams, sector gaps in volunteering may be driven by street-level bureaucrats who interface directly with the public regularly. These public servants may, through the conduct of their daily jobs, become more familiar with localized unmet needs in their communities, the organizations providing needed services, and the ways in which they can most effectively help. In this conceptualization, volunteerism will be highest among those both closest to the community and in service-oriented roles in their professional lives. Moreover, given the variation across regions and communities in the types of organizations that take on the provision of social services and the breadth of services organizations typically offer, the role workers adopt in their volunteering might be more indicative of both their motivation for volunteering and knowledge of community needs. For instance, if volunteering is a function of both intrinsic motivations more common in the public sector and the application of professional knowledge, then workers in service-oriented occupations should distribute their volunteer time to service-oriented activities, regardless of the type of organization with which they volunteer.

H3: Volunteering intensity will be highest among local government workers.

H4: Volunteering intensity will be highest among street-level bureaucrats who provide services to the public directly.

H5: Volunteer time will be allocated to activities consistent with workers' professional roles

Using detailed time diary data that tracks how respondents spend their time in a 24-h period, I test these five hypotheses derived from the extant literature on PSM and volunteerism. In doing so, I aim to extend our understanding of the social and institutional processes that may be driving sector gaps in volunteering. Perhaps more importantly, this study aims to underscore the additional nonmonetary value created by public sector workers that is often overlooked in policy and political discussions. The results presented here provide an opportunity to highlight the economic and social importance of public sector workers and, to the extent that volunteering represents socially produced values (i.e., PSM), highlights the importance of policies and programs targeted at producing high PSM citizens.

Data

The current study focuses on potential gaps in volunteering intensity among workers across sectors.

To the extent that volunteering reflects, in part, intrinsic motivations predominant in the public and nonprofit sectors, traditional survey items about volunteering may elicit upwardly biased responses (Marvel and Resh 2018). Indeed, Bednarczuk (2016) observes public sector workers over report their voting participation rates in surveys relative to administrative voting records. I examine volunteering intensity, and account for social desirability bias, using retrospective time diary data from the ATUS.

Using a nationally representative subset of the Current Population Survey (CPS), the ATUS collects a 24-h retrospective time diary from one respondent over the age of 15 per household. Since the ATUS uses a subset of CPS households, the ATUS time diary data can be linked to respondents' CPS survey data, which provide rich information on respondents' demographics, socioeconomic status (SES), and, importantly for the purposes of the current study, current occupation and sector. The retrospective time-diaries in the ATUS report, in minutes, every activity in which a respondent participates in the diary day, allowing researchers to examine the average time spent on particular activities in the average day across different groups of people.

Given the random selection of days, representative sampling of the CPS, and the collection of information about activities not specified by a researcher in advance, time diaries minimize the influence of social desirability among respondents. Indeed, researchers have long established the accuracy of time diaries over traditional survey methods using comparisons of measures from both measurement approaches collected from the same samples (see, for instance, Juster 1985; Niemi 1993; Robinson 1985). By way of example, Carlin and Flood (1997) use Swedish data and find that while estimates from survey data suggest men do not miss work after having a child, time diaries from the same sample suggest a significant decrease in hours worked per week among men after having a child. Niemi (1993) outlines the advantages of using time diary data to measure specific behaviors and notes the variety of potential biases in traditional survey questions (e.g., variation in the interpretation of questions across subgroups, social desirability bias, and recall bias).

I restrict the sample to working age adults (e.g., respondents aged 18–65 years old) who are either temporarily unemployed or employed as a nonagricultural worker for all available years (2003 to 2016), resulting in an analytic sample of over 104,000 diary days.¹

¹ Some workers, such as teachers, might be seasonally "unemployed" during the diary day, but still have a primary job during the rest of the year. Such workers are coded in the ATUS/CPS as both having a primary occupation in the public or private sector and being unemployed. I control for an unemployed binary to account for this possibility, but the results reported here are robust to excluding such cases.

Dependent Variables

The primary outcome of interest is time spent volunteering in a 24-h period. I measure this as the total time, in minutes, spent on all volunteering activities. The ATUS also provides six subcategories of volunteering activities that specify the type of volunteering activity performed by respondents. The subcategories can provide insights into sector differences in the kinds of volunteering in which workers engage. The subcategories are “administrative and support,” “social service and care,” “indoor and outdoor maintenance,” “participating in performance and cultural activities,” “attending meetings and conferences,” and “public health and safety.” I test for gaps across sectors in the proportion of volunteering time allocated to different activities across workers in different occupations and sectors.²

Independent Variables

The current study focuses on sector gaps in volunteering intensity, and I measure sector using a CPS survey item regarding the classification of the workers’ occupation. The CPS item in the ATUS subset identifies workers as self-employed or wage-earning, categorizes them as agricultural or nonagricultural, and, among nonagricultural workers, classifies them as government or private sector workers. The CPS item further divides government workers along the level of government (i.e., federal, state, or local). I measure sector using indicator variables for three mutually exclusive categories of workers: public, private, and unemployed.³

In some analyses, I replace public with indicators for the level of government of a worker. Unfortunately, the worker classification provided by the ATUS does not separate private sector workers into nonprofit and for-profit sectors. Consequently, the results presented here likely underestimate gaps between public and private sector workers, as nonprofit worker often resemble public sector workers in the extent of their volunteerism (Houston 2006; Lee 2012; Piatak 2015; Rotolo and Wilson 2006).

Of course, many factors likely shape both engagement in volunteering and the intensity of that engagement. In addition to common demographic (age, sex, race) and SES (household income, level of education) factors, family commitments and other

² Specific activities are coded by BLS analysts. Two analysts code specific activities independently with a disagreement resolved by review from a third analyst.

³ The results are robust to the inclusion of self-employed workers as well. Notably, the class of worker item in the ATUS does not separate for-profit from nonprofit workers. Piatak (2015) finds about 7% of the respondents in the 2011 CPS were nonprofit sector workers. Her results suggest that a higher proportion of nonprofit workers volunteer relative to public sector workers. Thus, this limitation likely provides a downward bias in estimates of a gap in volunteerism between public and private sector workers, and the results presented here reflect a conservative estimate of sector differences in volunteer intensity.

obligations or interests may “crowd-out” time available for volunteering. For instance, having children, particularly young children, in the household might limit discretionary time available for volunteering. Alternatively, sector or occupational differences in time spent at work in the average day might systematically limit discretionary time available for volunteering for workers across sectors. I control for these factors using two different aspects of the ATUS. First, I control for possible family constraints using the household roster available in the ATUS to identify the number of people in the household, create an indicator for whether a young child (2 years or younger) is in the household, and indicator for whether the respondent is married.

Second, I leverage the unique attribute of time diary data to control for other activities that may “crowd-out” volunteering. I measure total time, in minutes, spent on care-taking activities for other household members (children or adults), household chores, socializing and relaxing, playing sports or exercising, personal care (e.g., hygiene and sleeping), and working.

Table 1 summarizes the analytic sample of employed-person diary days in the ATUS. Column 1 summarizes all respondents in the sample, while columns 2 and 3 compare public and private sector workers and columns 4 and 5 compare those with some volunteer time with those with no volunteer time. On an average day, the average working-aged adult in the United States spends about 7 min volunteering. Conditional on spending some time volunteering, the average volunteering spell is about 2 h. Comparing workers’ unconditional average time spent volunteering across sectors shows that on the average day, public sector workers spend about 3.5 min, or about 57%, more time volunteering than private sector workers. Along the extensive margin, public sector workers are about 3 percentage points more likely to spend any time volunteering on an average day than workers in the private sector.

