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**The wages of care: Bargaining power, earnings and inequality**

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**Abstract**

The uneven bargaining power of both firms and workers may be contributing to increased earnings inequality in the U.S. Econometric analysis of earnings from the 2015 Current Population Survey shows that the earnings of managers and professionals employed in care industries (health, education, and social services), characterized by high levels of public and non-profit provision, are significantly lower than in other industries. Overall, earnings in care industries are more compressed, with lower ratios of earnings at the 90<sup>th</sup> percentile to those at the 50<sup>th</sup> and 10<sup>th</sup> percentiles. The specific features of care work, including moral commitments, the difficulty of capturing added value, and the importance of teamwork help explain these patterns.

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## **Wages of Power vs. Wages of Care**

Jobs that involve care provision typically pay less than other jobs, even controlling for differences in individual human capital and other job characteristics (England et al. 2002; Barron and West 2013; Hirsch and Manzella 2011; Hodges et al. 2016). Two of these studies use longitudinal data that make it possible to control for individual fixed effects (England et al. 2002; Hodges et al. 2016). This care wage penalty may partly reflect reduced bargaining power in the labor market, an explanation consistent with models that invoke efficiency wages and rent-seeking behavior.

Attention to the specific features of care provision complements other research on earnings differences between industries and firms, independent of occupation or other measures of skill (Gittleman and Pierce 2013; Avent-Holt and Tomaskovic-Devy 2014). For instance, many high-level employees in financial services capture rents in the form of significant wage premia, earning significantly more than would be predicted based on their education and other individual characteristics (Bivens and Mishel 2013; Philippon and Reshef 2009; Crotty 2009). The wage penalty in many care jobs represents the inverse: workers are paid less than they would be in other jobs.

Analysis of earnings in care industries—health, education and social services--provides a rich opportunity to explore the interaction between individual and job characteristics. Care industries have a number of distinctive features: their employees are predominantly female, and less than half of all employees work for

private for-profit firms. Teamwork plays a crucial role and it is especially difficult to identify an individual worker's contribution to either output or firm revenue.

These features of paid care provision have significant implications for the relative compensation of workers, particularly among managers and professionals. In this paper we explore three specific hypotheses regarding cross-sectional differences in earnings in the U.S. in 2015: 1) Earnings inequality in the top half of the earnings distribution, measured by the ratio of the 90<sup>th</sup> to the 50<sup>th</sup> percentile, is lower in care than non-care industries; 2) Both employment in a care industry and employment in a care occupation have a negative effect on earnings and 3) Professionals and managers in care industries have lower earnings than those in other industries.

The first section of this paper explains the distinctive features of care work that reduce bargaining power over wages. The second section reviews empirical research on earnings in care jobs, with particular attention to efficiency wages, performance pay, and institutional arrangements that complicate estimates of returns to human capital. The third section compares earnings inequality in care industries with those in non-care industries and tests the three hypotheses outlined above using data from the 2015 Current Population Survey. The final section summarizes the results and outlines an agenda for future research.

### **Power, Care, and Skill**

While conventional neoclassical models of wage determination focus on individual characteristics such as skills or preferences, a variety of institutional arrangements and market imperfections create significant space for distributional

conflict. Many private, for-profit firms operate in labor markets that cannot be described as perfectly competitive, either because they have monopsony power or because they cannot fully observe their workers' effort or productivity. Imperfect competition creates an environment in which wages are partially determined by bargaining power (Manning 2003; Taylor 2007). Firms with market power earn extra profits, or rents, and some workers are able to capture a share of these (Nickell 1999). Their ability to do so is influenced by the characteristics of the industry and occupation in which they work.

Feminist theory asserts the relevance of distributional conflict based on gender, as well as other dimensions of collective identity such as class, citizenship, race, and ethnicity. Most analyses of gender conflict in the labor market focus on discrimination against women (or harassment of them) by employers or workers. However a growing literature calls attention to the supply side of the labor market. Cultural assignment of responsibility for the direct care of others both constrains women's hours of employment and contributes to occupational segregation (Folbre 2012a). Specialization in care provision reduces bargaining power in the home and earnings in the labor market (England et al. 2002; Budig and Misra 2010; Budig et al. 2012). Long hours of unpaid work, reduced opportunities for training and continuous employment, lower lifetime earnings, and high vulnerability to poverty in the event of non-marriage or divorce exercise a large cumulative effect (Folbre 2016b).

The lower pay typical of care jobs represents a significant component of this larger care penalty. Differences between women's and men's education and labor

market experience are less important than they once were. Sorting and segregation across industries and occupations now explain much of the difference between women's and men's earnings in both the U.S. and Canada (Blau and Kahn 2016; Schirle 2015). The positive impact of women's entrance into professional and managerial occupations, for instance, has been muted by their concentration in traditionally female industries such as health and education.

Patterns of gender segregation by industry and occupation are typically explained either by discrimination or by individual preferences. But gender norms both influence women's preferences and impose costs on women who fail to conform to them (Badgett and Folbre 2003; Folbre 2012b). While many women find satisfaction in care provision, most would prefer institutional arrangements that provided greater economic reward for it. Ability to bargain for such arrangements is limited by at least three important factors: intrinsic motivation makes it difficult for care workers to threaten withdrawal of their services, the dollar value of care services is difficult to measure, and neither care workers nor their employers can easily lay claim to the value created.

