Who Cares—and Does It Matter?
Measuring Wage Penalties for Caring Work

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Abstract

Sociologists and economists have proposed plausible arguments for why there can exist a wage penalty for work involving helping and caring for others, a penalty borne primarily by women. Existing evidence for wage penalties is neither abundant nor fully compelling. In this paper, we examine wage differentials associated with caring jobs using multiple years of Current Population Survey (CPS) earnings files matched to occupational descriptors providing continuous measures of caring across all occupations, in contrast to prior studies assuming occupations either do or do not require a high degree of caring. Cross-section and longitudinal analyses are used to identify the sources of wage differences associated with caring jobs, conditional on worker, location, and occupational attributes (the latter including required job skills and working conditions). Cross-section estimates are sensitive to specification, in particular the use of alternative caring measures and inclusion of controls for job skills. Little if any cross-section evidence is found for caring wage penalties among women; only weak evidence is seen among men. Based on our preferred longitudinal estimates, wage changes among job switchers indicate small wage penalties for jobs requiring 'assisting & caring' and 'concern' for others, with the estimates for women half the size of those for men. Separate analyses for the private and public sectors provide a clearer pattern. There is no evidence of caring penalties (on average) for either women or men in private sector jobs. In the public sector, we find more substantial evidence of lower pay for women and men in caring jobs. The magnitudes are modest, at the most about a 5% penalty for one standard deviation differences in the various measures of caring. Examining a similarly constructed data set spanning the past thirty years, we find that while there has been a steady upward trend in the mean level of caring, the overall change has been quite small, and there is no evidence of convergence between women and men in the levels of caring in the U.S. labor market.

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1. Introduction

Caring labor has been described as employment "in which workers are supposed to provide a face-to-face service that develops the human capabilities of the recipients" (England et al., 2002, p. 455).[1] Health, child, and elder care services, along with education, account for a substantial and increasing share of paid employment and personal consumption expenditures in the U.S. (Folbre 2008). Research in economics and sociology provides theoretical rationales for why a wage penalty may exist for caring labor.[2] Yet there are a surprisingly limited number of empirical analyses examining whether wage penalties for caring work exist and, if so, the sources of these penalties.

A recent study by Barron and West (2013) examines the British labor market and finds wage premiums for doctors, nurses, and teachers, coupled with wage penalties for direct care and child care workers.[3] Earlier work by England et al. (2002) finds a 5-6% wage penalty for caring labor in the U.S. They show that the type of care work matters since nurses enjoy a significant wage premium, while workers in most other caring occupations suffer a penalty.[4] Both studies, however, assume a dichotomy in care work; an occupation is classified as either involving or not involving care.

The question of whether there are significant wage penalties for caring work is important for several reasons. Depending on the source, wage penalties for care work might be viewed as an equity problem if the incidence of such penalties disproportionately affects women and minorities. And penalties might be viewed as a social and economic problem if low wages in the care sector create higher than optimal turnover and low quality care in socially

[1] England et al. refer to "human capabilities" as "health, skills, or proclivities that are useful to oneself or others."
[2] These works include England and Folbre (1999), Folbre and Nelson (2000), England (2005) and Folbre (2006, 2008, 2010, 2012). Folbre (2010) uses the phrase "girly jobs" as shorthand linking caring jobs and wage penalties borne disproportionately by women.
[3] In principle, the approach taken by economists, including our study, is to measure whether wages are high or low relative to similarly skilled workers in similar jobs in similar locations. Economists with "tight" market priors are skeptical that sustained premiums and penalties exist in competitive markets; hence evidence of such wage gaps is met with suspicions regarding measurement. Those with "loose" priors are more open to the myriad of reasons why we might observe nontrivial deviations from the textbook law of one price.
[4] Hirsch and Schumacher (2012) show that nursing/non-nursing wage gaps shrink substantially once one: (a) controls for occupation skill requirements and working conditions and, (b) accounts for bias in estimating log (percentage) wage differentials with OLS when comparing a treatment group with low wage dispersion (nurses) to a broad comparison group with much higher dispersion such as all college-educated women (see Blackburn 2007).

valuable jobs (England et al., 2002). Moreover, a finding of sizable wage gaps among truly similar workers in similar jobs (apart from the degree of caring) raises the question of whether labor market outcomes deviate substantially from those predicted by standard theory.

Our paper attempts to provide evidence that enhances knowledge regarding wage differentials associated with caring. In what follows, we first discuss how standard theory might (or might not) account for wage penalties for caring work. We then provide detailed empirical analysis of how wages differ across workers and jobs with respect to caring attributes. To do so, we match employee data from Current Population Survey (CPS) earnings files with detailed job descriptors (including multiple measures of caring) from the Occupational Information Network (O*NET). Cross section analysis is conducted using large CPS data files for 2006-2008 (thus ending prior to large labor market shocks from the Great Recession). Longitudinal analysis is conducted using large CPS panels for worker-year-pairs from 2003/4 to 2008/9 (each pair consists of two-observations per worker, one year apart). The panel analysis identifies differentials for caring work based on wage changes among job switchers who increase or decrease the required levels of caring in their jobs. As compared to prior literature, the analysis is more recent, uses large cross-sectional and panel samples of workers, provides multiple measures of caring (and other) job attributes, and examines wage differentials associated with these measures in a comprehensive fashion.

2. Theoretical Rationales

There is a literature in sociology from which researchers have proposed theories explaining the existence of wage penalties for care work.[5] The mechanisms emphasized by sociologists are readily compatible with economic theory once framed in language familiar to economists. In the remainder of this section, we use a competitive market framework to discuss how wage differentials for caring work may or may not exist. That said, if there exists wage differences for caring work, we cannot rule out the possibility of non-competitive sources.

It is reasonable to expect that some individuals derive greater utility from work that is characterized by a high degree of caring for and helping others than from work that is not. If

[5] We discuss, albeit indirectly, the prevailing notions of "devaluation" and "prisoner of love" theories. For further discussions of these views see England and Folbre (1999); England et al. (2002); England (2005); and Barron and West (2013).

such preferences are widespread (i.e., relevant at the margin rather than inframarginal), the theory of compensating differentials suggests that jobs involving high levels of 'caring' may bear a wage penalty compared to jobs with similar working conditions and skill demands, but lower levels of caring that provide non-pecuniary rewards. Researchers have referred to this "preference" argument as the "intrinsic rewards" or "prisoner of love" explanation (England and Folbre, 1999, and England, 2005, respectively).

Alternatively, the "devaluation" explanation suggests that society values what women do less than what men do; hence, caring labor pays less because women disproportionately work in the care sector (England et al., 2002). Devaluation is the most prevalent theory for a caring wage penalty emerging from sociology. It is consistent with neoclassical micro theory to the extent that devaluation means that individuals, in their roles as consumers, employers, voters, etc. simply have a lower willingness to pay for services provided by women; hence lower labor demand working through product and labor (and political) markets. Combining lower demand with heterogeneous skill and job preferences that produce upward sloping long-run occupational labor supply curves can produce wage differences between women and men and caring versus non-caring work.[6]

Independent of women's preferences for caring work, if there exists substantial employer-based discrimination against women in many non-caring jobs, women will be "crowded" into caring sectors, lowering equilibrium wages in caring jobs and denying women the opportunities to accumulate human capital outside that sector. This characterization of the U.S. labor market fits nicely the situation throughout much of the twentieth century, but over the last 40 years or so has gradually become less accurate.

Some have argued that caring labor is concentrated in the public sector, where competitive forces are dampened (Barron and West, 2013; Folbre 2012). Devaluation of women's work, often caring work, might then be reflected in a lower willingness to pay for those public services that most involve caring. In our empirical work, we examine how wage outcomes vary with respect to caring in the private and public sectors.

[6] Although gender discrimination in the workplace is illegal, lower wages based on women's labor supply preferences and "devalued" work typically would not be illegal.

Prior studies have emphasized reasons for seeing lower wages in caring jobs. Arguments for caring premiums, however, can be made as well. Efficiency-wage theory and theories of reciprocity and gift exchange suggest that wage premiums could exist in caring jobs. Measuring and monitoring the quality of care services provided by an employee can be difficult for employers or customers (e.g., parents selecting child care), so high wages may arise to attract more-able workers, reduce shirking, lower turnover rates, and foster gift-exchange between employees and the employer/customer (Fehr and Gächter 2000; Borjas 2013, pp. 484-493). It seems plausible to us that such forces might well mitigate to some (unknown) degree negative wage effects resulting from worker labor supply (i.e., intrinsic rewards for care work) or from demand-side devaluation of caring jobs.

3. Previous Evidence

There are (surprisingly) few empirical studies providing in depth analysis of caring wage differentials. We summarize two studies that are comprehensive and similar to our study in terms of the research question being addressed. England et al. (2002) analyze the relative pay of caring labor in the U.S. using individual worker longitudinal data from the NLSY79 for the years 1982-1993. Their sample consists of 10,670 respondents for whom they had at least two years of detailed employment data. Respondents were ages 16-23 in the initial year of their sample (1982) and 28-35 in the final year (1993).[7] The authors create an indicator designating whether occupations are caring (or not), with these occupations being primarily in healthcare or education, plus a handful of other occupations (childcare workers, librarians, counselors, social workers, clergy and other religious workers, and recreation and fitness workers). An advantage of their data set is that they are able to construct measures of previous part-time and full-time work experience, job tenure, and breaks in employment. Such measures are particularly important for cross-sectional analysis, but effectively fall out in longitudinal analysis (through worker fixed effects or wage change analysis) favored both in their study and in our subsequent analysis. In order to control for occupational skill, they use factor analysis to create a measure of cognitive skills demanded by an occupation based on job descriptors in the

[7] They restricted their sample to respondents who worked either part- or full-time for at least two years during the sample period (person-years with missing values or extremely low or high hourly earnings were also dropped.

Dictionary of Occupational Titles.[8] Their fixed-effects wage regression models, with dummies for individual *i* and year *t*, identify the effect of care work on wages based on individuals who switch between care and non-care occupations. They perform their analysis separately for men and women, finding significant wage penalties of 5% for women and 6% for men.

When England et al. (2002) disaggregate care work into seven types, they find large heterogeneity in the estimated wage gaps.[9] Surprisingly, doctors were found to suffer a significant wage penalty (men: 17%; women: 10%) while the category containing nurses, therapists, and medical assistants, referred to as 'other medical', enjoyed a wage premium (men: 4%; women: 8%). The former result is counterintuitive, but likely arises from age-truncation in the sample, as noted by the authors (England, et al. 2002, p. 468). The result regarding nurses is consistent with subsequent studies on nursing, although Hirsch and Schumacher (2012) show that such estimates overstate relative nursing wages (see footnote 3). The data and analysis in England et al. (2002) have limitations (and advantages) as compared to our subsequent analysis. First, the NLSY79 sample period covered 1983-1992, so all workers were under age 36 and were observed early in their careers, as noted by the authors. Their period of analysis, roughly twenty years earlier than in our study, may not reflect the experience of more recent cohorts, with occupational shifts among women due to evolving social norms and increased educational attainment, or of substantial changes in overall labor market rewards to skill and the skill content of jobs. And our CPS panels provide relatively larger samples of occupation switchers than does the NLSY, having roughly 19 and 22 thousand unique worker occupation job switchers for women and men, respectively.