Of course, the average worker in the public sector has more education, is more likely to have a spouse, and is demographically different than the average private sector worker. Similarly, volunteers are descriptively different than nonvolunteers. Volunteers, on average, are more likely to be in high-income households, more likely to have a college education, and less likely to have a young child to look after. Thus, the unconditional averages may not accurately capture sector differences in volunteerism or volunteer intensity.

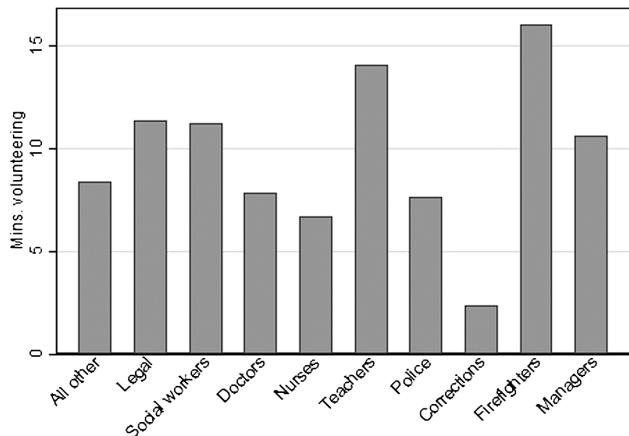
Figure 1 presents the unconditional average time, in minutes, spent volunteering each day across occupations commonly observed in the public sector. Note that the graph is not sector specific, so occupations, such as managers, teachers, health care providers, and legal workers include both public and private sector

Table 1. Summary of Analytic Sample, 2003–2016

Variable	(1) All	(2) Public	(3) Private	(4) Volunteer	(5) Nonvolunteer
Volunteering time (T; in min)	6.78 (40.53)	9.73*** (48.13)	6.21 (38.85)	122.48 (124.47)	0.00 (0.00)
Any time volunteering (T > 0)	0.06	0.08***	0.05	1.00	0.00
Volunteering time T T > 0	122.48 (124.47)	121.43*** (123.85)	122.81 (124.67)	122.48 (124.47)	0.00 (0.00)
Working time (T; in min)	291.70 (264.28)	278.99*** (263.86)	294.19 (264.29)	242.87*** (250.72)	294.56 (264.77)
Caring for others (T; in min)	28.89 (72.58)	29.93* (75.37)	28.69 (72.03)	32.25*** (68.06)	28.69 (72.84)
Private sector	0.84	0.00	1.00	0.76***	0.84
Public sector	0.16	1.00	0.00	0.24***	0.16
Unemployed	0.09	0.06***	0.09	0.08*	0.09
White	0.82	0.80***	0.83	0.86***	0.82
Black	0.12	0.15***	0.11	0.11**	0.12
Latino(a)	0.14	0.10***	0.15	0.07***	0.15
Male	0.52	0.43***	0.54	0.47***	0.53
HH income \$20K or less	0.16	0.11***	0.17	0.12***	0.16
HH income \$150K or more	0.09	0.08**	0.09	0.12***	0.08
R is married	0.57	0.63***	0.55	0.70***	0.56
HH size	3.11 (1.51)	2.94*** (1.40)	3.14 (1.53)	3.24*** (1.48)	3.10 (1.51)
Child younger than 2 present	0.12	0.09***	0.12	0.08***	0.12
Less than HS diploma	0.08	0.02***	0.10	0.04***	0.09
College degree or more	0.34	0.53***	0.31	0.51***	0.33
Observations	104,363	18,936	85,427	6,715	97,648

Note: SDs in parentheses; the statistical significance of mean differences between public and private sector (volunteers and nonvolunteers) is tested using *t*-tests.

p* < .10; *p* < .05; ****p* < .01.

**Figure 1.** Average Time Spent Volunteering across Select Occupations (in minutes), 2003–2016

workers in their respective occupations. Volunteering intensity across these occupations reveals interesting patterns. First, street-level bureaucrats, such as social workers, firefighters, legal workers, and teachers, spend much more time each day, on average, volunteering their time. Second, police, corrections officers, and nurses represent notable exceptions. This could be

due to scheduling irregularities, as police and corrections officers and nurses often work shifts that vary between nighttime and daytime hours. Alternatively, for police and corrections officers, the relative lack of volunteering could be attributable to the nature of their relationships to the broader community.

Since states vary in their economic and social health, as well as their available human capital, the need and opportunity for volunteers may also vary across states. Figure 2 maps the average time spent volunteering, in minutes, across states, and confirms substantial differences in volunteering intensity across states. Generally, citizens in the southeast and northwest appear to be the most generous with their time, while citizens in the northeast and southwest volunteer less time, on average.

The sector gap in volunteerism, documented in the extant literature described previously and evident in the unconditional average volunteer time in table 1, might be explained by a combination of prosocial or PSM and a familiarity with community need. That is, public sector workers, on the front lines of social and economic problems in their communities, may be more immediately knowledgeable about unmet needs in their community and donate their time to volunteering in response.

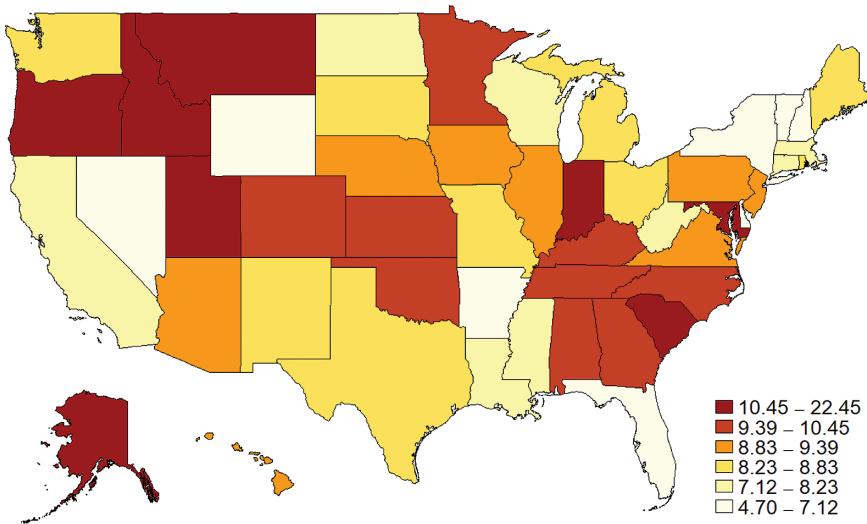


Figure 2. Average Time Spent Volunteering in Each State (in minutes), 2003–2016

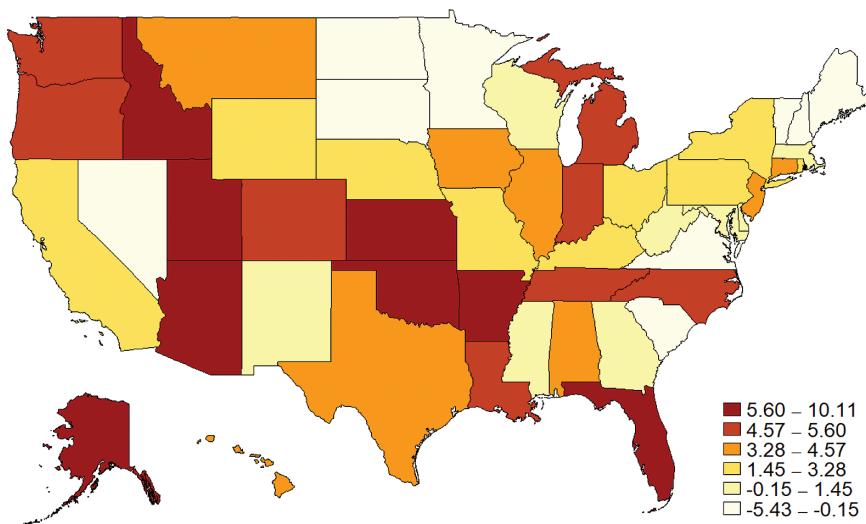


Figure 3. Average Gap between Public and Private Sector Workers in Time Spent Volunteering in Each State (in minutes), 2003–2016