### **Intrinsic Motivation**

Economists tend to describe desirable job attributes as those offering benefits to workers, not to employers, consumers, or society as a whole. But a paid employee who provides a gift of additional effort above and beyond job requirements lowers the market cost of service delivery. Depending on market structure and the elasticity of demand, this gift may benefit firms, consumers or both (Frank 2010).

When workers identify with their employers' mission, they are willing to provide more effort for less pay (Francois 2000, 2003; Besley and Ghatak 2005). Some economists argue that public sector workers earn less, on average, than those in the private sector because they are risk averse, willing to sacrifice pay for job security (Dohmen and Falk 2007). But many public sector workers are motivated by a desire for public service (Perry et al. 2010). This is likely also true for workers in private non-profit organizations. Similarly, many care workers express strong moral commitments to the well-being of others.

Employers who find it costly to monitor worker effort may pay workers an efficiency wage above the market-clearing wage in order to increase the cost of job loss to the worker (Stiglitz 1975). Standard efficiency wage models assume the employer finds it costly to measure worker effort, but both the employer and the consumer can assess the effect of effort on the quantity or quality of output. In care work, the information problem is reversed: employers can rely on intrinsic motivation to provide effort, but either cannot measure or cannot directly capture the effect on output. Where consumers have less sovereignty and quality is difficult to measure—as for instance, in nursing homes—firms have little to lose from the low-effort and low-quality services associated with high turnover. At the high end of the labor market, willingness to work for lower pay can be interpreted as a signal of quality, giving employers an incentive to keep wages low (Heyes 2005; Folbre and Nelson 2006; Taylor 2007). In general, women are less likely than men to receive efficiency wages (Schlicht 2016).

One could describe caring preferences, like other personal traits such as conscientiousness, as “efficiency-enhancing” (Bowles et al 2001a, 2001b). But unlike the other traits that are typically included in this category, caring preferences also appear to be “pay-lowering.” Gender differences in noncognitive factors, especially the importance of money relative to people, help explain the gender wage gap (Fortin 2008). This dynamic is evident in relatively well-paid, as well as less-paid jobs. A recent survey of physicians asking what they liked most about their profession found that 43% of men, compared to 28% of women included “potential for making good money at a job I like” and 72% of women compared to 62% of men included “gratitude, relationships with patients.”<sup>1</sup>

### **Measuring Value**

Both the quantity and quality of services provided in care industries are difficult to measure. Conventional measures of the “output” of education and health care are, like measures of the “output” of government, based only on the value of the purchased inputs, which represent only a small portion of their total value (Abraham and Mackie 2005). In many industries, consumers are good judges of quality. In health and education, they are not. Appropriate expertise is difficult to acquire and comparison shopping is often impractical. Education and health services both involve extensive third-party payments and create perverse incentives. Consumer sovereignty seldom reigns. As a result, profit-maximizing strategies create temptations to provide low-quality services (Deming et al. 2012; Cabin et al. 2014).



The greater the difficulty of measuring output, the lower the likelihood that individual pay is directly related to the value of individual contributions. Care often involves team production, including collaboration with other paid employees and the family members of care “consumers.” The cooperation of care recipients is typically vital. As a result, the value of a care provider’s contribution to education or health depends partly on the personal characteristics of the consumer. Production synergies combine with individual heterogeneity to make it difficult to identify a paid worker’s specific contribution.

Economic theory suggests that rewards for easily measurable performance tend to reallocate effort away from more intangible goals (Holmstrom and Milgrom 1994). Not surprisingly, teachers and their unions tend to be critical of pay-for-performance measures that rely heavily on standardized tests, which undermine collaborative efforts to develop students’ general capabilities.<sup>2</sup> In higher education, time devoted to teaching, where performance is difficult to measure, has a negative effect on pay, even controlling for more easily quantified research productivity (Binder et al. 2012). Within the health care industry, specific outcomes such as survival and recovery rates after surgery are easier to measure than long-run health outcomes determined by more holistic care, such as preventive health care. Hospitals typically treat nursing a fixed cost (like the cost of a room) rather than billing by services provided (Welton et al. 2006).

### **Capturing Value**

Both public and non-profit organizations play a large role in care provision. These organizations, unlike for-profit firms, do not generate direct revenues that

can be captured by providers. Even in the private for-profit sector, care provision generates positive spillovers—contributions to human and social capital—that consumers themselves do not pay for. In other words, both education and health represent public goods.

The present value of care services that contribute to the development of long-run human capabilities is difficult to estimate, much less capture. Imagine health care providers charging patients on the basis of estimated increase in disability- and pain-adjusted increased life expectancy. Imagine education providers charging on the basis of estimated increase in lifetime earnings. Some recent thought experiments along these lines yield telling results. One recent empirical analysis of teacher quality based on test scores alone found that replacing a teacher in the bottom 5% with one of average quality would increase the present value of students' lifetime income by more than \$250,000, far more than any teacher earns in a year (Chetty et al. 2011). And test scores represent only one dimension of success, demonstrably less important than emotional intelligence and non-cognitive traits (Bowles et al. 2001a)

In sum, consumers of care services are less likely than other consumers to pay for what they get or get what they pay for. And many care services provide unpriced benefits for society as a whole. This puts care service providers in a weak bargaining position.