In a recent study, Barron and West (2013) analyze wage differentials for caring work in the British labor market. They use 17 waves of the British Household Panel Survey covering the years 1991 to 2007, consisting of annual accounts of an individual's education, employment, and family characteristics. They estimate a regression model that includes individual and year

[8] The DOT was the precursor to O*NET, the latter being used in our analysis to construct job attribute indices using factor analysis. While the DOT included a small number of job descriptors with categorical coding, O*NET contains several hundred job skill/task and working condition attributes, each providing non-categorical continuous ratings. O*NET is discussed subsequently in our data section.

[9] These categories consisted of childcare, primary teachers, secondary teachers, professors, doctors, other medical, and other caring labor, such as social workers, religious workers, etc. (England et al., 2002).

fixed effects. Similar to England et al. (2002), Barron and West disaggregate care work into six specific types (doctors, nurses, teachers, childcare, nursing assistant, and welfare) by using self-reported job descriptions matched to occupation codes. Their empirical work combines men and women (with a male dummy), thus not allowing for different caring penalties (rewards) for women and men. Barron and West rely on a Heckman selection correction procedure to account for the attrition of low-wage workers from the labor force, but do not discuss what exclusion restriction (if any) was used or how their selection results compare with OLS, thus creating concern about the reliability of the estimates. Although the authors use longitudinal data, it does not appear that they identify caring wage effects based on worker changes between caring and non-caring occupations. Rather, care workers and a non-care comparison group are included in one of the six occupational groups. In this sense their estimates are more comparable to our subsequent wage level rather than longitudinal analysis.

Barron and West obtain wage differential estimates indicating that doctors earn 33% more, nurses 10% more, and teachers 5% more than their peers in non-caring occupations, while nursing assistants earn 6% less, welfare workers 18% less, and childcare workers 21% less than their peers in non-caring occupations. Unlike England et al. (2002) and our subsequent analysis, Barron and West do not include measures of occupational skills. We suspect that some of the large wage gap estimates they present reflect substantial skill differences between their caring and non-caring occupations. And, as the authors point out, important differences exist between the U.S. and U.K. labor markets, in particular, the U.K.'s nationalized healthcare and education systems in which wages are set by national negotiations (Barron and West, 2013).

4. Data Sources and Descriptive Evidence

The data sets used in our analysis are constructed from two principal sources, the Current Population Survey Outgoing Rotation Group (CPS-ORG) monthly earnings files containing worker-level data and the Occupational Information Network (O*NET) providing occupational descriptors that can be matched to the CPS.[10] A cross-sectional data set is created by pooling 36 monthly CPS-ORG files for January 2006-December 2008, with 166,009 women

[10] The CPS-ORG data is sponsored jointly by the U.S. Census Bureau and the Bureau of Labor Statistics (BLS) while the O*NET data is sponsored by the Department of Labor's Employment and Training Administration (USDOL/ETA).

and 168,760 men included in our estimation sample. Since the CPS surveys households in the same month in two consecutive years, we are able to construct a large panel data set consisting of more than forty-thousand worker-year pairs from 2003/4 to 2008/9 of which 18,981 are women and 21,689 men.[11]

An occupational-level data set constructed from a 2007 edition of O*NET provides 259 job skills and working conditions attributes. Most O*NET variables provide ratings of the skills and various tasks required to perform the job or the environment of a worker in the job. We use 206 O*NET variables, measured on a level scale, indicating the degree to which a descriptor is required or needed to perform the occupation. Most of the O*NET variables are measured on a scale of either 0-to-7 or 1-to-5 range, with the reported values being a continuous number based on ratings provided by job analysts based on site visits and reports from job incumbents.[12] We scale all O*NET measures from zero to one to provide a comparable scale.[13]

In line with prior literature, we regard care work as involving activities and requirements in jobs characterized by high levels of non-routine interactive job tasks that directly foster recipients' social, emotional, intellectual, and/or physical well-being. Typically, the delivery and quality of caring job skills/tasks depend on workers providing individualized services and

[11] The time period for the panel was determined by there being time-consistent detailed Census occupation codes in the CPS for the years 1993-2009. For details on the methods used to match individuals across years in CPS earnings files, see the appendix in Macpherson and Hirsch (1995) and Madrian and Lefgren (2000). Our sample excludes all individual observations with imputed earnings in the pooled cross section analysis and all earnings pairs with either or both years imputed in the panel analysis. In the CPS-ORG files, earnings non-respondents are assigned the earnings of a "similar" donor based on broad but not detailed occupation. Hence, the estimates of coefficients on caring or other occupation-based variables will be attenuated (so-called "match bias") if imputed earners are included. See Bollinger and Hirsch (2006) for a detailed discussion of CPS imputation methods, resulting biases, and alternative corrections for such biases. Omitting the imputed earners avoids imputation match bias and provides estimates highly similar to more complex correction methods.

[12] We use the O*NET data set previously used in Hirsch and Schumacher (2012). They provide a more detailed description of its construction and merger with the CPS, Section 4 of their paper provides discussion of the selection of variables used to construct the skill and working condition indices. Most O*NET descriptors are measured by both the required level and importance. These two rankings are highly collinear. We use the levels measures.

[13] In order to normalize ratings for attributes using a different scale, we follow an approach similar to the one used by the USDOL; we use the formula $S = \frac{O-L}{H-L}$, where *O* is the original rating score on the rating scale used, *H* is the highest possible score on the rating scale used, and *L* is the lowest possible score on the rating scale used.

establishing a personal relationship with the recipient.[14] Consequently, we identify two O*NET occupational job task variables as most directly measuring the level of caring work: 'assisting & caring for others' and 'concern for others'. In addition to examining these O*NET caring measures separately, we use factor analysis to construct a latent factor combining these two measures; we refer to this as the 'narrow caring' index.

In addition to the direct caring and concern measures, we construct a factor index that we label the 'developing/teaching' or D/T index, which loads the four O*NET descriptors: 'developing & building teams', 'training & teaching others', 'coaching & developing others', and 'instructing'. In order to construct a single comprehensive index of caring, which we label the 'broad caring' index, we construct a factor loading all six of the individual O*NET measures listed above. Table 1 provides a full definition for each of these six O*NET caring attributes.

In addition to constructing job caring indices, we construct two broad latent factor indices, one reflecting occupation job skills requirements and a second reflecting job working conditions. Our 'job skills index' includes 162 O*NET job skill/task variables and heavily loads cognitive skills. A second factor index – a 'working conditions index' – is constructed by loading 38 O*NET variables measuring (mostly) physical working conditions.[15] As seen subsequently, the skills index is a particularly important control variable in the wage analysis for two related reasons. First, the job skills index is a strong correlate of wages and, second, caring jobs vary greatly in their required level of skill, some involving minimal training and low levels of cognitive skills, while others are among the most highly-skilled jobs in the economy. Caring jobs also vary with respect to working conditions; that said, working conditions have far weaker effects on wages than do skills.

The O*NET attributes and factor indices measuring occupation skills, working conditions, and the various measures of caring are matched by detailed occupation to both the 2006-2008 CPS cross-sections and the 2003/4-2008/9 CPS panel data sets. Table 2 provides the

[14] Our definition is similar to England et al. (2002), but also incorporates the concepts of "routine versus nonroutine" and "interactive" job tasks developed in Autor et al. (2003) in their analysis of information technology (IT) on employment and wages. Each of these studies uses DOT occupation job descriptors to classify jobs.

[15] Our approach in forming the O*NET skills and working condition indices follows Hirsch and Schumacher (2012). For further details on the O*NET to CPS match, see their paper.

unweighted means and standard deviations for women and men for the O*NET measures and indices, plus the earnings measure used in the CPS, as described below.[16]

Our dependent variable is the natural log of average hourly earnings across all hours worked, with earnings inclusive of tips, overtime, and commissions, for individual worker *i*, in constant 2008 dollars. We include all non-student workers ages 18 to 65 with hourly wage values between three and one hundred fifty dollars. We exclude full-time students (reported for those under age 25) and observations in which workers' earnings are not reported and instead imputed by Census, since workers' detailed occupation is not a hot deck match attribute used to assign donor earnings to nonrespondents (Bollinger and Hirsch 2006, Table 1). Were imputed earners included, coefficient estimates regarding caring attributes would be attenuated and longitudinal estimates would be severely biased toward the cross-section results (see Bollinger and Hirsch 2006).[17] The same sample exclusions are applied to the panel analysis covering 2003/4 – 2008/9, where the dependent variable is the one-year change in the log of average hourly earnings.

Turning to Table 2, the raw gender gap is 19 log points (roughly 20%), with women's mean hourly earnings $4.38 less than that for men and somewhat less dispersed.[18] The other variables in Table 2 are occupation measures, with the means compiled across workers (i.e., equivalent to a sample-weighted mean across occupations). We use six 'caring' attributes from O*NET, measured in levels and each scaled between 0 and 1. The two attributes that come closest to the definition of caring emphasized in previous literature are 'assisting & caring for others' and 'concern for others'. Women have higher averages than do men for each, 0.78 versus 0.69 for the former and 0.46 versus 0.39 for the latter. Our 'narrow caring' factor index that combines these two attributes has a substantially higher value for women than men (the difference is more than a half s.d.).

[16] Differences between sample-weighted and unweighted descriptive statistics and regression analyses are trivial, hence we do not show both.

[17] Inclusion of imputed earners does not correct for (possible) nonignorable response bias, since included nonrespondents are assigned the earnings of respondents. One can reweight the respondent sample by the inverse probability of response, which rebalances the sample based on measured attributes. But in practice IPW regression results are nearly identical to those using unweighted respondent samples. See Bollinger and Hirsch (2006, 2013).

[18] Throughout the paper we will treat log wage gaps as approximate percentage differentials, with the implicit wage base being in between the average for women and men (roughly the geometric mean).

Table 2 also presents means for the four occupational measures emphasizing aspects of team development, training, coaching, and instructing. Here, women and men have highly similar levels for each. Even if these job attributes were associated with substantial differences in wages, this would produce minimal changes in the gender wage gap. When we combine these four O*NET attributes into the factor index labeled 'development/teaching', women have a somewhat higher mean value (.072 versus .054, with s.d. values close to 1.0). Our single 'broad caring' index combines all six O*NET attributes, with women having a mean value of 0.15 and men -0.03 (with s.d. values close to 1.0), a much smaller gender difference than seen with the 'narrow caring' index.