Figure 3 maps the difference between the average time spent volunteering by public sector workers and all other workers across states. Notably, the gap between public sector workers and other workers is higher in many states with lower average volunteerism and vice versa. For instance, Florida, Arkansas, and Louisiana are relatively low in average volunteerism; however, the gap between public sector workers and other workers in these states are among the highest. Similar, but smaller, patterns exist in Washington, Michigan, New York, Arizona, Texas, Ohio, Oklahoma, Wyoming, and Kansas. On the other hand, many states with the highest volunteerism among their residents, such as Minnesota, Maine, Oregon, New Mexico, and parts of the southeast, show a smaller (and sometimes reversed) gap in daily volunteer time between public and private sector workers. These patterns suggest that public sector

workers may fill in gaps in the volunteering need left by the broader community, and their professional positions provide them the opportunity to recognize such needs.

Empirical Strategy

I test for sector gaps in volunteering intensity by estimating a linear time-use regression of minutes spent volunteering:

$$T_{ionst} = \beta \text{Sector}_i + \delta X_i + \alpha C_i + \theta_o + \gamma_n + \phi_s + \tau_t + \varepsilon_{ionst} \quad (1)$$

where i, o, n, s, t indexes workers, occupations, industries, states, and years, respectively; Sector represents the sector of worker i , as previously described; X represents a vector of controls for worker characteristics (e.g., demographics, SES, family and household structure, etc.); C represents

a vector of controls for time spent on other activities, as previously described; $\theta, \gamma, \phi, \tau$ represent fixed effects (FE) for major occupation and industry categories, state, and year, respectively; and ε represents an idiosyncratic error term.⁴ Since states and locales vary considerably in their need and opportunities for volunteering, state FE and a binary indicator for living in an urban area ensures comparisons are made using workers in the same state and a similar locale, controlling for unobserved, time invariant community factors that may shape volunteer time. Similarly, occupations and industries may vary widely in their scheduling constraints and social norms in ways that influence volunteer time beyond sector. The inclusion of industry and occupation category FE ensures comparisons are made between public and private sector workers in the same general occupation and working in the same general industry, accounting for unobserved occupation- and industry-specific factors that may shape volunteerism.

In equation (1), β is the parameter of interest to the study, and captures the conditional gap in volunteering intensity between public sector workers and observably similar private sector peers. Importantly, β will provide a consistent estimate of sector based gaps in worker volunteering behavior by minimizing the possibility of social desirability bias. I estimate equation (1) using OLS, weighted using ATUS provided weights that account for unequal sample probabilities for subgroups, days, and months of time diaries.⁵ In addition to examining volunteer intensity, I replace minutes spent volunteering with a binary indicator for non-zero time volunteering to compare time-diary estimates of the sector gap in volunteering at the extensive margin to estimates in previous research using conventional survey data.⁶

Results

I begin by estimating descriptive regressions of equation (1) on the full analytic sample to test for a sector gap in volunteerism after accounting for sector differences in observable characteristics.

Table 2 presents the estimates of these regressions, estimated in iterations to examine the contribution of different factors to changes in the estimated gap. Columns 1 through 4 examine volunteering intensity, in minutes, and columns 5 through 8 examine sector differences in the

extent of participation in volunteer activities. Beginning from the unconditional estimated gap of 3.55 min, column 2 shows that accounting for SES and demographic differences between public and private sector workers reduces the estimated gap by 46%, to about 1.9 min.

However, as the descriptive statistics in table 1 indicate, public sector workers, and volunteers more generally, have different family demands, on average. Moreover, public sector workers may have different work demands or systematically different care-taking obligations in their households. Indeed, relative scheduling stability in some public sector jobs may have led workers with care-taking responsibilities or preference for fewer obligatory work hours to systematically sort into public sector occupations. After accounting for the day of the week, month, year, potential family obligations, and time spent on other, potentially confounding activities, the gap between public sector works and their private sector peers in volunteer time shrinks again. The results in column 3 suggest that potential scheduling or family obligation differences between public and private sector workers account for another 26% of the gap in time spent volunteering.

Of course, as shown in figure 2, states vary in their volunteerism and this variation could be a function of differences in culture, need, and opportunity. Similarly, occupations and industries may vary in professional norms and average schedules in ways that influence workers' time allocated to volunteering. As column 4 indicates, adding state, occupation, and industry FE to account for these unobserved differences shows a larger gap than accounting for other activities and family obligations alone. In the fully specified model, public sector workers spend 2.17 min more per day volunteering, on the average day, than their observably similar peers in the private sector.

Columns 5 through 8 reveal a similar pattern in explaining sector gaps at the extensive margin. The unconditional gap reveals that workers in the public sector are 3 percentage points more likely to spend some time volunteering on the average day. However, after accounting for all potential confounding factors, the results in column 8 suggest that workers in the public sector are about 2 percentage points more likely to volunteer than an observably similar worker in the private sector.

The volunteering gap at the extensive margin observed here, using retrospective time diaries documenting activity participation without priming on specific activities, suggests research using traditional surveys might overstate the gap between public and private sector workers in volunteer participation rates. For instance, using data from the volunteering supplement of the CPS, both Lee (2012) and Piatak (2015) observe an 11- to 12-percentage point gap between public and private sector workers in self-reported volunteer participation rates using conventional survey

⁴ See supplementary appendix table A2 for a list of major occupation and industry categories.

⁵ To account for the "pile-up" at zero common in time diary data, I also estimate Tobit models. I report the estimated average partial effects (APE), directly comparable to OLS estimates, of Tobit regressions in supplementary appendix tables A4–A6. As Sturman (1999) demonstrates, even in a count context with a pile-up at zero, OLS is more robust to type II error than Tobit. Consequently, OLS is the more conservative and preferred estimator.

⁶ To account for the binary nature of the outcome in these models, I also estimate logistic regressions and report these estimates in supplementary appendix table A4.

Table 2. OLS Estimates of Sector Gap in Volunteer Intensity (in min), Weighted

Variable	Volunteer Time				Any Volunteering			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Public sector	3.55*** (0.44)	1.90*** (0.44)	1.41*** (0.43)	2.17*** (0.61)	0.03*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.02*** (0.00)
Unemployed	0.61 (0.58)	1.49** (0.59)	-0.51 (0.56)	-0.47 (0.58)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
HH income \$150K or more		1.28* (0.75)	-0.78 (0.72)	-0.71 (0.74)		0.02** (0.01)	0.00 (0.01)	0.00 (0.01)
College degree or more		3.28*** (0.32)	2.76*** (0.34)	2.34*** (0.37)		0.03*** (0.00)	0.03*** (0.00)	0.02*** (0.00)
Black		0.70 (0.46)	0.69 (0.46)	0.99** (0.42)		-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Latino(a)		-2.06*** (0.31)	-2.77*** (0.31)	-2.48*** (0.33)		-0.02*** (0.00)	-0.02*** (0.00)	-0.02*** (0.00)
Male		-0.39 (0.31)	0.54* (0.32)	0.74** (0.34)		-0.01*** (0.00)	-0.00* (0.00)	-0.00 (0.00)
Child younger than 2 present				-2.03*** (0.44)	-2.10*** (0.44)		-0.02*** (0.00)	-0.03*** (0.00)
Controls for demographics and SES	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Controls for family	No	No	Yes	Yes	No	No	Yes	Yes
Controls for day of week, month, and year FE	No	No	Yes	Yes	No	No	Yes	Yes
Controls for other activities	No	No	Yes	Yes	No	No	Yes	Yes
Controls for state FE	No	No	No	Yes	No	No	No	Yes
Controls for occupation/industry FE	No	No	No	Yes	No	No	No	Yes
Adjusted R ²	0.00	0.01	0.07	0.07	0.00	0.02	0.06	0.06
Observations	104,363	104,363	104,363	104,363	104,363	104,363	104,363	104,363

Note: SEs (in parentheses) are clustered at the state level. All regressions are weighted by ATUS sampling weights that adjust for unequal probabilities of sample selection. R, respondent; FE, fixed effects.