## Care Skills

None of the distinctive features of care work imply that skill is unimportant. A worker's potential contribution to output has obvious implications for bargaining power. However, skill itself is remarkably hard to measure. Economists often resort to use of proxies such as education, experience, or occupation. Sometimes occupational wages themselves are interpreted, in circular terms, as a measure of skill.<sup>3</sup> In other words, low-wage jobs are simply assumed to be low-skill jobs.

This assumption has been explicitly challenged by research on pay equity, compensable factors, and comparable worth (England 1992). Detailed analysis of job evaluation systems reveals systematic devaluation of traditionally feminine skills (Steinberg 1990). More recent case-study-based research suggests that the skill requirements of both child care and elder care are systematically underestimated (Findlay et al. 2009; Palmer and Eveline 2012).

Most labor economists focus primarily on cognitive skills, suggesting that skill-based technological change has dramatically increased the demand for highly-educated workers (Lemieux 2008). An important modification of this approach emphasizes that some jobs are routine, easily automated or outsourced, while others are not (Autor et al. 2006). Because care work often requires customized attention to a specific person or personal space it is generally considered non-routine. This bodes well for future demand for care workers in the U.S., especially relative to routine clerical jobs.

Another optimistic spin on care work emerges from predictions of growing demand for interpersonal skills. However, most studies to date lump all

interpersonal skills into one category such as “people skills” (Borghans et al. 2014) or skills that improve coordination among workers (Deming 2015). Demand for such skills appears to be increasing, particularly when correlated with cognitive skills. This trend may also augur well for women’s entrance into some management occupations.

Care work, however, requires a distinctive form of interpersonal interaction, characterized by empathy and concern for others. The personal characteristics that foster such caring interactions have elements of skill, but also include specific attitudes, commitments, and motivations that do not fit neatly into the “skill” designation (Moss and Tilly 2001). Whatever it is called, the ability to effectively care for others has received relatively little attention from economists. The survey of Skills, Technology and Management (STAMP) administered in 2004-2006 did not ask about care work because “pretests suggested it has salience only for people who work in jobs that could be identified easily from intuition, existing research, and occupational title alone” (Handel 2008: 35). The more recent Princeton Data Improvement Initiative survey (PDII) that builds on STAMP follows this precedent. It divides interpersonal job demands into three categories: interactions with customers or clients, interactions with suppliers or contractors, and interactions with students or trainees (Autor and Handel 2009). In other words, it does not distinguish between interactions with adults who might be said to exercise consumer sovereignty and customers, clients, or students who might depend heavily on the good will and good heart of service providers.

One important recent study combines data from the Occupational

Information Network (O\*NET) on job requirements and worker characteristics to create both a “caring index” and a “developing/teaching index” (Hirsch and Manzella 2015) for specific occupations, asking how rankings on these indices affect earnings. While this study provides important insights into differences among care occupations (see later discussion), it does not treat these indices as measures of skill.

The apparent, if partial, invisibility of caring “skills” could be attributed to an ample “natural” supply or to a process of cultural devaluation. However, it may also be related to the characteristics of care work highlighted above: motivational complexity combined with output that is difficult to accurately measure or fully capture.

### **Occupation, Industry, and Care Job Earnings in the U.S.**

The small but growing empirical literature on care penalties in paid employment typically estimates earnings equations that seek to isolate the effect of work in a caring job, controlling for both individual characteristics (such as age, education, and experience) and job characteristics (such as % female in the occupation, level of unionization, licensing rules, public vs. private sector). Measurement problems abound. “Care jobs” can be defined in a variety of ways, as can compensation in care employment. Also, as the preceding discussion indicates, care jobs are particularly likely to be performed by women and to be located outside for-profit private employment; if these or other features of care jobs are the indirect result of the distinctive features of care provision they should not be netted out of estimates of the care penalty.

## **Defining Care Jobs**

Much empirical research on care jobs to date has defined them in terms of an occupation/industry overlap consistent with services that develop human capabilities, often requiring personal interaction (England et al. 2002; Budig and Misra 2010; Duffy et al. 2013). Direct care jobs have been defined more specifically as jobs in which the quality of the service provided is likely to be affected by the care provider's concern for the well-being of the care recipient. Indirect care jobs entail provision of services necessary for direct care (Folbre 2012).

The occupation/industry overlap is designed to isolate jobs that are caring on both an individual and a firm-level. A nurse employed in a health care industry would be included because both her job and the firm she works for are providing care. A nurse in a manufacturing industry (on hand, for instance, to deal with industrial accidents), would not be included, because even though her job involves care, her firm is not in the business of providing it. Occupation is typically treated as an approximate measure of individual skill, and industry as a factor relevant to the nature of the service being provided by the firm. Workers in occupations that do not involve direct care (such as hospital cleaning personnel) often experience a pay penalty (Duffy 2011; Duffy et al., 2015).

Most economists analyzing the care penalty have focused on occupation alone. For example, Barron and West (2013) single out six caring occupations for analysis using British Household Panel Survey data: childcare, doctor, nurse, nursing assistant, school teacher, and welfare worker. Another, previously mentioned approach to the definition of caring jobs ranks all occupations in terms of a "care

index” based on the O\*Net rankings (Hirsch and Manzella 2015). This approach offers the distinct advantage of providing a continuous measure, rather than creating a binary category of “care jobs” vs. “non-care jobs.” However, it is difficult to assess the accuracy of the underlying O\*Net rankings, because they include occupational averages that do not take industry or firm-level differences into consideration. The factor analysis that transforms individual occupation rankings into a cardinal index adds a layer of complexity to empirical analysis.