To get a feel for how various occupations are rated by O*NET with respect to 'assisting & caring for others' and 'concern for others', in Table 3 we provide ratings for selected occupations that have very high and low ratings, plus many of the larger occupations in the economy. What can be clearly seen in Table 3 is that many of the highest ranked occupations (e.g., physicians, nurses, ambulance drivers, therapists) are health care jobs in which workers directly interact with individuals. Occupations requiring minimal 'assisting & caring' include engineers, mathematicians, machinists, and sales representatives. Examining the rankings for 'concern for others' shows that there is a strong correlation with 'assisting & caring'' but that an occupation can be ranked high (or low) using one measure but not the other. Sale representatives have a low 'assisting & caring' rank but an above average rank for 'concern'. Ambulance drivers are ranked 8th highest in 'assisting & caring' but 71st in 'concern' for others.

The principal takeaway from Table 3 is that all jobs require some degree of 'assisting & caring' and 'concern' for others, in addition to numerous other job tasks. Characterizing occupations as either caring or not provides a useful shorthand for discussion. But in order to statistically estimate the relationship between market wages and caring, it makes sense to examine multiple caring measures and explicitly account for the required levels of care for each.

Table 4 provides simple pairwise correlations between these measures and some key variables. The O*NET job descriptors 'assisting & caring for others' and 'concern for others' have a 0.71 correlation. The narrow caring index combining these two caring measures is

positively correlated with our comprehensive job skill index (0.191), negatively correlated with the index of physical working conditions (-0.215), positively but weakly correlated with the log wage (0.066), and strongly correlated with the share of women in an occupation (0.537). As compared to the narrow caring index, the broad caring index (which adds the four teaching/developing attributes) has the same qualitative correlations with these variables.

Figures 1-3 show the smoothed distribution of the caring indices across the labor market (absent smoothing one observes multiple "mini-peaks" at index values attached to highly-populated occupations). Recall that by construction, the mean of the factor indices across women and men combined is zero with s.d. of 1.0. In Figure 1 we show the narrow caring factor index (loading the two most direct measures of caring) for women and men. The female distribution is everywhere to the right of the male distribution, demonstrating both higher levels and more dispersed levels of caring than seen among men. By contrast, the development/teaching index that combines the four pertinent O*NET measures differs between women and men, but is not systematically higher for either group. Rather the left tails and peaks of the female and male distributions are similar. Beyond the peaks, however, men initially have jobs involving more development/teaching than do women, but in the far right of the distributions, women are more likely to work in those occupations with the highest levels of development/teaching. Not surprisingly, the broad caring index for women and men, shown in Figure 3, looks like a mix of Figures 1 and 2, with women's cumulative density of broad caring jobs being systematically below that of men's throughout much of the distribution, but with women more highly concentrated in those occupations with the highest levels of caring.

To study trends in caring work over time, we constructed a data set that matches the 1998 initial public release edition of O*NET (version 1.0) to 1980 Census occupations, as used in the CPS during 1983-91. The 1990 Census occupation codes, used in the CPS from 1992-2002, are easily mapped into 1980 codes. The 2000 Census occupations, used by the CPS during 2003-2010 (minor changes were adopted beginning in 2011), are substantially different from the earlier codes, but can be converted back to 1980 codes using a probabilistic mapping provided by Census. Taken together, we have matched the 1998 O*NET 1.0 ratings on caring to occupations for all wage and salary workers ages 16 and over from 1983 through 2010. We find

no discontinuity in our series associated with occupational code breakpoints (1991 vs. 1992 and 2002 vs. 2003), thus enhancing our confidence in the series. Note that these earlier ratings were based entirely on job analyst ratings and did not (explicitly) use input from incumbents. Although relative differences across occupations are highly similar to those seen for the more recent O*NET data, the absolute level of ratings are lower.

The matched CPS/O*NET data set allows us to examine changes in caring in the labor market over the 28 year period from 1983 to 2010. Note that the within-occupation O*NET ratings are not changing (they are fixed at 1998 values). Thus, the measured economy-wide changes in caring occur entirely from change in the distribution of workers across occupations (all index values are employment weighted using CPS sample weights). The O*NET attribute 'concern for others' did not appear in the 1998 O*NET edition, but we are able to examine the historical evidence on our most direct measure of caring in the labor market – 'assisting & caring for others'.

Figure 4 shows the trends for the years 1983-2010 in the mean levels of 'assisting & caring for others' for women and for men, plus the difference between the two. As evident in the figure, the level of caring skills in the U.S. labor market has increased steadily over time for both women and men, but the overall change has been quite small (about 0.04 for women and 0.03 for men). If anything, the substantial difference in the mean levels of caring for women and men has widened, although only slightly. Comparing the gender differences in levels of caring work, the indices imply that since at least the early 1980's, women have sorted into jobs requiring one-third more 'assisting & caring for others' than men. In contrast to the evidence on caring, we find that the development and teaching content of both women and men's jobs have increased over time, but far more so for women than men (see Appendix Figure A1).

5. Measuring Wage Differentials for Caring Work: Methods

Our empirical approach is straightforward. We estimate relatively standard Mincerian semilog earnings functions in which hourly earnings is a function of accumulated human capital (net of depreciation), proxied by time spent in schooling and the labor market. The human capital earnings function is augmented by inclusion of selected demographic controls, measures of location, and job attributes associated with wage differentials, including various measures of

caring. We provide estimates from separate female and male earnings functions. This permits a straightforward way to examine how caring job attributes differently affect the wages of women and men, as emphasized in this literature. We provide estimates using panel as well as cross-section data, thus accounting for worker heterogeneity. And our large sample allows us to examine whether caring wage differentials differ across the private and public sectors, among other possibilities.

To examine wage differentials for caring across workers, we use the CPS/O*NET 2006-2008 sample and estimate the wage level equations:

$$lnW_{iF} = \sum_{k=1}^{K+1} \beta_{kF} X_{ikF} + \gamma_F caring_{iF} + \varepsilon_{iF} \quad \text{(1a)}$$

$$lnW_{iM} = \sum_{k=1}^{K+1} \beta_{kM} X_{ikM} + \gamma_M caring_{iM} + \varepsilon_{iM} \quad \text{(1b)}$$

Here, subscripts *F* and *M* denote female and male, respectively; lnW_i is the natural log of hourly earnings for worker *i*; X_{ik} contains an intercept and *K* independent variables measuring worker and job-related characteristics; β_k contains a constant and coefficients for covariates in *X*; $caring_i$ is the covariate(s) of interest measuring caring skills for each worker's detailed occupation; γ is the coefficient(s) of interest measuring the "caring gaps"; and ε_i is an idiosyncratic error term. Estimates of γ_F and γ_M may be sensitive to the controls included in X_k, in particular measures of job skills and working conditions. And variants of equations (1a) and (1b) can be estimated within different sectors, for example, the private and public sectors.

If employment in caring jobs is correlated with workers skills, motivation, etc. not reflected in measures of occupation skill requirements, wage level estimates may be biased. In order to account for worker heterogeneity, we use panel analysis, in this case longitudinal wage change equations that conform to the CPS sample structure. To examine wage differentials for caring among job switchers, we use our CPS/O*NET 2003/4–2008/9 panel sample, including only those workers who change occupations and, thus, have had changes in the O*NET caring measures.[19] We estimate the following wage change equations:

[19] More precisely, we include only those who have changed detailed occupation and industry in order to insure that we include mostly "true" job switchers. Worker descriptions of occupation are coded by Census employees and can be coded differently one year apart even when there has been no job change. Industry is reported with greater accuracy and restricting the sample to just those who report changes in occupation and industry insures a

$$\Delta lnW_{iF} = \sum_{k=1}^{K+1} \beta_{kF}\Delta X_{ikF} + \gamma_F \Delta caring_{iF} + \Delta\varepsilon_{iF} \quad (2a)$$

$$\Delta lnW_{iM} = \sum_{k=1}^{K+1} \beta_{kM}\Delta X_{ikM} + \gamma_M \Delta caring_{iM} + \Delta\varepsilon_{iM} \quad (2b)$$

where Δ denotes changes between year-pairs (i.e., 2004 minus 2003, etc.). Parameter estimates in equations (2a) and (2b) are based on occupation switchers and nets out worker-specific fixed effects on wages.

Two limitations in using the O*NET job skills/tasks measures warrant mention: (1) the value of each O*NET attribute does not vary across workers in a given occupation, and (2) the O*NET values matched to each occupation are fixed over time.[20] We are not concerned with the latter issue, since relative occupational differences in attributes change gradually and our analysis is for a relatively short time period. The first issue, the measurement of job attributes at the occupation rather than individual worker level, is more serious. There is heterogeneity of job characteristics within detailed occupations and these may differ to some degree by gender as well as across individuals. It is not clear whether or to what extent measurement error in O*NET job attributes is mitigated in the panel analysis through differencing (i.e., where "two wrongs can make a right"). Because job attributes are at the occupation rather than individual level, we cluster standard errors by occupation in the wage level analysis.[21]

An important advantage of our CPS/O*NET data set is that we not only have continuous measures of caring intensity across all occupations, but also measures for a large array of detailed job tasks, skill requirements, and working conditions. Such data make it more likely that we can obtain relatively clean estimates of wage differentials associated with caring in the U.S. labor market. And because the analysis also is done using CPS longitudinal data, where we identify person-specific wage changes resulting from movement across years into or out of occupations with different levels of caring, we can account for bias due to worker heterogeneity correlated with caring.

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high probability of true occupational change, thus avoiding attenuation of the caring coefficients. For a careful discussion of this approach, see Macpherson and Hirsch (1995).

[20] O*NET updates ratings for occupations on a rolling basis; it takes several years for all occupations to have revised ratings.

[21] Because there are such a large number of occupation-to-occupation combinations in the panel analysis, there should be little difference between non-clustered and clustered standard errors. We do not cluster in the panel analysis.

We include additional independent variables to control for other important factors that may influence wages. When estimating wage level regression equations (1a and 1b), we use controls for potential experience (years since schooling completed or since age 16, whichever is less) in quartic form, dummies for gender, race, ethnicity, marital status, foreign-born, union, city size (6), region (8), year, and broad industry (11). Education dummies are included for the completed grades 9, 10, 11, and 12 (but no diploma), plus high school degree (including the GED), some college no degree, associate, bachelor, masters, professional, and doctorate degrees (those reporting 0-8 years are the omitted category). We also include dummies for the public and private-not-for-profit sectors (private-for-profit being the reference group). Given that caring jobs are sometimes largely female jobs, we separately estimate wage equations including a sex composition variable to control for the ratio of the number of females to total workers in each occupation. Although this is not the focus of our study, we can observe the sensitivity of caring penalty estimates to the inclusion of gender composition (and vice-versa).