*p < .10; **p < .05; ***p < .01.

methods. Using similar self-reported survey data from the General Social Survey, Houston (2006) reports an unconditional 12.6-percentage point gap in volunteer participation rates. This is perhaps unsurprising, as individuals with higher levels of PSM sort into the public sector at higher rates (Holt 2018a), making social desirability bias in self-reported volunteering systematically more likely in the public sector than the private sector. That said, even after accounting for a rich set of controls for confounding factors, public sector workers are still more likely to volunteer on an average day. On the other hand, the difference in the estimated gap at the extensive margin may be due to comparing different time horizons (e.g., volunteering in a typical year versus volunteering in a typical day).

Of course, the public sector includes multiple levels of government, each of which varies in its relationship to the broader community. Similarly, the public sector contains a wide variety of occupations, which also likely vary in their prosocial orientation and relationship with the community. Using the fully specified

Table 3. OLS Estimates of Public Sector Level and Occupation Differences in Volunteer Intensity (in min), Weighted

Variable	(1)	(2)	(3)
Public sector	2.17*** (0.61)		
Unemployed	-0.47 (0.58)	-0.46 (0.58)	0.42 (2.11)
Federal		-0.30 (0.97)	
State		0.91 (0.91)	0.91 (1.09)
Local		3.43*** (0.75)	3.51*** (1.16)
Adjusted R ²	0.07	0.07	0.09
Observations	104,363	104,363	18,936

Note: SEs (in parentheses) are clustered at the state level. All regressions are weighted by ATUS sampling weights that adjust for unequal probabilities of sample selection. FE, fixed effects.

*p < .10; **p < .05; ***p < .01. In column 4, state and local estimates statistically different from each other (p < .04).

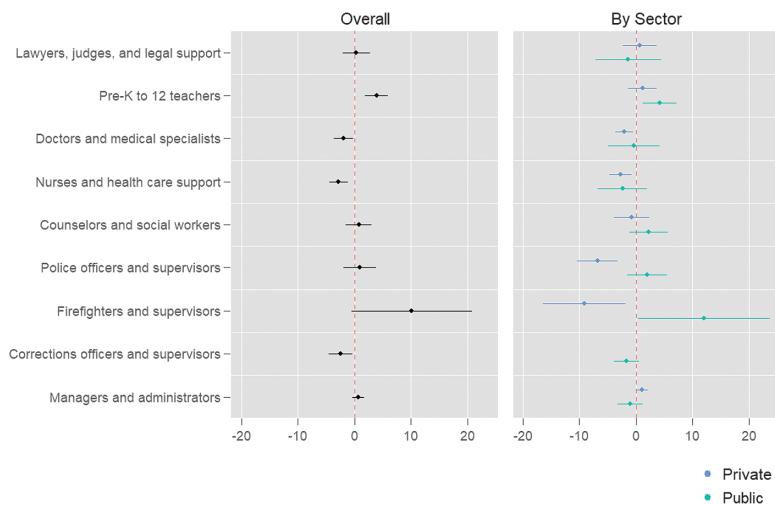


Figure 4. OLS Estimates of Occupational Differences in Volunteer Time

Note: Plots represent estimated coefficients and confidence intervals of occupational binaries estimated using full model with all controls on the full sample and separately by sector. Lines reflect 95% confidence intervals of estimated coefficients.

model from column 4 in [table 2](#), I examine differences in volunteering intensity across levels of the government (i.e., federal, state, and local) and occupations common to the public sector.

[Table 3](#) presents estimates of the baseline model with public sector broken out by level, in columns 2 and 3. The estimates in column 2 demonstrate that volunteering intensity is the largest among local government workers. Relative to their private sector peers, local government workers spend approximately 3.43 more minutes per day volunteering. Meanwhile, the estimated difference between state workers and their private sector peers is still positive, but smaller in magnitude and not statistically significant. The direction reverses for federal workers, though again the estimated difference is small and insignificant. Column 3 provides estimates restricted to only workers in the public sector to provide a clear comparison public sector workers across levels of government. The results show that even relative to their public sector peers at other levels of government, local government workers spend more time volunteering on an average day. The estimates for state and local government workers are significantly different from each other at conventional levels as well.

[Figure 4](#) estimates the baseline model with all controls, but replaces the sector indicator with indicators for occupations common to the public sector and often on the front lines of public issues.⁷ Here, the model captures the difference in volunteering behavior among individuals in these occupations relative to

workers in other occupations. The model is estimated in the full sample and separately by sector, since both sectors employ people in these occupations. In sector specific models, the point estimates capture average volunteering differences between workers in these roles and the average worker in other roles within the same sector. In the pooled model, the estimates show that relative to workers in other occupations, teachers and firefighters spent more time volunteering on an average day. For teachers, the difference is significant at conventional levels; the gap for firefighters is only marginally significant. Meanwhile, doctors and nurses tend to spend significantly less time volunteering than the typical worker in other occupations.

Many of these common occupations, however, can be found in both the public and private sector. Consequently, there may be heterogeneity in volunteering intensity across sector within occupations observed in both sectors. Looking at comparisons of these occupations separately by sector reveals that pooled estimates mask some important sector differences within occupations. For instance, private detectives and private sector fire inspectors represent some private sector counterparts to police officers and firefighters, respectively. Separating these occupations by sector reveals that security related roles in the private sector spend significantly less time volunteering than private sector workers in other occupations. Meanwhile, relative other public sector workers, police spend slightly more time volunteering, but the difference is not significant. Similar patterns emerge for fire-related occupations, doctors, and social workers, where the pooled estimates mask an underlying gap between public and private sector workers within these

⁷ See [supplementary appendix table A8](#) for the point estimate behind [figure 4](#).

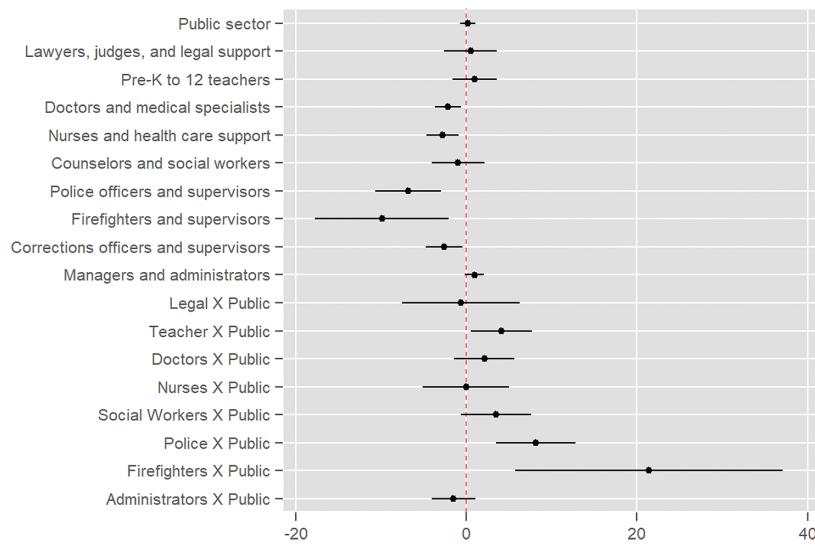


Figure 5. OLS Estimates of Occupational Differences in Volunteer Time

Note: Plots represent estimated coefficients and confidence intervals of occupational binaries interacted with a public sector indicator estimated using full model with all controls. Lines reflect 95% confidence intervals of estimated coefficients.

occupations. Managers and administrators, on the other hand, run in the opposite direction-private sector managers seem to volunteer more than their public sector peers.