The merits of specific definitions of care work depend on the theoretical framework in which they are situated. Sociologists often emphasize the influence of institutional factors such as the role of the public sector, unionization, and social closure. International comparisons show that these factors are indeed significant, with wide variation in care penalties (and bonuses) across twelve countries (Budig and Misra 2010). Economists often emphasize the role of individual and occupational characteristics. While little attention to date has focused on the impact of industry (except as a way of narrowing the definition of care jobs), much of the theoretical discussion above suggests that industry may exercise an independent effect as a result of its implications for the characteristics of the service being provided.

### **Defining Earnings**

Industry differences influence forms of compensation. Performance pay (defined as any pay over and above a regular wage, including bonuses) has become quite widespread in the U.S. over the past twenty years, especially among professionals and managers. In 2013, 17% of workers in the top 1 percent received

incentive pay (a subset of performance pay explicitly related to performance benchmarks) compared to 1% in the bottom decile (Gittelman and Pierce 2013b: R8). The expansion of such extra-wage payments has almost certainly intensified earnings inequality, though estimates of the size of this impact differ considerably (Lemieux et al. 2009; Gittelman and Pierce 2013b). Incentive pay is quite uncommon in the public sector (which, as later discussion will show) accounts for a large percentage of employment in care industries. As a result, most researchers examining performance pay limit their attention to the private sector.

Even within the private sector, care industries are among the most underrepresented. One estimate based on analysis of the 2013 National Compensation Survey found that 36% of workers in information and 32% in financial services received performance pay, compared to 12% in education and health services. Occupational differences are also salient: 28% of workers in management, business, and financial occupations (a category that includes nearly half of the top 1% of earners) received performance pay, relative to 19% in professional and related services and 10% in service occupations (Gittelman and Pierce 2013b: R7). Among employees of non-profit firms, only fund-raisers typically earn incentive pay (Mesch and Rooney 2008).

These differences validate the claim that performance is more difficult to measure in care industries. They also suggest that comparisons based on hourly earnings are particularly likely to understate earnings outside care occupations and industries, and thus understate any care penalty.



## **Heterogeneity**

Broad-brush similarities in the care sector are crosscut by finer distinctions. Some care occupations, such as teaching and nursing, require specific educational credentials and are relatively unionized. They offer relatively secure and well-paid employment compared to others such as child care and elder care (Howes et al. 2012). Licensing requirements for some occupations, but not for others, create differences in “social closure” that affect wages and benefits (Lightman 2016). Face-to-face interactions and emotional connection are typical of many, but not all jobs in the care sector. Regardless of industry, immigrants and women of color tend to dominate occupations that make larger physical than emotional demands (Duffy 2005, 2011).

Three important professional occupations within care industries have been studied in some detail: teachers, nurses and doctors. All three have idiosyncratic institutional features, including, in many cases, stressful working conditions. Hours of work follow distinctive patterns. Teachers put in long hours outside the classroom preparing their presentations and grading papers, but either do not work for pay or find other jobs during much of the summer. Nurses typically work long shifts, often at night, often with mandatory overtime (Hirsch and Schumacher 2012). Physicians often work more than 50 hours per week (more than 60 hours per week are typical of hospital residents) and are often on call at night and weekends.

Educational requirements also differ: teaching jobs typically require a Bachelor’s degree, but often offer standardized rewards for achievement of a

Master's degree. By contrast, many registered nurses gain their licenses with an Associate's Degree, and those who also earn a Bachelor's Degree do not enjoy a very large premium (Auerbach et al. 2015). Standard human capital models often specify the educational requirement for a medical degree as 20 years (four years beyond achievement of a Bachelor's degree) (Glied et al. 2015). But medical licensing today typically requires between three and eight years in a hospital residency program, a substantial extension of the training requirement.<sup>4</sup>

Accurate measurement of hours worked—as well as benefits, overtime, and performance pay—is key to comparisons of earnings per hour across occupations. Disagreements over the measurement of teacher hours lead to very different conclusions regarding their average pay.<sup>5</sup> Some physicians argue that they earn less than high-school teachers when both hours worked and the cost of medical training are taken into account.<sup>6</sup> The specificity of educational requirements by occupation complicates estimates of rates of return to education for nurses and doctors based on standardized assumptions (See, for instance, Glied et al. 2015).

Heterogeneity is often high within these occupations as well. Unionization significantly affects the earnings of many, but not all teachers and nurses. Extreme differences in earnings among physicians based on specialization illustrate the care penalty in microcosm. A recent Medscape survey estimates the average income of orthopedists in 2015 as \$421,100 annually, more than twice as high than the average for practitioners of family medicine, at \$195,000.<sup>7</sup> Success in surgical procedures is easier to measure: Medscape's explanation of the survey's findings

notes that “those who perform procedures have the highest incomes compared with those who manage chronic illnesses.”<sup>8</sup>

Earnings in care jobs have polarized since the 1980s, with faster growth in the top and bottom quintiles than in the middle quintiles of the distribution. Differences in hourly earnings related to educational credentials and race/ethnicity have also intensified (Dwyer 2013). Because care jobs have expanded as a share of employment, these trends contributed to economy-wide patterns of increased earnings inequality. This finding, however, is not inconsistent with the possibility that inequality is lower in the top half within care industries than in others, especially in management and professional occupations.