6. Wage Equation Caring Results Using Cross-sectional and Longitudinal Analysis

Table 5 provides wage level results for women and men, respectively, with different columns (i.e., specifications) including alternative measures or combinations of caring. Column (1) includes the single 'broad caring' index that loads the six O*NET descriptors measuring various aspects of caring, concern, development, and teaching. Column 2, which we believe is our most informative specification, includes two factor indices, the 'narrow caring' factor index loading the 'assisting & caring' and 'concern' O*NET measures, and a 'development/teaching' index loading the four relevant O*NET attributes. Columns 3 and 4 separately include these two factor indices. Column 5 regressions include the six separate O*NET measures (i.e., 'assisting & caring' through 'instructing'), but we focus on (and show) only the O*NET measures 'assisting & caring' and 'concern' for others (coefficients on the other four are included in appendix tables). The coefficients on the O*NET factor indices can be interpreted as the partial effect of a one standard deviation change in the index (by construction, the factors have mean 0 and s.d. 1.0 over the combined female/male sample). For the separate O*NET caring measures shown in column 5, we show in brackets the partial effect of a one s.d. change.

All specifications include a rich set of individual worker and location controls (see the text note) and, importantly, O*NET occupational skills and working conditions indices. For reasons of space, we do not show coefficients for all our control variables. Tables in the appendix provide coefficients for most of the control variables not shown in Tables 5 and 7 (the wage level and wage change results, respectively). Table 6 is identical to Table 5, except that we omit the O*NET skill and working condition indices. Before turning to results with respect to the caring variables, we note that the skill (and to a lesser extent, working conditions) indices have large and highly significant coefficients and add about 5 percentage points to the R^2 values. A one s.d. increase in the skill index is associated with roughly a 25 log point increase in women's wages and 19 for men. These large wage effects reflect the impact not only from job skill requirements but also from worker skills not fully captured by schooling, potential experience, and other CPS control variables. Indeed, in our panel analysis (Table 7), which accounts for worker fixed effects, the skill index coefficients are only a fifth as large but still highly significant. The estimated working conditions coefficients are positive, as predicted by theory, with larger coefficients (in cross-section analysis) for women than men, consistent with prior literature (Hersch 1998).

Turning to the estimated effects of caring on wages, we first focus on the estimated wage effects of the single 'broad caring' index (column 1). For women, the estimate is negative, but small and insignificant, with a point estimate showing a 1% lower wage associated with a one s.d. increase in the caring index. The coefficient for men is also negative, but only a third as large and not close to significance. In short, our cross-section evidence does not support the thesis of a substantive widespread penalty from caring jobs, defined broadly. More informative is column 2, where we distinguish between the degree of caring/concern (the 'narrow caring' index) and the degree to which jobs involve development and teaching (the 'D/T' index). For women, neither of these indices is associated with wage penalties, the coefficients being small, mixed in sign, and far from statistical significance. The same result is obtained when these indices are entered separately (columns 3 and 4). The coefficient on the narrow caring index is positive. In column 5, we separately enter the two O*NET measures included in that index. We obtain a positive (and significant) coefficient on the 'assisting & caring' measure, with a one s.d.

increase associated with a 4% higher wage. We place little weight on this result, subsequently finding that its sign reverses (but is insignificant) in our wage change analysis.

In contrast to the cross-sectional evidence for women, that for men is more consistent with there being a wage penalty for caring, but not development/teaching work. Column 2 estimates show a 3% lower wage associated with a one s.d. increase in the narrow caring index and a 1% higher wage with respect to a one s.d. increase in the D/T index. Focusing on the individual caring measures (column 5), we obtain a negative but insignificant coefficient on 'assisting & caring', with a one s.d. increase associated with a 2% lower wage, while the 'concern' coefficient is positive, very small and insignificant. Although the cross-section evidence for men is hardly compelling, it does foreshadow our subsequent conclusion based on the longitudinal evidence that men face small wage penalties for work in caring jobs.

In short, our initial cross-section analysis provides mixed evidence for caring penalties, with the evidence stronger for men than women. Note that absent our control for job skill requirements, evidence for a wage penalty would have been far weaker. As seen in Table 6 (identical to Table 5, except for exclusion of the job skills and working condition indices), we obtain an overall positive and sizable caring wage advantage estimate for women using the broad caring index. More detailed analysis indicates that the positive coefficients are driven both by teaching jobs and health professional occupations (in particular, nursing), both of which have very high job skill requirements, which we control for in Table 5 but not 6. The mostly insignificant coefficients for men on 'assisting & caring' and 'concern for others' have opposite signs as do those same measures for women (minus/plus vs. plus/minus), consistent with women and men working in very different mixes of jobs. In contrast to women, far fewer men with jobs requiring high levels of 'assisting & caring' are employed high-skilled caring jobs (e.g., registered nurses).

Our takeaway points from Tables 5 and 6 are twofold. First, evidence for penalties associated with caring jobs is rather mixed and specific to the types of caring jobs one examines. Second, skills matter. Worker and job skills have high payoffs in the labor market but are not typically well accounted for (controlled) in standard analyses. Caring jobs sometimes require highly skilled workers and tasks (e.g., registered nurses) and sometimes not. Because of

the importance of skill, we have the most faith in our longitudinal estimates, which control both for worker heterogeneity (worker-specific fixed skills) and changes in job skill requirements.

The results from the longitudinal wage change analysis, shown in Table 7, is reasonably clear-cut, showing small negative wage effects in jobs involving 'caring and assistance' and 'concern for others' but not for jobs involving development and teaching. Caring penalties are larger for men than for women, but of course fewer men work in such jobs. Note first that coefficients on the 'broad caring' index (column 1), which loads the two caring/concern job descriptors and four measures of development/teaching, are negative but insignificant for both women and men, each suggesting wages being a small fraction of a percent lower with respect to a one s.d. increase in the index. When we include separate O*NET indices for the caring/concern and development/teaching job attributes (column 2), we obtain clear-cut negative estimates for the former. The point estimate for women indicates a 1.5 log point decrease for a one s.d. increase in the caring index, while the estimate for men shows a 2.6 log point decrease. Coefficients on the development/teaching index are positive but very small (effectively zero for women and 1% and significant for men with respect to a one s.d. change). Point estimates for the narrow caring index are similar when entered separately rather than jointly (i.e., columns 3 and 4 versus 2). In column (5) we break out the narrow caring index into its component parts, finding negative wage effects for both 'caring & assisting' and 'concern' for others. These estimates are tiny and only marginally significant for women. They are larger and more significant for men, minus 1.6% and minus 0.9% for one s.d. increases in 'caring &assisting' and 'concern' for others, respectively. That said, these estimates are not large as compared to other wage gaps standard in the literature (say, with respect to union status, city size, race/ethnicity, etc.).

7. Caring Penalties in the Public versus Private Sectors

Scholars emphasizing the importance of caring penalties have not only stressed its disproportionate effect on women, but also argued that it may reflect a concentration of caring jobs in the public sector (e.g., Barron and West 2013). If that is the case, then a caring penalty would mechanically arise if public workers are systematically paid less than are similar private sector workers in similarly demanding jobs. Analysis of public-private pay differences is beyond

the scope of our paper, but our assessment of a now extensive literature is that estimated public/private wage differentials are typically small, sometimes negative and sometimes positive, and somewhat sensitive to inclusion of what have become controversial control variables (e.g., union status, employer size). More clear-cut is the finding of considerably greater pay compression and relatively higher non-wage benefits (pensions, health insurance) in the public sector.[22] Although not the focus of our study, in our regression analyses, a public sector dummy variable is systematically positive for women and men, in both the wage level and wage change analyses, and with or without the inclusion of the job skills and working condition indices. We do not focus on public/private pay differences, but instead examine how wages vary with respect to our caring measures within the public sector versus within the private sector. We provide estimates using wage level (Table 9) and wage change (Table 10) analyses, the latter estimates based exclusively on workers switching between private and public sector jobs (as discussed below, such analysis is difficult to interpret). As seen below, we find evidence consistent with caring penalties being more likely in the public than in the private sector, with wage effects being more evident for men than women.

Prior to examining the wage evidence, we first examine whether caring work is in fact more prevalent in the public than in the private sector based on our multiple measures of caring derived from O*NET. As seen in Table 8 (as well as in Figure 5, which shows relative values for the six O*NET attribute measures), there is clear-cut evidence that for both women and men, jobs in the public sector require considerably higher levels of caring, defined broadly or narrowly. For example, focusing on the O*NET factor indices (with mean 0 and s.d. 1 over the entire male/female, private/public sample), each is higher for women than men within the public sector, and each is higher in the public than in the private sector for women and for men. For example, the narrow caring index for women in the public sector is 0.60 versus 0.21 in the private sector; for men, the public and private values are 0.22 and -0.35. For the D/T factor index, the value for women in the public sector is 0.62 versus -0.08 in the private sector; for men, the public and private values are 0.54 and -0.03. And as widely recognized, women are disproportionately employed in public sector jobs. The share of women in our public sector

[22] Recent studies include Gittleman and Pierce (2011), Bender and Heywood (2012), and Lewin et al. (2012). The debate regarding inclusion of a union control can be traced back to Linneman and Wachter (1990).

sample is 58.5%, as compared to 47.6% in the private sector. Using all CPS wage and salary workers for 2007 (i.e., no sample exclusions) and employing sample weights, the shares of women in the public and private sectors are 57% and 46%, respectively.[23]

Turning to the wage level regression results (Table 9), we provide separate estimates for caring wage penalties within the public versus the private sectors, separately for women and men. For women there is little evidence for caring penalties in the private sector (top panel). No coefficient on the caring measures is statistically significant and the only sizable coefficient (for the 'assisting & caring' O*NET measure) is positive. For women in the public sector, however, coefficients are negative and significant on the broad caring index, as well as on the narrow caring and narrow development/teaching indices when entered separately (both are negative but only marginally significant when entered jointly).

Moving to men in the private sector (second page of Table 9), there are no statistically significant coefficients on any of the caring measures. In the public sector, however, substantive penalties are seen using the broad caring index (a 3% penalty for a one s.d. change) and for the narrow caring index (a 5% penalty). Focusing on the component O*NET attributes in the narrow caring index, we see that the penalty is associated primarily with the 'concern for others' rather than the 'caring and assisting' attribute. In short, the wage level analysis supports the thesis of a caring penalty in the public but not private sector, but more so for men than for women.[24]

Because of unobserved worker heterogeneity, we previously attached greater weight to the longitudinal than cross-section results. It is less obvious here how to conduct panel analysis

[23] Men are slightly underrepresented in our estimation samples because they have higher rates of earnings non-response. Because non-respondents are not matched to donors based either on public/private status or detailed occupation, inclusion of imputed earners would bias estimated wage gaps (Bollinger and Hirsch 2006).