Given the differences within occupations by sector observed in [figure 4](#), I estimate the same model with the addition of interactions between a public sector indicator and occupation indicators. [Figure 5](#) plots the results of the interacted model.⁸ Consistent with the proposition that workers on the front lines of public service might devote more of their time to volunteering, the results show that many of the public sector workers in these occupations volunteer more than the average worker in the private sector. For instance, the point estimates for public sector teachers, police, firefighters, social workers, and doctors are all positive, and the differences for police, firefighters, and teachers is statistically significant while the difference for social workers is marginally significant. Notably, while doctors and nurses in the private sector spend less time volunteering than the average private sector worker, the difference for public sector nurses is much smaller and not significant.

[Table 4](#) estimates the baseline model across occupations frequently observed in both sectors to test for sector-specific differences in volunteer intensity among individuals working the same occupation. Column 1 restricts the sample to college educated workers to compare workers with a similar set of labor market skills

(with occupation and industry FE included). Among college educated workers, the public-private sector gap in volunteering intensity grows slightly and remains significant. Notably, among teachers, who already volunteer more than workers in other occupations, public school teachers volunteer, on average, 3.5 min more per day than their private school counter parts. This suggests that, holding all else constant, public school teachers volunteer spend double the amount of time volunteering than the average private sector worker. Among doctors and social workers, the point estimate for those in the public sector is positive, but imprecise and should be interpreted with caution. Perhaps surprisingly, the public-private gap in volunteering intensity among administrators and lawyers is small and insignificant.

Finally, as noted previously, the ATUS also provides subcategories of activities, which allows for an examination of the specific kinds of volunteer activities to which workers allocate their limited volunteer time. The particular activities workers do when they volunteer can provide some indication of whether public and private sector workers differ substantially in the social function of their volunteer time. [Figure 6](#) begins the analysis by examining the average distribution of volunteer time across activities separately by occupation for those who volunteered some amount of time. The descriptive assessment of the distribution of volunteer time suggests workers do opt for volunteering roles that align with their professional expertise. For instance, relative to other occupations, teachers and firefighters spend a larger proportion of their volunteer time on social and human service activities. Similarly,

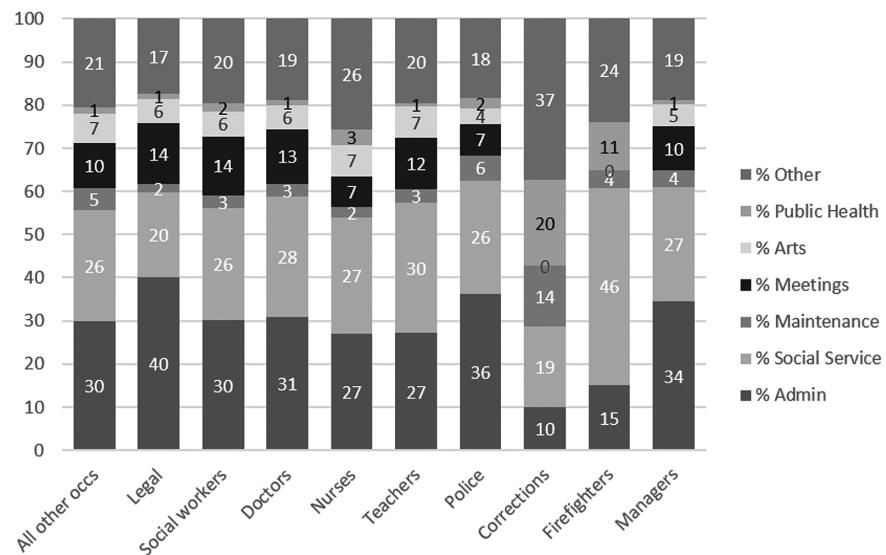
⁸ Plotting coefficients simply serve as a convenient means to present complicated models with many parameters. See [supplementary appendix table A8](#) for coefficients from the regressions underlying the plot in [figure 5](#).

Table 4. OLS Estimates of Heterogeneity of Sector Gap in Volunteer Intensity (in min), Weighted

Variable	College	Teachers	Doctors	Nurses	Social Workers	Administrators	Legal
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Private sector	(Omitted)						
Public sector	2.29** (0.91)	3.35** (1.63)	2.06 (1.62)	-1.11 (2.69)	2.73 (2.51)	-0.99 (1.44)	0.15 (3.37)
Unemployed	0.21 (1.49)	0.65 (4.09)	8.84 (10.43)	0.39 (3.98)	-2.52 (4.45)	-4.24** (1.79)	-3.93 (3.35)
All controls and FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.09	0.12	0.07	0.05	0.10	0.10	0.11
Observations	40,018	5,634	3,555	2,520	1,714	11,358	1,329

Note: SEs (in parentheses) are clustered at the state level. All regressions are weighted by ATUS sampling weights that adjust for unequal probabilities of sample selection. FE, fixed effects.

* $p < .10$; ** $p < .05$; *** $p < .01$.

**Figure 6.** Percent of Total Volunteering Time Allocated to Specific Volunteering Activities by Occupation, 2003–2016

firefighters and nurses allocate a larger proportion of volunteer time to public health and safety activities, and lawyers, police, and managers spend a larger share of volunteer time on administrative and support activities.

Again, the distribution of time across volunteering activities might be shaped not only by occupation, but by other observable characteristics of the workers. For a more rigorous examination of workers' allocation of volunteer time, I estimate equation (1), as described previously, and replace time spent on volunteering with the proportion of volunteer time spent on each type of volunteer activity. Intuitively, the estimate of β in the new model captures the conditional difference across sectors or occupations in the proportion of volunteer time dedicated to specific volunteer activities among volunteers. Panel A of table 5 presents the estimates of these regressions across sector. The estimates suggest that, relative to their private sector peers, public

sector workers do not vary substantially in the allocation of their volunteering time to specific roles or functions. Public health and safety activities appears to be an exception, and, perhaps surprisingly, public sector workers, on average, allocate 1.32% less volunteer time to those activities. The point estimates for providing social and human services (column 2) and attending meetings, conferences, or training (column 3) are positive, but imprecise.