### **Inequality in Care Worker Earnings in 2015**

The characteristics of paid care services suggest that these services are not best provided by private for-profit firms. They also suggest that care-providing organizations can foster cross-occupational teamwork and cooperation by reducing inequalities among workers (Weil 2014). While these dynamics operate independently of gender, we expect them to be particularly strong among women workers in care jobs. Our empirical analysis of data from the March Supplement of the 2015 U.S. Current Population Survey begins with a descriptive analysis of differences between care industries and others based on type of employer (for-profit, private not-for-profit, and government) before describing occupational and earnings differences. We then provide estimates of rates of return to human capital for professionals and managers in care and non-care industries, revealing significant differences.

## **Employment and Earnings in Care Industries**

Our definition of care industries follows precedents set in the literature and consists of health, education, and social services (for a detailed list of industry codes see Appendix A). We exclude self-employed workers and those with negative or no earnings for the year. Because our dependent variable is earnings in the previous year, we use occupation in the last year as an independent variable,

Workers in care industries comprised about 25% of total U.S. employment in 2015. They represented a relatively small share of employment in private for-profit firms (about 16%) because they were disproportionately concentrated in private non-profit employment (about 61% of the total) and government (about 50% of the total)(See Table 1). Patterns for women workers were similar, but more extreme. Those working in care industries comprised 38% of all women employed. They represented only about 28% of women in private for-profit employment, but 69% of those in private non-profit employment and about 63% of those in public employment.

Patterns of earnings inequality differ substantially. A bird's eye comparison of median earnings and earnings at the 10<sup>th</sup> percentile (P10) and the median (P50) shows no difference between care and other industries. However, the 90<sup>th</sup> percentile (P90) in care industries is only \$82,000, compared to \$100,000 for other industries. The median represents 45% of the P90 in care industries, compared to 35% in other industries, signifying less inequality in the upper half of the distribution (See Table 2). Lower earnings inequality in care industries results from lower inequality in

women's earnings, as the earnings ratio among men in care industries is more in line with the earnings ratios seen in other industries.

Human capital characteristics also differ between these two industry groupings. Workers in care industries are slightly older and are more likely to be married and have children than workers in other industries (See Table 3). Their average levels of educational attainment beyond the Bachelor's Degree are far higher. The percentage of women in care industries with a Master's Degree or higher is 23% compared to 8% in other industries; for men, 35% to 8%. The high percentage of men in care industries with a Ph.D. or professional degree also stands out at 15% compared to 2% in other industries.

Differences in occupational structures are striking. More than 56% of employees in care industries are professionals, compared to 13% in other industries (See Table 4). Managers represent only a slightly smaller share in care industries (8%) relative to other industries (11%). Occupational earnings also differ. Managers have the highest earnings in both care and other industries, followed by professionals. However, managers and (especially) professionals earn less in care industries than in others (See Table 4).

Analysis of the relationship between human capital characteristics and hourly earnings shows that, net of controls, workers in care industries pay a 12% wage penalty (see Model I, Table 5). Even controlling for job characteristics, gender has a large significant negative effect (-23%). The effects of occupation in this model are not surprising: managers and professionals enjoy a pay premium compared to other workers. Employment in private for-profit firms is associated

with a small premium of 3% compared to public employment (the omitted category) while employment in private non-profit firms is associated with a significant penalty of -6%.

Coefficients on other variables less central to our story show that, as expected, earnings increase with age, and also with education. Married workers earn 12% more than single workers, and having children is also associated with higher earnings. Workers who are black, non-Hispanic experience a 4% wage penalty. It is important to note here that the variable for educational attainment is extremely crude, given differences in both the years required to attain a professional degree (see earlier discussion) and the intensity and effort put into medical education, in particular. An additional consideration, often omitted in discussion of returns to human capital, is that advanced education for professional jobs is more closely aligned with job demands than is a generic college degree.

In Model I of Table 5, the professional category includes professional workers in care occupations, showing the effect of professional occupation alone. It does not include any control for care work occupations, which, as indicated in the previous discussion, are associated with a wage penalty (for a list of these occupations, see Appendix B). The overlap between occupational categories such as professionals and managers and the binary distinction between care and non-care occupations requires a more detailed specification.

Model II in Table 5 includes a dummy variable for all care work occupations and excludes professional workers in care occupations from the professional category (this category effectively becomes “professional, but not care occupation”).

In this model, the care industry pay penalty is reduced to 5% (compared to 12% in Model I) and the pay bonus for managerial occupations becomes slightly smaller, but remains positive and large. The pay bonus for professional occupations becomes slightly larger. In this model, the reference group of “other occupations” does not include highly paid managers and professionals, and as a result, Model II does not show a care occupation penalty. When the reference group does include managers and professionals, as in Model III, where they are left out of the model as separate categories, a pay penalty of 7% for care occupations results.