[24] Evidence for a penalty for women is restricted to the development and teaching measure, a result largely driven by public school teachers. An issue here is the impact from inclusion of the occupational skills index. O*NET ratings of the required skills for teachers are very high. Given the large labor market rewards associated with the job skill index, one finds that teachers are underpaid in the sense that their hourly earnings fall below the predicted wage. O*NET skill measures reflect the skills and tasks needed to perform a job well. They need not provide an accurate measure of the skills of workers hired in these jobs, although competitive market forces should limit discrepancies between worker skills and job skill ratings. In the case of teachers, it may well be that O*NET skill ratings overstate the skill level of the average teacher. Allegretto et al. (2004) use the CPS to compare hourly earnings for teachers with non-teachers, controlling not only for CPS worker attributes but also using an occupational work level index derived from BLS occupational data, similar in spirit to our O*NET skill index. Teachers were rated very high in required job skills and the authors conclude that teachers are substantially underpaid. That said, other analyses in the literature fail to support the thesis of teacher underpayment, having found that those who leave teaching suffer substantial wage losses.

since there are relatively few workers switching occupations (and hence the degree of caring) within the public sector. Were we to base such an analysis on changes in recorded occupation codes, the ratio of noise (i.e., reporting/recording error) to true signal would be high. What we have estimated (and report in Table 10) is longitudinal analysis exclusively among workers who switch between the private and public sectors. This evidence is difficult to interpret, but the results are quite similar to the cross-sectional results. We find no significant caring wage change effects among women, but find penalties for men associated with changes in the narrow caring index but not the development/teaching index.[25]

8. Additional Issues and Robustness Checks

It is widely recognized that both women and men who work in occupations with high proportions of female workers tend to have lower wages (for comprehensive treatments, see Macpherson and Hirsch [1995] and Bayard et al. [2003]). Less clear are the reasons for these relationships, with it being some combination of sex-based discrimination, differences in job skill requirements and working conditions, unmeasured worker attributes correlated with the percent female (e.g., cumulative work experience), and difference in women's and men's occupational labor supply preferences. Because the sex composition of an occupation is highly correlated with occupational measures of caring, an important question to address is how addition of a sex composition variable (the %Female) to wage regressions affect the coefficients on the caring variables (and vice-versa). In order to save space, we do not report these results.

Perhaps surprisingly, neither the cross-section nor longitudinal results are highly sensitive to inclusion of %Female into the wage equations. In general, the absolute values of the caring coefficients are reduced in magnitude, but not always, and never substantially. We also examine the reverse question. Do the estimated effects of %Female simply reflect wage differences associated with caring job attributes? Here we find that inclusion of the caring attributes has little effect on the magnitude of the %Female coefficients. As in Macpherson and Hirsch (1995), we find that %Female has a larger negative wage relationship for men than for women in wage level analysis, but that the magnitudes of the %Female coefficients drop

[25] In a robustness check, we conducted an identical analysis, except that we allowed separate estimates for wage changes due to changes in caring among those moving from public to private versus private to public jobs. In general, the estimates were roughly similar (i.e., symmetric) for the two groups of job switchers.

sharply in longitudinal wage equations, becoming similar and unsubstantial for women and men. The longitudinal results indicate that a substantive portion (but far from all) of the wage effects associated with %Female stems for unobserved worker differences correlated with gender (e.g., cumulative work hours and experience).

9. **Conclusion**

Sociologists and economists have proposed plausible theories for why there may exist wage penalties for work involving helping and caring for others, jobs often performed by women. Previous evidence is mixed, but some studies have suggested wage penalties for both women and men in caring jobs, on the order of 5%. Taken as a whole, the empirical evidence for caring wage penalties has been limited, varied, and not always compelling.

Rather than categorically designating occupations as caring or not based on authors' judgment, we use continuous measures of 'assisting & caring' and 'concern for others', along with numerous other job descriptors, based on evaluations from job analysts and incumbents for the roughly five-hundred detailed occupations across the U.S. workplace. We match these job descriptors to multiple years of the Current Population Survey (CPS) earnings files, which enables us to perform both standard cross-sectional and longitudinal wage analyses based on large one-year panels with two observations per worker. Because longitudinal analysis identifies the effects of caring from wage changes among workers moving into and out of occupations involving different degrees of caring, it accounts for otherwise unobserved worker heterogeneity correlated with wages.

In our wage level analysis, we find that estimates of the effects of caring are sensitive to specification, in particular controls for occupational skill requirements. Absent such controls, we find both significant negative and positive wage effects, for women and for men, for different types of caring jobs (say, 'assisting & caring' versus 'development/teaching' jobs). With controls for occupational skills, among women we find no significant negative wage effects associated with a variety of caring measures. Among men, we obtain small negative and marginally significant wage effects associated with a 'narrow caring' index and, more specifically, jobs with high levels of 'assisting and caring' for others. We place greater weight on our longitudinal analysis. Here, we find a negative wage effect for women in jobs requiring

assisting and caring, but the effect is quite small (on the order of 1% for a one s.d. change in the caring index.) For men, evidence of a penalty for work in occupations requiring high levels of assisting and caring is more substantive, on the order of a 2½% penalty for a one s.d. change in the caring index. The penalty occurs across both elements of the 'narrow caring' index, 'assisting & caring for others' and 'concern for others'. We find no evidence of wage penalties for jobs requiring high levels of development/teaching.

Jobs in the public sector involve substantially higher levels of caring for both women and men. When we provide separate analyses for the public and private sectors (each separately for women and men), we find no evidence in the private sector for significant wage penalties associated with caring jobs. Indeed, all but one of the caring coefficients is positive. In contrast, evidence is found for statistically significant caring penalties within the public sector for both women and men. That said, the magnitudes of caring penalties found in the public sector are not large, at most around 5%, modest by comparison with other wage gap estimates found in the labor literature such as union status, employer size, and city size.

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Figure 1. Density Plot of O*NET 'Narrow Caring' Factor Index