Panel B in table 5 estimates the model replacing major industry and occupation FE with indicators of specific occupations common to the public and service sectors. The results test for the possibility that workers allocate their volunteering time consistent with their professional roles. Notably, as column 1 suggests, after accounting for potentially confounding observables, volunteers from legal and management or administrative positions allocate a significantly larger proportion of their volunteer time to administrative and support

Table 5. OLS Estimates of Differences across Sector (Occupation) in Percent of Volunteer Time Spent on Specific Activities, Weighted

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	% Administration	% Social Service	% Maintenance	% Meetings	% Arts	% Public Health
Panel A. Sector differences						
Public sector	-0.64 (2.31)	1.19 (1.98)	-0.44 (1.02)	1.80 (1.49)	-0.01 (1.14)	-1.32** (0.51)
Unemployed	5.57** (2.75)	-3.70* (2.14)	0.55 (1.40)	1.21 (1.61)	0.69 (1.34)	0.64 (0.89)
Adjusted R ²	0.09	0.04	0.04	0.05	0.04	0.03
Observations	6,715	6,715	6,715	6,715	6,715	6,715
Panel B. Occupations differences						
Lawyers, judges, and legal support	8.66** (4.29)	-5.92 (3.72)	-1.08 (1.26)	0.54 (4.27)	-2.41 (2.06)	-0.17 (0.72)
Pre-K to 12 teachers	-5.64* (3.22)	7.07*** (2.47)	-0.25 (0.52)	-0.79 (1.78)	-1.85* (1.00)	0.24 (0.58)
Doctors and medical specialists	-5.51 (3.89)	8.43* (4.99)	-0.48 (0.95)	-0.70 (2.44)	-0.67 (1.38)	0.51 (1.09)
Nurses and health care support	-4.73 (5.62)	0.10 (3.96)	-2.16** (0.89)	-4.91** (2.37)	-0.69 (1.99)	2.32 (1.73)
Counselors and social workers	-4.81 (3.90)	0.31 (3.90)	0.02 (1.24)	5.33 (5.26)	-1.89 (1.84)	1.63 (1.35)
Police officers and supervisors	8.06 (9.42)	7.71 (8.77)	-1.26 (2.69)	-1.64 (5.23)	-4.24* (2.28)	-0.26 (2.03)
Firefighters and supervisors	-16.15** (6.62)	21.22 (13.58)	-5.50 (3.94)	-10.25*** (2.39)	-7.71*** (1.79)	1.14 (3.29)
Corrections officers and supervisors	-2.00 (20.18)	-10.55 (8.38)	1.07 (6.26)	-15.04*** (2.43)	-5.93*** (1.17)	8.90 (8.86)
Managers and administrators	6.47** (2.83)	-0.48 (1.67)	-0.34 (0.74)	-0.67 (1.32)	-2.33* (1.23)	-0.48 (0.67)
Adjusted R ²	0.08	0.03	0.03	0.05	0.03	0.03
Observations	6,715	6,715	6,715	6,715	6,715	6,715

Note: All controls included. SEs (in parentheses) are clustered at the state level. All regressions are weighted by ATUS sampling weights that adjust for unequal probabilities of sample selection.

* $p < .10$; ** $p < .05$; *** $p < .01$.

service tasks, and the conditional difference is even larger than the descriptives in figure 6 suggest. Similarly, teachers allocate significantly more of their volunteer time to social and human service acts (column 2) than others, as do doctors and other medical professionals. The point-estimate for firefighters is large and positive, suggesting they also contribute a larger share of their time to social and human services; however, the estimate is statistically insignificant. Perhaps surprisingly, social workers and counselors contribute a similar share of their volunteer time to social and human services as volunteers from other occupations.

The results provide some evidence that suggests workers who volunteer, regardless of sector, opt in to volunteering roles and activities that allow them to be most effective. For instance, in public service occupations that often interface directly with the public, such as

teachers and doctors, spend more time than their peers on volunteer activities associated with serving others directly than in activities related to their hobbies or interests (such as the arts or attending conferences). Similarly, managers, administrators, and legal workers who volunteer allocate more of their volunteering time to administrative support services for organizations. These results are broadly consistent with the possibility that volunteerism emerges from a combination of intrinsic desire to help others and a professional role that aids in identifying unmet needs and opportunities to fill them.

Occupations across Sectors

The preceding analysis focused on selected occupations common in the public sector (e.g., police officers and firefighters) or with a service orientation in both sectors (e.g., legal, health, and education workers). While

focusing on detailed occupations allows for comparisons of individuals within the exact same occupation and, for occupations in observed in both sectors, controls for occupation to isolate sector differences, the approach has limitations. First, some occupations do not have private sector counterparts (e.g., police and firefighters) for exact occupation matching. Second, the nature of time diaries necessitates large sample sizes for deriving precise estimates. Given that nationally only approximately 6% of respondents volunteer on an average day, estimates of volunteering time within specific occupations may be particularly imprecise because samples of specific occupations in nationally representative samples can be quite small.

On the other hand, workers with similar skills, abilities, and values may cluster in fields or industries, which consist of a several related occupations, more evenly distributed across sectors. The Bureau of Labor Statistics and Census Bureau use major occupation and industry codes to capture these broader aggregated fields by using industry to denote the industry of the organization for which a respondent works and major occupation to capture broadly similar occupations common to organizations across industries. While the results in [table 2](#) demonstrate that controlling for the major occupation or industry classification of a respondents' job did not eliminate the sector gap in time spent volunteering on an average day, the sector gap in volunteering may vary within occupation and industry categories.

To address the potential small cell problem, I examine the sector gap within related occupations and industries using the major occupation codes with at least 10% of respondents in both the public and private sector. This includes four occupation categories: business, management, and financial; professional; service; office and administrative support. Here, professional occupations include analysts, teachers, counselors, social workers, doctors, and other technical professional roles. Service occupations include roles, such as nurses, aids, teaching assistants, and various grounds keeping jobs. Finally, office and administrative support includes jobs like clerks, executive assistants, office receptionists, and other secretarial jobs. I estimate the full model within each of these major occupations for organizations in the education, health, and social assistance industries. I also include estimates for all industries excluding these three.

[Figure 7](#) plots the estimated difference between public and private sector workers in minutes volunteering per day within each occupation separately by the industry of their employer. The points represent estimated coefficients of β from [equation \(1\)](#), while the lines represent the 95% confidence interval. The approach allows for the examination of sector gaps among workers at

similar levels in their field's hierarchy while controlling for the selection of workers into organizations in different industries. For instance, nurses who opt to work in schools might be quite different from nurses who work in hospitals (health industry) in ways unobserved to researchers using indirect observational data.

As might be expected, the sector gap at different occupational levels varies across industries; however, consistent with the proposition that street-level workers operating closer to clients drive sector gaps in volunteerism, the sector gap among managers and administrators is low across all industries. In the education industry, public sector professional workers, 75% of whom are teachers, volunteer more than their private sector peers in the same industry. Notably, however, the sector gap is positive for service workers in the education industry as well, which includes similarly client-oriented jobs; however, the sector gap among service workers in education organizations is not statistically significant.

In organizations in the social assistance industry, managers and administrators in the public sector spend significantly less time volunteering than their private sector counterparts, logging 34 fewer minutes on the average day. Public sector professionals in this industry, primarily counselors and social workers, appear to spend more time volunteering, but again the difference is not statistically significant. Meanwhile, in social assistance organizations, public sector service workers spend less time volunteering, while public sector clerks and other office assistants in this industry spend more time volunteering. In the health industry, the sector gap is negligible among all types of workers. Note that in the social assistance industry, the nonprofit share of the private sector might be substantial. Finally, among workers at organizations in all other industries, the sector gap only appears among service workers, among whom public sector workers spend 9 more minutes volunteering on an average day.