We hypothesized that managers and professionals earn less in care industries than in other industries. The results in Table 6 confirm this hypothesis. Both specifications control for individual worker characteristics, as in Table 5, but only results for the primary variables of interest are reported. Model I estimates an interaction between care industries and managers. The care industry penalty for nonmanagers is 3%, with a coefficient of -11%. Combined with the penalty for working in a care industry of -3%, the care industry penalty for managers is larger at 14%. Model II performs the same exercise through the interaction between care industries and professionals. Here we see the care industry pay penalty for nonprofessionals is 3%, and the care industry penalty for professionals is -20%  $[(-0.03)+(-0.17)]$ .

Another way of interpreting the interaction effects asks how big the bonus for being a manager is in care industries, compared to being a manager in other industries. The coefficient on manager in Model I is 0.37, while the interaction between manager and care industry yields a coefficient of -0.11. This implies that

the bonus for working as a manager in care industries is 26%  $[(0.37)+(-0.11)]$  compared to 37% in other industries. Likewise, the coefficient on professionals not in care occupations in Model II is 0.32 while the interaction between professional and care industry is -0.19. This implies the bonus for working as a professional in a non-care occupation in a care industry is 13% compared to 32% in other industries.

Model III omits the dummy for care occupation, which makes it possible to define professionals more broadly to include those in both care and non-care occupations. The results are not dramatically different from Model II. The coefficient for care industry is larger in magnitude, at -0.07, the coefficient on professional is almost the same as in Model II (0.31 compared to 0.32) and the interaction term is -0.15. Following the same reasoning outlined above, the pay penalty for a professional working in a care industry is 22%  $[(-0.07)+(-0.15)]$ . The bonus to working as a professional in a care industry is 16%  $[(0.31)+(-0.15)]$ , compared to 31% in a non-care industry.

That managers and professionals working in the care industry pay a penalty is somewhat surprising given the presence of high-level earners such as specialist physicians, pharmacists, and dentists. However, the high level of education required in these occupations, as well as the institutional environment, helps explain these results. Our results are consistent with human capital equations estimated by Hodges et al. (2016) in analysis of data from the National Longitudinal Survey of Youth, which find that workers in relatively highly paid care occupations experience a significantly lower rate of return on experience than other workers.



Our results are also consistent with the institutional observation that medical billing is typically based on the procedures performed, rather than the skill or experience of health care workers. Education is subject to similar dynamics. Students as consumers do not pay more for taking classes with more experienced teachers; gains to experience in that profession are largely determined by bureaucratic procedures and collective bargaining rather than market demand. The greater percentage of managers and professionals in care industries is also consistent with the more team-based and collaborative nature of care work. .

As emphasized in the first section of the paper, managerial and professional earnings are influenced by a variety of factors that cannot be measured with Current Population Survey data, including exact years and intensity of education, actual experience, and levels of occupational unionization. Failure to accurately measure worker benefits such as employer contributions to health insurance and pensions is also problematic. The most serious shortcoming of this data set, however, is the ambiguous treatment of—and likely failure to capture— performance-based pay such as year-end bonuses, irregular incentive pay, and stock options, all of which are considerably greater outside of care industries. As a result, we believe that the estimates presented here are likely to underestimate the magnitude of the care penalty for managers and professionals.

### **Conclusion**

This paper bridges research on gender and care work and research on the effects of industry-level factors on wage inequality in several ways. First, it conceptualizes care industries (health, education, and social services) as a

distinctive sector of the economy that deserves more empirical attention. This sector not only employs a large percentage of women, but also provides services for which traditional economic assumptions of consumer sovereignty do not hold and in which both the average and the marginal social product of workers almost certainly exceeds their wage. Although economists have largely ignored specific features of the labor process in care industries, these likely affect both the level and the distribution of earnings.

Second, this paper calls attention to the importance of employment outside the private-for-profit sector of the economy, which clearly departs from the profit-maximization logic that is typically invoked in analysis of earnings inequality. Partly as a result of their specialization in care provision, women workers are disproportionately located in government and private non-profit employment. Most recent analysis of trends in earnings inequality focuses entirely on private for-profit employment. One (not terribly recent) exception to this generalization finds that wage compression in public employment in the U.S. increased significantly after 1970, and may therefore have exercised an equalizing effect on overall earnings (Borjas 2002). Lack of attention to the public sector, like lack of attention to earnings in care industries, could be construed as an indicator of androcentric bias.

Third, this paper provides a theoretical basis for distinguishing the effects of working in a care industry (related to the type of services provided) and working in a care occupation (related to the personal characteristics and motivations of those selected into direct care jobs). The empirical analysis of interaction effects between industry and occupation shows that both are relevant to labor market outcomes.

The estimated pay penalty for managers and professionals in care industries, despite their higher average levels of average educational attainment, suggests that high wages for specialty physicians and top managers are counterbalanced by the wages of lower-level managers and professionals who also play an important role in the delivery of care services.

Our analysis also raises important questions regarding the impact of gender on wage determination. Are care workers paid less because they are women? Or are women paid less because they are care workers? The answer to both questions is probably yes. While it is difficult to determine the relative size of these reciprocal effects, our results suggest that the effect of gender on earnings cannot be reduced either to employer discrimination or individual preferences. It also reflects ways in which the labor market rewards—or fails to reward—stereotypically feminine capabilities that contribute to positive outcomes in care services.