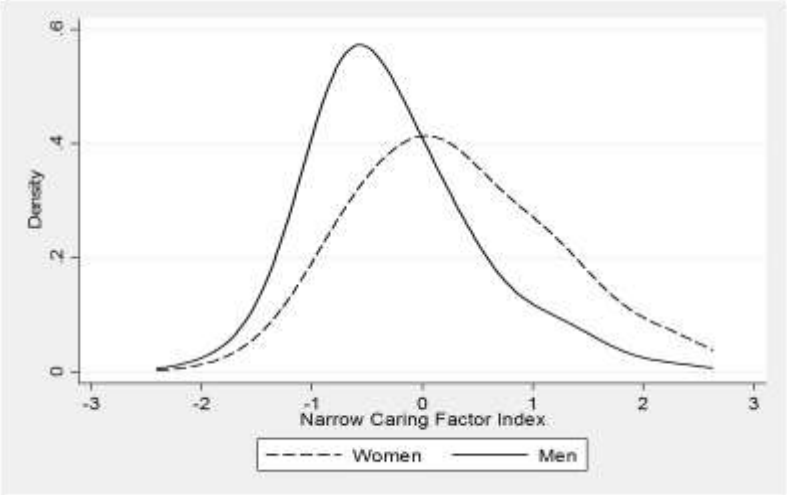


Figure 2. Density Plot of O*NET 'Developing/Teaching' Factor Index

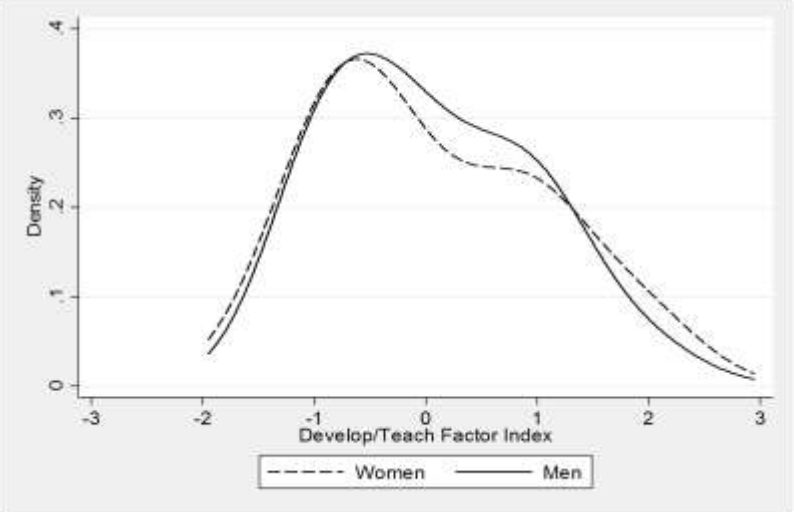


Figure 3. Density Plot of O*NET 'Broad Caring' Factor Index

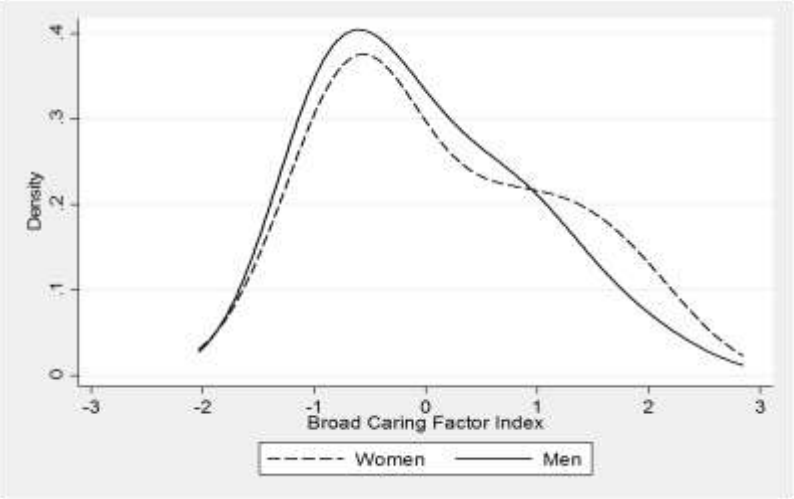
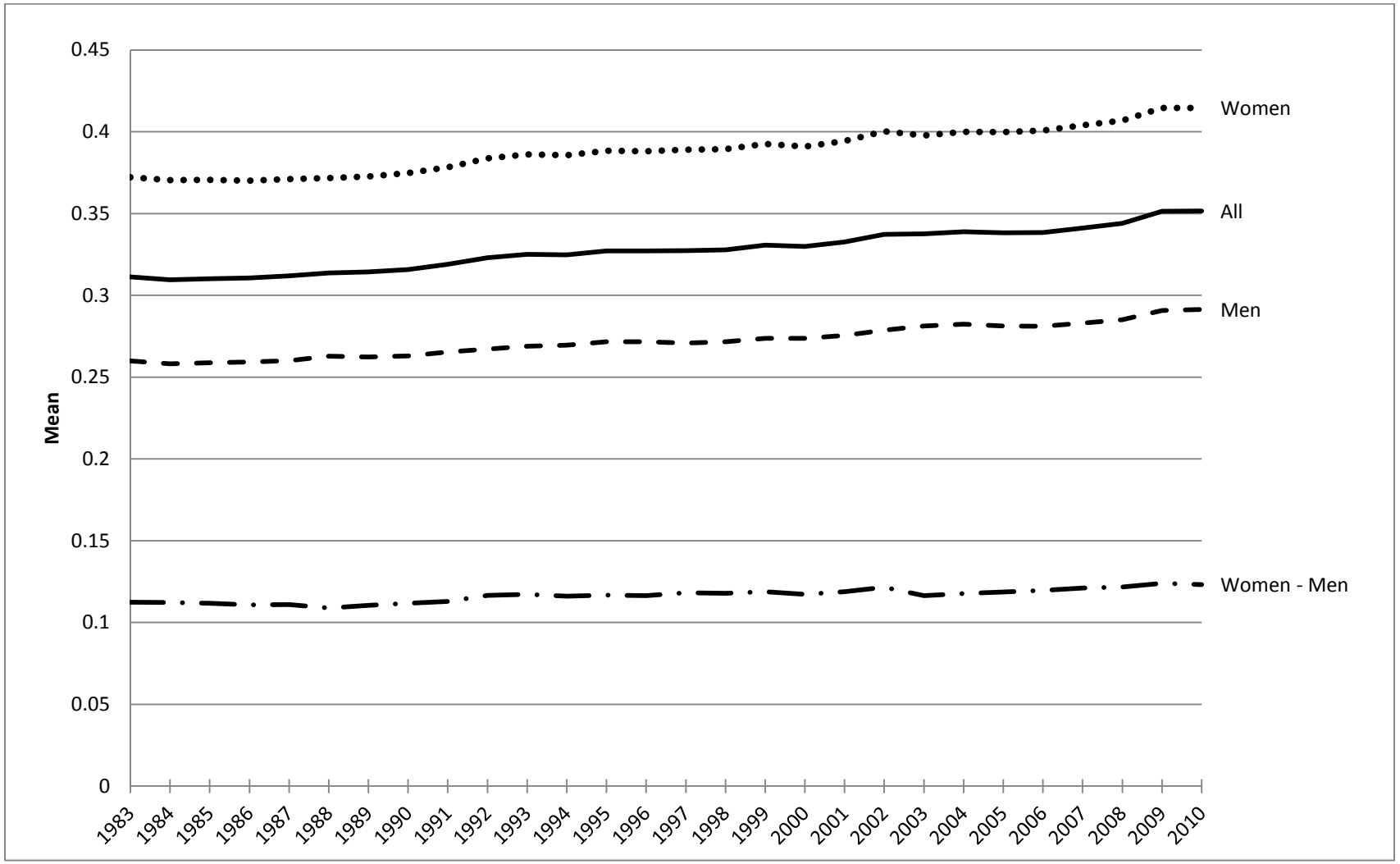
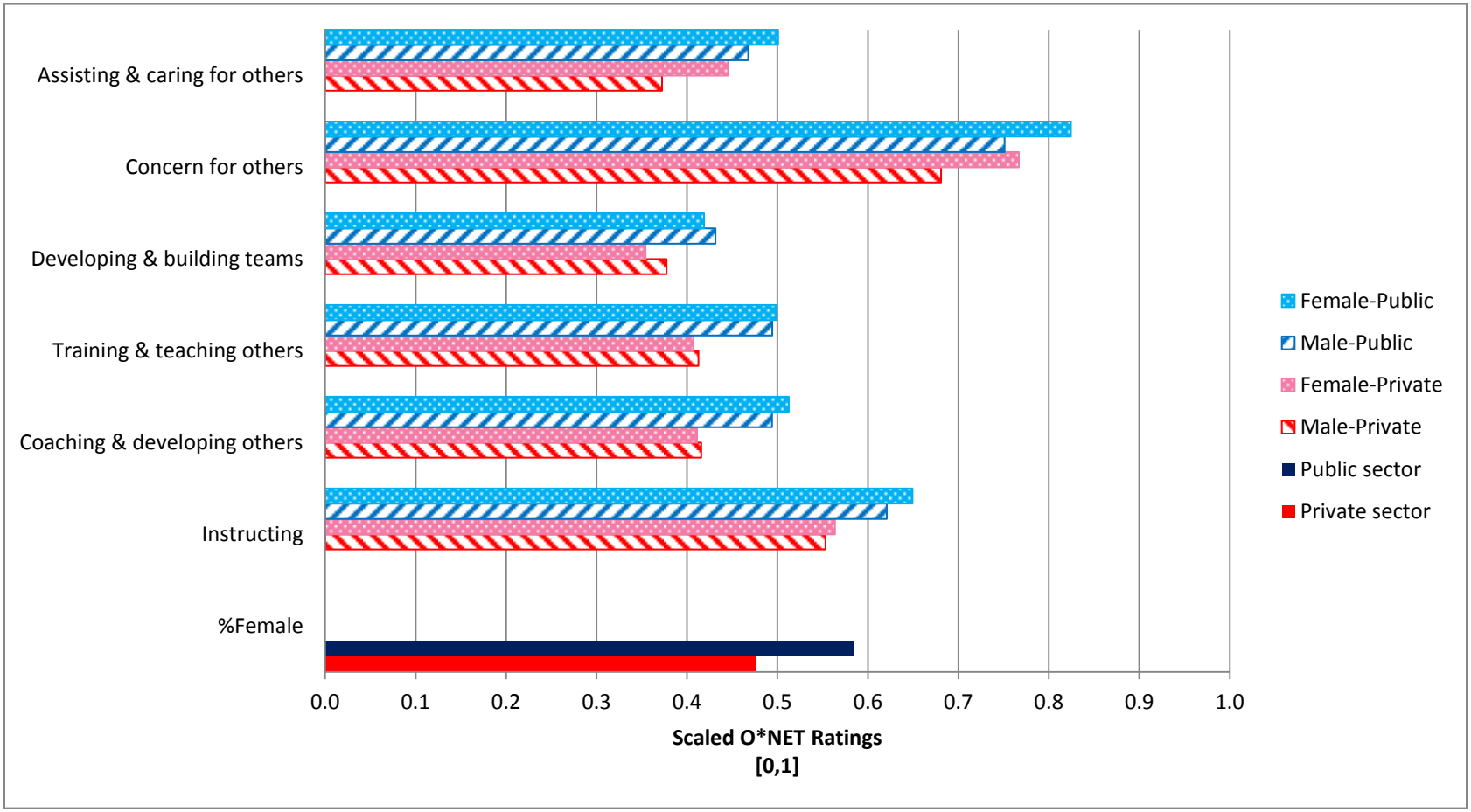


Figure 4. Trends in Means of O*NET 'Caring' Variable, 'Assisting & Caring for Others', by Sex and Year, 1983–2010



Weighted means are calculated using all wage and salary workers, ages 16 and over. CPS data are matched based on 1980 Census occupation codes to 1998 O*NET version 1.0 values. O*NET variables are measured in levels and scaled on [0,1]. See text for further details.

Figure 5. O*NET Ratings of Caring Attributes by Gender and Public/Private Sectors



Figures reflect the means shown in Table 8, which are based on the CPS/O*NET 2006-2008 sample.

Table 1. O*NET Job Skill/Task Attributes Describing Care Work

		O*NET attribute label	O*NET description	O*NET variable	Possible score range	Pre-normalized score range
Broad Caring Factor	Narrow Caring r	Concern for others	Job requires being sensitive to others' needs and feelings and being understanding and helpful on the job	1.c.3.b	[1, 5]	[2.33, 4.99]
		Assisting and caring for others	Providing personal assistance, medical attention, emotional support, or other personal care to others such as coworkers, customers, or patients	4.a.4.a.5	[0, 7]	[0.13, 6.73]
	Develop/Teach Factor	Developing and building teams	Encouraging and building mutual trust, respect, and cooperation among team members	4.a.4.b.2	[0, 7]	[0.8, 5.66]
		Training and teaching others	Identifying the educational needs of others, developing formal educational or training programs or classes, and teaching or instructing others	4.a.4.b.3	[0, 7]	[0.79, 5.66]
		Coaching and developing others	Identifying the developmental needs of others and coaching, mentoring, or otherwise helping others to improve their knowledge or skills	4.a.4.b.5	[0, 7]	[0.63, 6.25]
		Instructing	Teaching others how to do something	2.b.1.e	[0, 7]	[1.6, 6.0310]

Source: http://www.onetonline.org/. Original score range refers to the minimum and maximum score values in our sample before rescaling all O*NET attributes on [0, 1] using the formula $S = \frac{O-L}{H-L}$, where *O* is the original rating score on the rating scale used, *H* is the highest possible score on the rating scale used, and *L* is the lowest possible score on the rating scale used.

Table 2. Summary Statistics for CPS and O*Net Attributes, by Gender, 2006-2008

		Women		Men	
Variables	$X_F - X_M$	**mean**	**s.d.**	**mean**	**s.d.**
Hourly earnings	-4.38	18.83	13.51	23.21	17.59
Ln(hourly earnings)	-0.1896	2.7635	0.5602	2.9531	0.5931
Individual O*NET attributes (scaled 0-1):					
Concern for others	0.0877	0.7793	0.1124	0.6916	0.1102
Assisting & caring for others	0.0707	0.4576	0.1625	0.3869	0.1281
Developing & building teams	-0.0173	0.3681	0.1321	0.3854	0.1281
Training & teaching others	0.0020	0.4269	0.1358	0.4249	0.1219
Coaching & developing others	0.0057	0.4331	0.1510	0.4274	0.1450
Instructing	0.0189	0.5822	0.1252	0.5633	0.1088
O*NET Indices (using factor analysis):					
Broad Caring index (loads all 6 O*NET attributes above)	0.1764	0.1473	1.0201	-0.0291	0.9193
Narrow Caring index (loads concern and asst/caring above	0.5572	0.2950	0.8748	-0.2622	0.7420
Developing/Teaching index (loads remaining 4 attributes)	0.0182	0.0722	1.0062	0.0540	0.9201
Job skills index (loads 162 O*NET attributes)	0.0981	0.1293	0.9229	0.0312	1.0326
Working conditions index (loads 38 O*NET attributes)	-0.7678	-0.4124	0.6790	0.3554	1.1155
Sex composition (%Female, from CPS)	0.3687	0.6761	0.2332	0.3074	0.2468
N		166,009		168,760	

Variable means and s.d. created from the CPS are unweighted (weighted means are similar). Hourly earnings are measured using implicit hourly wage (usual weekly earnings/usual weekly hours worked). All indices formed from factor analysis are compiled using the combined female and male sample and, by construction, have mean 0 and s.d. 1.0. The job skills index loads 162 O*NET job attributes and does not include the 6 O*NET 'caring' attributes. See the text for further details.