Two patterns emerge from this analysis. First, the gap between public and private sector workers is generally largest among workers in more client-oriented occupations working in organizations in the same industry. The health industry provides a notable exception, and future research should aim to better investigate the differences in volunteering patterns among health industry workers relative to other industries documented here. Second, the gap in volunteerism among public and private sector workers in the same general occupation seems to vary widely by the industry in which they work. For instance, in most industries, clerical workers in both the public and private sector do not seem to differ in their volunteer time on an average day. In social assistance organizations, however, public sector clerical workers spend about 37 more minutes volunteering on an average

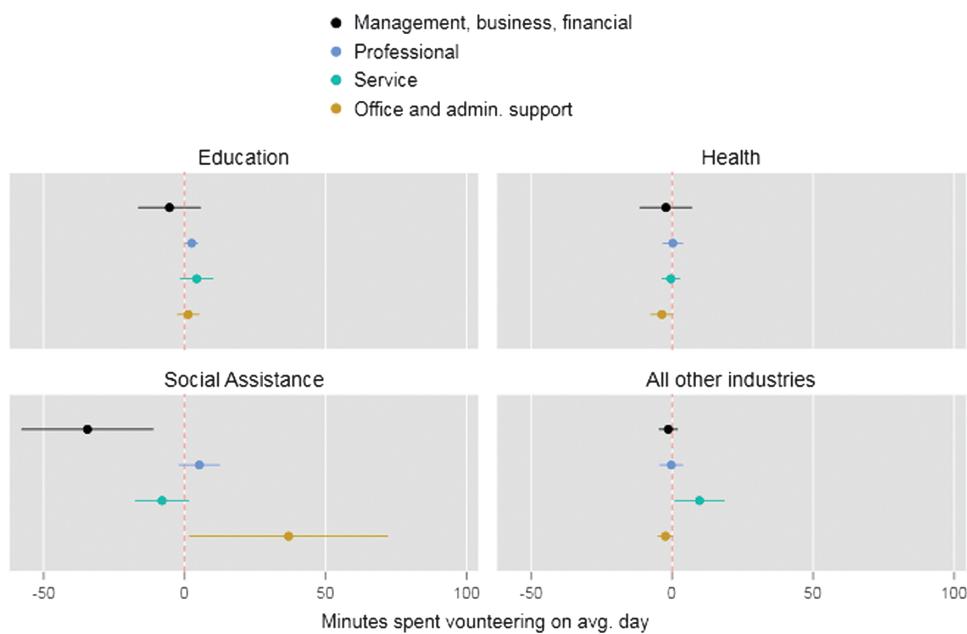


Figure 7. Volunteer Time Difference between Public and Private Sector Workers by Major Occupation within Industry, 2003–2016

Note: Plots represent estimated coefficients and confidence intervals of a public sector binary estimated using full model with all controls within each industry. Occupation and industry categories use BLS groupings of related occupations and industries. Occupation and industry categories included here represent the major categories with at least 10% of the observations in both sectors to capture occupations and industries with broadly similar jobs distributed across both sectors. Education services: N = 11,854; health services: N = 12,501; social assistance: N = 2,283; all other industries: N = 71,756.

day. The difference could be attributable to higher PSM workers in clerical jobs actively selecting into social assistance organizations, client contact among clerical workers being relatively higher in social assistance organizations, or some combination of these processes.

Activity Crowd Out

Finally, some scholars have noted that public sector workers, aware of the social function of their jobs, satisfy their prosocial motivations in work effort (Dur and van Lent 2018; Handy and Katz 1998). Indeed, using panel data from Germany, Dur and van Lent (2018) provide some evidence that highly altruistic workers donate more in the private sector, arguably as a social compensation for not engaging in public service work. Thus, public sector workers might be more willing to decrease volunteering intensity on work days than their private sector peers, as they view work and volunteering as substitutes. I examine this by estimating Poisson regressions of the baseline model and plotting time spent volunteering as a conditional function of time spent working during the average day for public and private sector workers. Similarly, if more prosocially motivated workers enter the public sector, public workers may also spend more time taking on care taking roles for household and nonhousehold people. The intuition here is that each unit increase in work or care-taking time may displace more volunteer time for public sector workers than their private sector

counterparts if public workers view all of these activities as prosocial in nature.

Figure 8 shows how public and private sector workers substitute between work and volunteer time. Here, the results show that the slope of the curve is steeper for public sector workers, which suggests relative to private sector workers, public workers are more likely to view work and volunteering as substitutes and, as a result, trade a larger share of volunteer time for each hour worked in a given day than their private sector peers. Moreover, the sector gap in volunteer time is largest on days with minimal work, which only underscores the commitment public sector workers make to service. Figure 9 shows that the sector difference in the rate of substituting volunteer time with care-taking time is even steeper. Collectively, the results are consistent with the proposition that public sector workers are both more intrinsically motivated to serve others, as they spend more time serving others on their days off, and view their work as intrinsically fulfilling a social objective, as they substitute more between volunteer and work time more directly.

Discussion

The results presented in this study investigate the intensity of volunteering behavior across sectors and occupations to extend previous research on prosocial behavior among public sector workers. The analysis employed retrospective time-diary data to compare public and

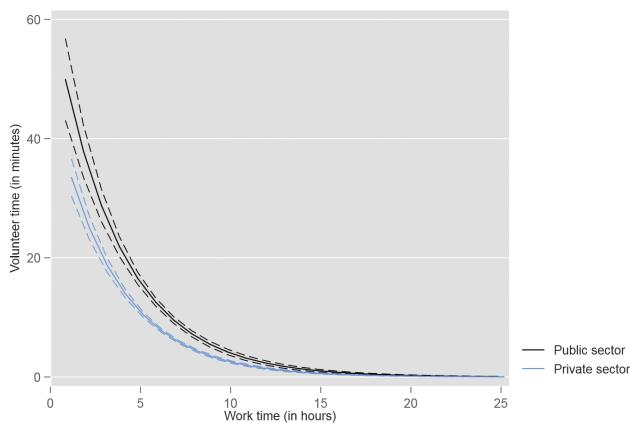


Figure 8. Sector Differences in Substitution between Work and Volunteering, 2003–2016

Note: Figure plots the marginal effects of time spent working on time spent volunteering in an average day estimated using Poisson regressions of the full model.

private sector worker volunteerism on an average day, controlling for a rich set of confounding factors and potential social desirability bias associated with traditional survey items. The analysis provided a variety of important results for understanding the relationship between motivation, sector, and volunteering. First, the results in [table 2](#) confirm both hypothesis 1 regarding volunteer participation rates, consistent with previous research using traditional survey methods, and hypothesis 2 regarding volunteering intensity, novel empirical evidence regarding sector differences in volunteering time. Importantly, these differences cannot be explained by sector differences in demographics, SES, family composition, or alternative time demands.

Second, examining differences across levels of government in volunteering intensity confirms hypothesis 3 that public sector workers closer to the community spend more time volunteering than others. Again, this difference is robust to a variety of alternative observable explanations. The results also confirm that public sector workers trade work time and volunteer time at higher rates than their private sector peers, consistent with intrinsic preference for service during off time or the perception that their jobs contribute an important social function to their communities. Similarly, while there is little evidence that volunteers who work in the public sector target their volunteer time differently than volunteers from the private sector, there is some evidence that workers from service-oriented professions choose volunteering roles related to their work domain.