In further research using the Current Population Survey, we plan to disaggregate “other industries,” focusing more narrowly on a comparison between care industries and financial/business services. We believe that this latter category represents what might be termed a more masculine sector of the economy, in which there is greater competition for measurable outcomes reflected in performance pay. The CPS now includes measures of occupational licensing and certification which we can utilize to analyze the effects of social closure. We also hope to plan more analysis of differences in average hours worked by industry and occupation and rates of return to education.

Out next steps will be to take our analysis back in time, examining historical trends and asking how growing employment in both care services and financial/business services has affected earnings inequality. We also hope to explore other sources of data, including the Survey of Income and Participation and the National Compensation Survey. We welcome any and all suggestions of ways to better measure both the wages of power and the wages of care.

**Table 1. Type of Employer in Care and Other Industries**

	Care Industries	Other
Total	25%	75%
Women	38%	62%
Men	12%	88%
Private, for-profit	16%	84%
Women	28%	72%
Men	7%	93%
Private, not-for-profit	61%	39%
Women	69%	31%
Men	47%	53%
Public	50%	50%
Women	63%	37%
Men	32%	67%

Source: 2015 U.S. Current Population Survey. Includes workers 15 and older; excludes self-employed and workers with negative or no earnings. N=77,584. Rows do not add exactly to 100 as a result of rounding.

**Table 2. Annual Earnings at the 10<sup>th</sup>, 50<sup>th</sup>, and 90<sup>th</sup> Percentiles by Type of Industry**

	Earnings			Earnings Ratios	
	P10	P50 (Median)	P90	P10/P50	P50/P90
Care Industries	\$10,000	\$37,000	\$82,000	27.0	45.1
Women	\$9,600	\$35,000	\$75,000	25.7	46.7
Men	\$12,000	\$45,000	\$120,000	26.7	37.5
Other Industries	\$8,000	\$35,000	\$100,000	22.9	35.0
Women	\$6,000	\$28,800	\$80,000	21.4	36.0
Men	\$11,000	\$41,401	\$110,000	26.6	37.6

Source: 2015 U.S. Current Population Survey. Includes workers 15 and older; excludes self-employed and workers with negative or no earnings. N=77,584.

**Table 3. Characteristics of Workers by Type of Industry and Gender**

Characteristics	Care Work Industry		Other Industry	
	Women	Men	Women	Men
Age (mean)	43.2	43.4	41.1	41.4
Education level				
Less than high school	3.2	3.5	9.2	10.9
High school degree	16.9	13.5	27.4	31.3
Some college	30.2	22.9	32.3	27.9
College graduate	27.0	25.2	22.8	21.0
Master's degree	18.0	19.5	6.4	6.9
Ph.D. or Professional degree	4.8	15.4	2.0	2.2
Percent married	57.8	60.5	46.7	56.0
Percent with children	50.3	40.6	43.0	40.0
Race and ethnicity				
White, non-Hispanic	68.1	67.3	63.6	65.3
Black, non-Hispanic	14.5	12.3	12.5	9.9
Other, non-Hispanic	7.2	10.2	8.8	7.8
Hispanic	10.2	10.2	15.1	16.9

Source: 2015 U.S. Current Population Survey. Includes workers 15 and older; excludes self-employed and workers with negative or no earnings. N=77,584.

**Table 4. Managers and Professionals in Care and Other Industries**

	Care Work Industry	Other Industry
Percent comprised of:		
Managers	8%	11%
Professionals	56%	13%
Other occupations	36%	76%
Median earnings		
Managers	\$60,000	\$70,000
Professionals	\$45,000	\$62,000
Other occupations	\$25,000	\$30,000

Source: 2015 U.S. Current Population Survey. Includes workers 15 and older; excludes self-employed and workers with negative or no earnings. N=77,584.

**Table 5. Ordinary Least Squares Model Predicting Natural Log of Hourly Earnings**

	Model I		Model II		Model III	
<b>Job Characteristics</b>						
Care work industry	-.12	***	-.05	***	-.03	**
Manager	.37	***	.35	***	-	
Professional	.24	***	.29	***	-	
Care work occupation	-		.05	***	-.07	***
Private, for-profit	.03	***	.01		.02	**
Private, non-profit	-.06	***	-.06	***	-.04	***
<b>Worker Characteristics</b>						
Female	-.23	***	-.22	***	-.23	***
Age	.01	***	.01	***	.01	***
High school degree	.24	***	.24	***	.25	***
Some college	.36	***	.36	***	.41	***
College degree	.66	***	.68	***	.78	***
Master's degree	.80	***	.83	***	.96	***
Ph.D./ Professional degree	1.01	***	1.04	***	1.19	***
Married	.12	***	.12	***	.13	***
Children	.11	***	.11	***	.12	***
Black, not Hispanic	-.08	***	-.08	***	-.10	***
Other, not Hispanic	-.04	***	-.05	***	-.05	***
Hispanic	-.08	***	-.09	***	-.10	***
Constant	2.04	***	2.05	***	2.06	***
R-squared	.28		.28		.26	
N	77,584		77,584		77,584	

Source: 2015 Current Population Survey. Includes workers 15 and older; excludes self-employed and workers with negative or no earnings. In models that include both professional and care occupations, professional occupations do not include professional care occupations.