Table 3. Measures of Caring for Selected Large Occupations and Occupations with High or Low Caring Ratings

COC	Occupation Name (Standard Occupational Classification)	A&C rank	A&C value	Concern rank	Concern value
3060	Physicians and surgeons	2	0.961	3	0.983
3130	Registered nurses	5	0.876	13	0.943
9110	Ambulance drivers & attendants, exc. emergency med technicians	8	0.823	71	0.835
2040	Clergy	12	0.799	103	0.800
3160	Physical therapists	15	0.781	4	0.978
3850	Police and sheriff's patrol officers	18	0.771	75	0.831
3640	Dental assistants	22	0.743	73	0.833
3630	Massage therapists	36	0.679	7	0.965
2010	Social workers	40	0.666	25	0.921
3650	Medical assistants and other healthcare support occupations	45	0.644	60	0.859
4600	Child care workers	46	0.642	34	0.898
2310	Elementary and middle school teachers	73	0.571	19	0.931
3600	Nursing, psychiatric, and home health aides	79	0.554	54	0.865
620	Human resources, training, and labor relations specialists	104	0.525	59	0.860
2200	Postsecondary teachers	115	0.500	121	0.783
5700	Secretaries and administrative assistants	153	0.433	116	0.790
4110	Waiters and waitresses	165	0.420	101	0.745
5240	Customer service representatives	190	0.403	117	0.785
4720	Cashiers	195	0.401	152	0.754
120	Financial managers	253	0.366	301	0.651
9130	Driver/sales workers and truck drivers	266	0.359	341	0.623
9620	Laborers and freight, stock, and material movers, hand	270	0.356	402	0.583
10	Chief executives	293	0.346	176	0.738
5620	Stock clerks and order fillers	299	0.343	265	0.673
4760	Retail salespersons	301	0.341	183	0.733
2100	Lawyers, Judges, magistrates, and other judicial workers	310	0.337	349	0.620
7200	Automotive service technicians and mechanics	332	0.328	419	0.574
6230	Carpenters	355	0.315	385	0.600
5120	Bookkeeping, accounting, and auditing clerks	367	0.306	227	0.700
4220	Janitors and building cleaners	377	0.301	167	0.745
4020	Cooks	390	0.294	260	0.676
800	Accountants and auditors	400	0.287	329	0.630
1020	Computer software engineers	457	0.228	413	0.577
8030	Machinists	471	0.211	500	0.380
4850	Sales representatives, wholesale and manufacturing	472	0.210	203	0.720
1300	Architects, except naval	490	0.176	473	0.506
1210	Mathematicians	495	0.143	501	0.333
300	Engineering managers	499	0.103	308	0.645
1320	Aerospace engineers	501	0.019	373	0.613

'A&C' and 'Concern' denote O*NET caring attributes 'assisting & caring for others' and 'concern for others', respectively. COC denotes the 2002 Census occupation codes adopted in the CPS beginning in 2003. Value refers to the rescaled score of an occupation's corresponding O*NET attribute ranking on a [0,1] scale. See details in the note to Table 1.

Table 4. Pairwise Correlations of Earnings, Gender, and O*NET Measures of Occupational Caring, Skills, and Working Conditions

	Ln(wage)	Female	Occupation %Female	Concern	Assist	Narrow Caring	Narrow Dev/Teach	Broad caring	Skill index	Work cond index
Ln(hourly wage)	1.0									
Female	-0.162	1.0								
Sex composition (%F)	-0.126	0.609	1.0							
Concern for others	0.039	0.367	0.604	1.0						
Assisting & caring for others	0.084	0.235	0.390	0.713	1.0					
Narrow caring factor	0.066	0.325	0.537	0.925	0.925	1.0				
Narrow Develop/Teach factor	0.346	0.009	0.024	0.373	0.494	0.468	1.0			
Broad caring factor	0.331	0.091	0.157	0.549	0.670	0.659	0.973	1.0		
Cognitive skill factor index	0.537	0.050	0.091	0.171	0.182	0.191	0.554	0.521	1.0	
Working conditions factor index	-0.197	-0.383	-0.628	-0.320	-0.078	-0.215	-0.203	-0.222	-0.574	1.0

These correlations are calculated using a pooled sample of 36 CPS-ORG monthly earnings files for female and male workers covering January 2006 to December 2008 merged with O*NET job attributes. Sex composition is calculated as the ratio of the mean number of females to mean total workers in a given occupation. Observations are not weighted by CPS sampling weights. Hourly wage is an implicit measure based on worker self-reports of usual weekly earnings divided by usual weekly hours worked.

Table 5. Wage Level Regression Estimates for Care Work Effects, by Gender, 2006 - 2008

	Women				
O*NET Variables/Indices	(1)	(2)	(3)	(4)	(5)
Broad Caring/DT Index	-0.0094	-	-	-	-
	(0.0166)				
Narrow Caring Index	-	0.0121	0.0056	-	-
		(0.0238)	(0.0211)		
Narrow Develop/Teach Index	-	-0.0162	-	-0.0119	-
		(0.0201)		(0.0168)	
Assisting & Caring for others	-	-	-	-	0.2799*
					(0.1590)
					[0.0430]
Concern for others	-	-	-	-	-0.1834
					(0.1310)
					[-0.0217]
Job Skills Index	0.2429***	0.2460***	0.2355***	0.2450***	0.2633***
	(0.0251)	(0.0282)	(0.0216)	(0.0277)	(0.0310)
Working Conditions Index	0.1055***	0.1051***	0.1002***	0.1063***	0.1020***
	(0.0298)	(0.0284)	(0.0265)	(0.0313)	(0.0261)
CPS controls	Y	Y	Y	Y	Y
Observations	166,009	166,009	166,009	166,009	166,009
R-squared	0.4747	0.4749	0.4746	0.4748	0.4810
	Men				
O*NET Variables/Indices	(1)	(2)	(3)	(4)	(5)
Broad Caring/DT Index	-0.0030	-	-	-	-
	(0.0126)				
Narrow Caring Index	-	-0.0247*	-0.0177	-	-
		(0.0147)	(0.0138)		
Narrow Develop/Teach Index	-	0.0125	-	0.0022	-
		(0.0132)		(0.0127)	
Assisting & Caring for others	-	-	-	-	-0.1584
					(0.1124)
					[-0.0235]
Concern for others	-	-	-	-	0.0034
					(0.1098)
					[0.0004]
Job Skills Index	0.1887***	0.1810***	0.1871***	0.1863***	0.1960***
	(0.0123)	(0.0121)	(0.0110)	(0.0125)	(0.0172)
Working Conditions Index	0.0159*	0.0129	0.0143	0.0157*	0.0186**
	(0.0090)	(0.0089)	(0.0087)	(0.0090)	(0.0094)
CPS controls	Y	Y	Y	Y	Y
Observations	168,760	168,760	168,760	168,760	168,760
R-squared	0.4891	0.4896	0.4895	0.4891	0.4917

Standard errors in parentheses, clustered by occupation. *** p<0.01, ** p<0.05, * p<0.10. Marginal effects in brackets based on one s.d. measured across all workers. CPS controls consist of detailed education attainment dummies, demographics (potential experience and its square, cubic, and quartic terms); dummies for marital status, race, ethnicity, foreign-born citizen, non-citizen), geographic dummies for region (8) and MSA size (6), industry dummies (11), year dummies, and dummies for union membership, public sector, and private nonprofit sector. Dependent variable is ln(hourly earnings), see text for a detailed description of variables.

Table 6. Wage Level Regression Estimates for Care Work Effects by Gender, Absent O*NET Skill & Working Conditions Indices

	Women				
O*NET Variables/Indices	(1)	(2)	(3)	(4)	(5)
Broad Caring/DT Index	0.0788***	-	-	-	-
	(0.0228)				
Narrow Caring Index	-	-0.0053	0.0339	-	-
		(0.0382)	(0.0354)		
Narrow Develop/Teach Index	-	0.0821***	-	0.0804***	-
		(0.0194)		(0.0202)	
Assisting & Caring for Others	-	-	-	-	0.3639
					(0.2889)
					[0.0563]
Concern for Others	-	-	-	-	-0.5287**
					(0.2066)
					[-0.0613]
Job Skills Index	N	N	N	N	N
Working Conditions Index	N	N	N	N	N
CPS controls	Y	Y	Y	Y	Y
Observations	166,009	166,009	166,009	166,009	166,009
R-squared	0.4232	0.4241	0.4118	0.4241	0.4407
	Men				
O*NET Variables/Indices	(1)	(2)	(3)	(4)	(5)
Broad Caring/DT Index	0.0632***	-	-	-	-
	(0.0174)				
Narrow Caring Index	-	-0.0673***	-0.0122	-	-
		(0.0213)	(0.0190)		
Narrow Develop/Teach Index	-	0.0973***	-	0.0740***	-
		(0.0195)		(0.0173)	
Assisting & Caring for Others	-	-	-	-	-0.3636**
					(0.1462)
					[-0.0532]
Concern for Others	-	-	-	-	0.0846
					(0.1547)
					[0.0102]
Job Skills Index	N	N	N	N	N
Working Conditions Index	N	N	N	N	N
CPS controls	Y	Y	Y	Y	Y
Observations	168,760	168,760	168,760	168,760	168,760
R-squared	0.4434	0.4506	0.4365	0.4465	0.4604

Standard errors in parentheses, clustered by occupation. *** p<0.01, ** p<0.05, * p<0.10. Marginal effects in brackets based on one s.d. measured across all workers. CPS controls consist of detailed education attainment dummies, demographics (potential experience and its square, cubic, and quartic terms; dummies for marital status, race, ethnicity, foreign-born citizen, non-citizen), geographic dummies for region (8) and size (6), industry dummies (11), year dummies, and dummies for union membership, public sector, and private nonprofit sector. Dependent variable is ln(hourly earnings), see text for a detailed description of variables.

Table 7. Wage Change Estimates for Care Work—Ind/Occ Switchers Only, by Gender, 2003/4 – 2008/09.