Third, regarding the relationship between street-level bureaucrats and other direct service providing occupations, the results are more mixed. For starters, relative to the average worker in the private sector, street-level bureaucrats in government generally spend

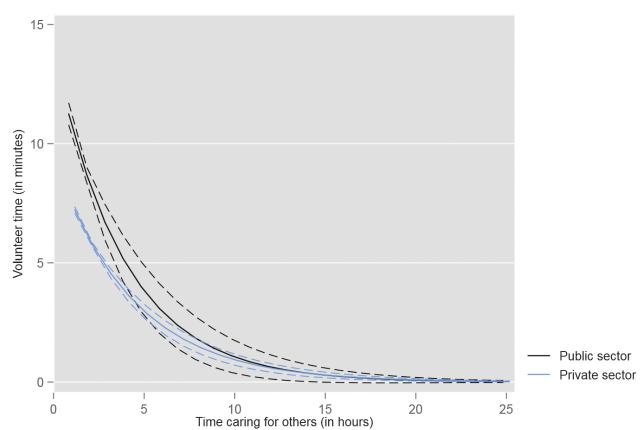


Figure 9. Sector Differences in Substitution between Work and Volunteering, 2003–2016

Note: Figure plots the marginal effects of time spent working on time spent volunteering in an average day estimated using Poisson regressions of the full model.

more time volunteering on the average day. Police, teachers, social workers, and fire-safety workers in the public sector all spend more time volunteering on the average day than the average private sector worker in other occupations, while administrators and managers in the public sector spend less time volunteering on an average day. On the other hand, health care workers, who also have a street-level caretaker role, spend less time volunteering than the average private sector worker. Moreover, while comparisons in volunteer time within the same occupation favors public sector workers for many street-level occupations, the results are often imprecise and inference should be treated with caution. Similarly, the sector gap in volunteering among workers closer to street-level operations varies across industries. In particular, health care professionals, like medical doctors and nurses, and workers in the health care industry provide consistent exceptions. Ultimately, this study provides mixed evidence for hypotheses 4 and 5 and additional research is needed. However, the evidence does suggest that workers with professional roles serving individuals in their communities draw on their professional knowledge to inform their volunteering choices.

Of course, as with any study of complex human behaviors, the analysis presented here carries some limitations that future researchers should consider investigating further. While the ATUS provides a unique set of data for examining the possibility that community embeddedness, as measured by level of government and occupation, explains part of the observed gap between public and private sector workers in volunteerism, the nature of national samples limits the efficiency of the data in examining important subsamples. Time diary data generally trades efficiency, in both practical and statistical terms, for precision in

measurement (Juster 1985; Niemi 1993). The loss in efficiency inherent in time diary data broadly becomes compounded in the ATUS for analyzing subsamples because the data collection aims to be nationally representative (Hamermesh, Frazis, and Stewart 2005). In the context of the current study, the subsamples of interest (e.g., occupations) may be too small to estimate precise parameters. While the estimates presented here represent least biased estimates of differences across sector within various occupations, the smaller subsamples for some occupations may lack the statistical power for strong inference. Finally, Wilson (2012) notes that there may be some response bias in the ATUS, as respondents are more likely to have volunteered than nonrespondents, which serves to underscore that while the results presented here minimize bias to the extent possible, there still may be bias driven by nonresponse.

Future researchers should endeavor to collect more detailed time diary data on samples designed to be representative of occupations and industries or specific regions or states. Beyond confirming the theoretical extension of volunteering argued in this study, such data collection efforts could target more granular information on the types of activities performed when volunteering, activities taken on during work hours, and investigate potential reasons public sector nurses appear to volunteer less than their private sector peers.

Conclusion

The results of this study contain a variety of implications for future public administration research, practice, and theory. First, building on previous evidence that demonstrates PSM drives both selection into public service (Clerkin and Coggburn 2012; Holt 2018a; Vogel and Kroll 2016; Wright, Hassan, and Christensen 2015) and volunteering (Clerkin, Paynter, and Taylor 2009; Holt 2018b; Huang and Feeney 2016; Leisink, Knies, and van Loon 2018; Piatak 2016a; Tsai, Stritch, and Christensen 2016), this study demonstrates that the opportunity to become more familiar with the community during work hours in the public sector may enhance the output of prosocial behaviors. The observed volunteering intensity gap favoring local government workers and some street-level public service professions (e.g., teachers and firefighters) on a typical day is consistent with the possibility that public sector workers combine knowledge gleaned from their professional roles with their commitment to help others to inform their volunteerism. This is further evidenced in the apparent inverse relationship between state-level volunteering and the state-level public-private gap in volunteering, as previously discussed. Notably, state-level private sector volunteering and the state-level gap are strongly and inversely correlated ($\beta = -0.86$, $SE = 0.10$, $p = .00$). These public servants on the front

lines of working with their communities are well positioned to identify gaps in services and allocate their time to fill these gaps after work hours, for no pay. Practically speaking, the volunteering spillover from public sector workers documented here underscores the efficacy of recruiting practices based, in part, on PSM and other prosocial motivations, as the marriage between motivational base and opportunities to interface with the community professionally may convert latent disposition into prosocial action more effectively.

Second, the estimates here provide a means to connect empirical assessments of the microlevel behaviors of public servants with macro-level outcomes for society (Moynihan 2018). After accounting for observable differences across sectors, the average worker in the public sector volunteers for 51 h per year relative to 38 h of volunteering for the average private sector worker. Another way of assessing the value of prosocial motivation in the public sector, as captured by this sector gap in volunteer intensity, is to provide a conservative estimate of the cost to organizations and communities if they had to pay for the volunteer labor instead. The annual gap between public and private sector workers of 13 h, at the federal minimum wage of \$7.25, represents about \$94 of additional labor donated by public sector workers per worker annually. While this seems small, using the conservative estimate of the extensive margin of volunteering among public sector workers measured in this study, 8%, and the current government workforce of 22,326,000 (BLS 2018), this 13-h gap represents a minimum value of \$167,891,510 additional goods and services produced annually by public sector workers' routine volunteering in their communities. The value of this volunteerism is particularly important to understand in the context of recent trends of static or declining local government employment and funding (Martin, Levey, and Cawley 2012; United States Government Accountability Office 2018), as there may be additional social costs to such local government decline.

Moreover, the variation across states, documented descriptively in figures 2 and 3, and across industries suggests that there are likely macro-level institutional, contextual, and governance-related factors that shape public servants' volunteering behaviors in socially important ways. For instance, future researchers should examine more explicitly the work and volunteering patterns of medical professions to account for their apparent deviation from other street-level professionals. Perhaps this can be explained by differences in work schedules or US specific institutional arrangements that attract different workers to the health care industry. Using data similar to the ATUS, used here, can help future researchers better understand both the theoretical propositions introduced here and the circumstances in which they do not hold. A starting point

may be using time diary data collected from other countries. Germany, the United Kingdom, Australia, Japan, Korea, Canada, New Zealand, and South Africa all have collected time diary data, and the BLS explicitly designed the ATUS to allow for cross-country comparison. Future research should leverage time diary data across countries and contexts investigate the governing structures and organizational processes that enhance both the occurrence and efficacy of public sector volunteerism.

Third, the results presented here open a variety of questions about the broader social outcomes attributable to the volunteering time spent by public servants. Is volunteer time spent by public servants more effective in providing services or building civic institutions than volunteer time from private sector workers? Conversely, in contexts where additional volunteering time in the public sector fills in either institutional gaps or compensates for less volunteerism among private sector workers, do public sector workers experience higher burnout rates? It is possible that an intrinsic desire to help others, without broader support, works against the retention of talent in the public sector in ways that will be important to assess, but lie beyond the scope of this study.

Finally, given the substantial social benefits created by volunteering intensity from public sector workers, conservatively estimated here as the minimum value of their additional labor hours, future research should consider strategies from public organizations to increase the supply of prosocially motivated workers (Holt 2018b) and shift more prosocial workers into other street-level positions. Corrections officers exhibit notably little routine volunteering despite working in the community, being well positioned to identify community needs, and experiencing tensions between their profession and the public they serve. Recruiting more prosocial officers or nudging existing officers into volunteering may aid community relationships, improve decision making in often tense situations, and expose officers to a wider experience of their communities than their jobs likely allow.

Supplementary Material

Supplementary data are available at *Journal of Public Administration Research and Theory* online.

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