\* p < .05 \*\* p < .01 \*\*\* p < .001

**Table 6. Ordinary Least Squares Models Predicting Natural Log of Hourly Earnings Interactions** (primary variables of interest)

	Model I		Model II		Model III	
Care industry	-.03	**	-.03	***	-.07	***
Manager	.37	***	.34	***	.37	***
Manager*Care industry	-.11	***	-		-	
Professional	.29	***	.32	***	.31	***
Professional*Care industry	-		-.17	***	-.15	***
Care occupation	.04	***	.04	***	-	
Constant	2.05	***	2.06	***	2.06	***
R-squared	.28	***	.28		.28	
N	77,584	***	77,584		77,584	

Source: 2015 Current Population Survey. Includes workers 15 and older; excludes self-employed and workers with negative or no earnings. In models that include both professional and care occupations, professional occupations do not include professional care occupations.

\*\*\* p < .001



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## **Appendix A. Care Industries (Current Population Survey Codes)**

7860	Elementary and secondary schools
7870	Colleges and universities
7880	Business, technical, trade schools
7890	Other schools, instruction, educational services
7970	Offices of physicians
7980	Offices of dentists
7990	Offices of chiropractors
8070	Offices of optometrists
8080	Offices of other health practitioners
8090	Outpatient care centers
8170	Home health care services
8180	Other health care services
8190	Hospitals
8270	Nursing care facilities
8290	Residential care facilities, without nursing
8370	Individual and family services
8380	Community food and housing, and emergency
8390	Vocational rehab services
8470	Child day care services



## Appendix B. Care Occupations (Current Population Survey Codes)

### Professional and related occupations

#### *Life, physical, and social science occupations*

Psychologists (1820)

#### *Community and social services occupations*

Counselors (2000)

Social workers (2010)

Miscellaneous community and social service specialists (2025)

Clergy (2040)

Directors, religious activities and education (2050)

Religious workers, all other (2060)

#### *Education, training, and library occupations*

Post secondary teachers (2200)

Preschool and kindergarten teachers (2300)

Elementary and middle school teachers (2310)

Secondary school teachers (2320)

Special education teachers (2330)

Other teachers and instructors (2340)

Other teachers and instructors (2550)

Teacher assistants (2540)

#### *Healthcare practitioner and technical occupations*

Chiropractors (3000)

Dentists (3010)

Dietitians and nutritionists (3030)

Optometrists (3040)

Pharmacists (3050)

Physicians and surgeons (3060)

Physician assistants (3110)

Podiatrists (3120)

Registered nurses (was one code now four, see below)

Audiologists (3140)

Occupational therapists (3150)

Physical therapists (3160)

Radiation therapists (3200)

Recreational therapists (3210)

Respiratory therapists (3220)

Speech language pathologists (3230)

Therapists, all other (3245)

Registered nurses (3255)

Nurse anesthetists (3256)

Nurse midwife (3257)

Nurse practitioner (3258)

Health diagnosis and treating practitioners, all other (3260)

Dental hygienists (3310)  
Diagnostic related technologists and technicians (3320)  
Emergency medical technicians and paramedics (3400)  
Health practitioner support and technologists technicians (3240)  
Licensed practical and licensed vocational nurses (3500)  
Opticians, dispensing (3520)  
Miscellaneous health technologists and technicians (3535)  
Other health care practitioners and technical occupations (3540)

## **Service occupations**

### *Health care support occupations*

Nursing, psychiatric and home health aides (3600)  
Occupational therapist assistants and aides (3610)  
Physical therapist assistants and aides (3620)  
Massage therapists (3630)  
Dental assistants (3640)  
Medical assistants (3645)  
Pharmacy aides (3647)  
Phlebotomists (3649)  
Miscellaneous health care support, including medical equipment preparers (3655)

### *Personal care and service occupations*

Child care workers (4600)  
Personal and home care aides (4610)  
Recreation and fitness workers (4620)  
Residential advisors (4640)  
Personal care and service workers, all other (4650)

## Notes

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<sup>1</sup> See Medscape Survey of 2014 at <http://www.medscape.com/features/slideshow/public/residents-salary-and-debt-report#2>, accessed November 2, 2016

<sup>2</sup> See, for example, John Rosales, “Pay Based on Test Scores?” at <http://www.nea.org/home/36780.htm>, accessed December 13, 2014.

<sup>3</sup> A recent analysis of polarization in the U.S. labor market, for instance, ranks occupations by average wages, but refers to this as a ranking by skill level. See David H. Autor and David Dorn, “The Growth of Low-Skill Service Jobs and the Polarization of the U.S. Labor Market,” *American Economic Review* 103:5 (2013), p. 1554.

<sup>4</sup> See discussion at <http://www.salary.com/physician-career-education-and-advancement/>

<sup>5</sup> See Corcoran et al. 2008 and updates to 2015 available at <https://www.washingtonpost.com/news/answer-sheet/wp/2016/08/16/think-teachers-arent-paid-enough-its-worse-than-you-think/>, accessed November 2, 2016.

<sup>6</sup> See, for instance, <http://www.bestmedicaldegrees.com/salary-of-doctors/>

<sup>7</sup> See discussion at <http://www.businessinsider.com/how-much-salary-does-a-doctor-make-2015-4>, accessed November 2, 2016.

<sup>8</sup> See <http://www.medscape.com/features/slideshow/compensation/2014/public/overview#2>, accessed November 2, 2016.