	Women				
O*NET Variables/Indices	(1)	(2)	(3)	(4)	(5)
ΔBroad Caring/DT Index	-0.0049	-	-	-	-
	(0.0042)				
ΔNarrow Caring Index	-	-0.0154***	-0.0147***	-	-
		(0.0040)	(0.0039)		
ΔNarrow Develop/Teach Index	-	0.0037	-	0.0003	-
		(0.0042)		(0.0041)	
ΔAssisting & Caring for Others	-	-	-	-	-0.0451*
					(0.0269)
					[-0.0068]
ΔConcern for Others	-	-	-	-	-0.0618*
					(0.0316)
					[-0.0074]
ΔJob Skills Index	0.0504***	0.0472***	0.0502***	0.0462***	0.0471***
	(0.0048)	(0.0049)	(0.0034)	(0.0048)	(0.0058)
ΔWorking Conditions Index	-0.0035	-0.0043	-0.0033	-0.0050	-0.0019
	(0.0046)	(0.0046)	(0.0044)	(0.0046)	(0.0048)
ΔCPS controls	Y	Y	Y	Y	Y
Observations	18,981	18,981	18,981	18,981	18,981
R-squared	0.0197	0.0204	0.0204	0.0196	0.0208
	Men				
O*NET Variables/Indices	(1)	(2)	(3)	(4)	(5)
ΔBroad Caring/DT Index	-0.0020	-	-	-	-
	(0.0039)				
ΔNarrow Caring Index	-	-0.0256***	-0.0224***	-	-
		(0.0044)	(0.0042)		
ΔNarrow Develop/Teach Index	-	0.0102***	-	0.0039	-
		(0.0039)		(0.0038)	
ΔAssisting & Caring for Others	-	-	-	-	-0.1048***
					(0.0299)
					[-0.0156]
ΔConcern for Others	-	-	-	-	-0.0711**
					(0.0290)
					[-0.0085]
ΔJob Skills Index	0.0443***	0.0420***	0.0483***	0.0402***	0.0362***
	(0.0042)	(0.0043)	(0.0035)	(0.0043)	(0.0050)
ΔWorking Conditions Index	0.0017	0.0000	0.0016	0.0009	0.0005
	(0.0034)	(0.0034)	(0.0034)	(0.0034)	(0.0034)
ΔCPS controls	Y	Y	Y	Y	Y
Observations	21,689	21,689	21,689	21,689	21,689
R-squared	0.0232	0.0248	0.0245	0.0232	0.0250

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10. Predicted effects in brackets based on one standard deviation across all workers. ΔCPS controls consist of first differences in higher order terms of experience (square, cubic, and quartic) and changes in married-spouse present, married-no spouse present, union membership, public sector, private nonprofit sector, and broad industry. All O*NET variables and indices are differenced. Dependent variable is Δln(hourly earnings).

Table 8. O*Net Caring Attribute/Index Means in the Public and Private Sectors, by Gender

Private sector					
		Women		Men	
Variables	$X_F - X_M$	mean	s.d.	mean	s.d.
Hourly earnings	-4.53	18.22	13.66	22.75	17.96
Log hourly earnings	-0.2003	2.7237	0.5648	2.9240	0.6022
Individual O*NET attributes (scaled 0-1):					
Concern for others	0.0859	0.7668	0.1105	0.6809	0.1045
Assisting & caring for others	0.0731	0.4456	0.1657	0.3725	0.1156
Developing & building teams	-0.0232	0.3540	0.1283	0.3772	0.1258
Training & teaching others	-0.0056	0.4069	0.1218	0.4125	0.1119
Coaching & developing others	-0.0045	0.4111	0.1392	0.4156	0.1388
Instructing	0.0105	0.5636	0.1135	0.5531	0.1001
O*NET Indices (using factor analysis):					
Broad Caring index (loads all 6 O*NET attributes above)	0.1210	-0.0081	0.9283	-0.1291	0.8435
Narrow Caring index (loads concern and asst/caring above	0.5573	0.2097	0.8753	-0.3476	0.6769
Developing/Teaching index (loads remaining 4 attributes)	-0.0469	-0.0790	0.9114	-0.0321	0.8629
N		129,987		143,228	
Public sector					
		Women		Men	
Variables	$X_F - X_M$	mean	s.d.	mean	s.d.
Hourly earnings	-4.74	21.03	12.74	25.77	15.09
Log hourly earnings	-0.2094	2.9070	0.5184	3.1164	0.5093
Individual O*NET attributes (scaled 0-1):					
Concern for others	0.0732	0.8244	0.1076	0.7512	0.1221
Assisting & caring for others	0.0333	0.5009	0.1424	0.4676	0.1610
Developing & building teams	-0.0128	0.4188	0.1330	0.4316	0.1309
Training & teaching others	0.0048	0.4991	0.1573	0.4943	0.1490
Coaching & developing others	0.0184	0.5125	0.1644	0.4941	0.1600
Instructing	0.0284	0.6493	0.1414	0.6209	0.1345
O*NET Indices (using factor analysis):					
Broad Caring index (loads all 6 O*NET attributes above)	0.1759	0.7079	1.1333	0.5320	1.1063
Narrow Caring index (loads concern and asst/caring above	0.3857	0.6029	0.8010	0.2172	0.8934
Developing/Teaching index (loads remaining 4 attributes)	0.0806	0.6180	1.1351	0.5374	1.0692
N		36,022		25,532	

All means are calculated from the merged 2006-2008 merged CPS/O*NET data set described in the text. Some of the information in Table 8 is shown visually in Figure 5.

Table 9. Wage Level Estimates for Care Work, by Gender and Private/Public sectors, 2006-2008

	Women in the private sector				
O*NET Variables/Indices	(1)	(2)	(3)	(4)	(5)
Broad Caring/DT Index	0.0198	-	-	-	-
	(0.0165)				
Narrow Caring Index	-	0.0297	0.0311	-	-
		(0.0241)	(0.0219)		
Narrow Develop/Teach Index	-	0.0045	-	0.0129	-
		(0.0183)		(0.0157)	
Assisting & Caring for others	-	-	-	-	0.2883
					(0.1752)
					[0.0443]
Concern for others	-	-	-	-	-0.0891
					(0.1435)
					[-0.0106]
Job Skills Index	0.2257***	0.2298***	0.2326***	0.2299***	0.2411***
	(0.0249)	(0.0267)	(0.0213)	(0.0283)	(0.0324)
Working Conditions Index	0.0918***	0.0913***	0.0927***	0.0951***	0.0906***
	(0.0302)	(0.0275)	(0.0255)	(0.0332)	(0.0271)
CPS controls	Y	Y	Y	Y	Y
Observations	129,987	129,987	129,987	129,987	129,987
R-squared	0.4777	0.4784	0.4784	0.4774	0.4813
	Women in the public sector				
O*NET Variables/Indices	(1)	(2)	(3)	(4)	(5)
Broad Caring/DT Index	-0.0569***	-	-	-	-
	(0.0173)				
Narrow Caring Index	-	-0.0279	-0.0515**	-	-
		(0.0259)	(0.0228)		
Narrow Develop/Teach Index	-	-0.0399*	-	-0.0552***	-
		(0.0235)		(0.0185)	
Assisting & Caring for others	-	-	-	-	0.0576
					(0.1391)
					[0.0087]
Concern for others	-	-	-	-	-0.2001
					(0.1395)
					[-0.0237]
Job Skills Index	0.2664***	0.2591***	0.2290***	0.2697***	0.2748***
	(0.0329)	(0.0363)	(0.0300)	(0.0337)	(0.0399)
Working Conditions Index	0.1297***	0.1273***	0.1155***	0.1278***	0.1188***
	(0.0320)	(0.0326)	(0.0326)	(0.0316)	(0.0345)
CPS controls	Y	Y	Y	Y	Y
Observations	36,022	36,022	36,022	36,022	36,022
R-squared	0.4430	0.4429	0.4406	0.4419	0.4555

(continued on next page)

Table 9 (continued). Wage Level Estimates for Care Work, by Gender and Private/Public Sectors

	Men in the private sector				
O*NET Variables/Indices	(1)	(2)	(3)	(4)	(5)
Broad Caring/DT Index	0.0165	-	-	-	-
	(0.0136)				
Narrow Caring Index	-	-0.0077	0.0037	-	-
		(0.0170)	(0.0162)		
Narrow Develop/Teach Index	-	0.0217	-	0.0190	-
		(0.0135)		(0.0130)	
Assisting & Caring for others	-	-	-	-	-0.1973
					(0.1285)
					[-0.0292]
Concern for others	-	-	-	-	0.1238
					(0.1049)
					[0.0149]
Job Skills Index	0.1834***	0.1796***	0.1900***	0.1811***	0.1813***
	(0.0123)	(0.0120)	(0.0115)	(0.0123)	(0.0166)
Working Conditions Index	0.0087	0.0069	0.0094	0.0079	0.0129
	(0.0095)	(0.0094)	(0.0094)	(0.0096)	(0.0100)
CPS controls	Y	Y	Y	Y	Y
Observations	143,228	143,228	143,228	143,228	143,228
R-squared	0.4981	0.4983	0.4977	0.4982	0.4997
	Men in the public sector				
O*NET Variables/Indices	(1)	(2)	(3)	(4)	(5)
Broad Caring/DT Index	-0.0329**	-	-	-	-
	(0.0135)				
Narrow Caring Index	-	-0.0542***	-0.0476***	-	-
		(0.0160)	(0.0135)		
Narrow Develop/Teach Index	-	0.0107	-	-0.0272*	-
		(0.0173)		(0.0152)	
Assisting & Caring for others	-	-	-	-	-0.0221
					(0.1070)
					[-0.0033]
Concern for others	-	-	-	-	-0.3465**
					(0.1404)
					[-0.0406]
Job Skills Index	0.1885***	0.1663***	0.1727***	0.1867***	0.1801***
	(0.0184)	(0.0216)	(0.0177)	(0.0195)	(0.0187)
Working Conditions Index	0.0365***	0.0340***	0.0351***	0.0351***	0.0203*
	(0.0118)	(0.0128)	(0.0118)	(0.0119)	(0.0104)
CPS controls	Y	Y	Y	Y	Y
Observations	25,532	25,532	25,532	25,532	25,532
R-squared	0.4217	0.4249	0.4247	0.4204	0.4311

Standard errors in parentheses, clustered by occupation. *** p<0.01, ** p<0.05, * p<0.10. Marginal effects in brackets based on one s.d. measured across all workers. CPS controls consist of detailed education attainment dummies, demographics (potential experience and its square, cubic, and quartic terms; dummies for marital status, race, ethnicity, foreign-born citizen, non-citizen), geographic dummies for region (8) and size (6), industry dummies (private sector only) and private non-profit (private sector only). Dependent variable is ln(hourly earnings), see text for a detailed description of variables.

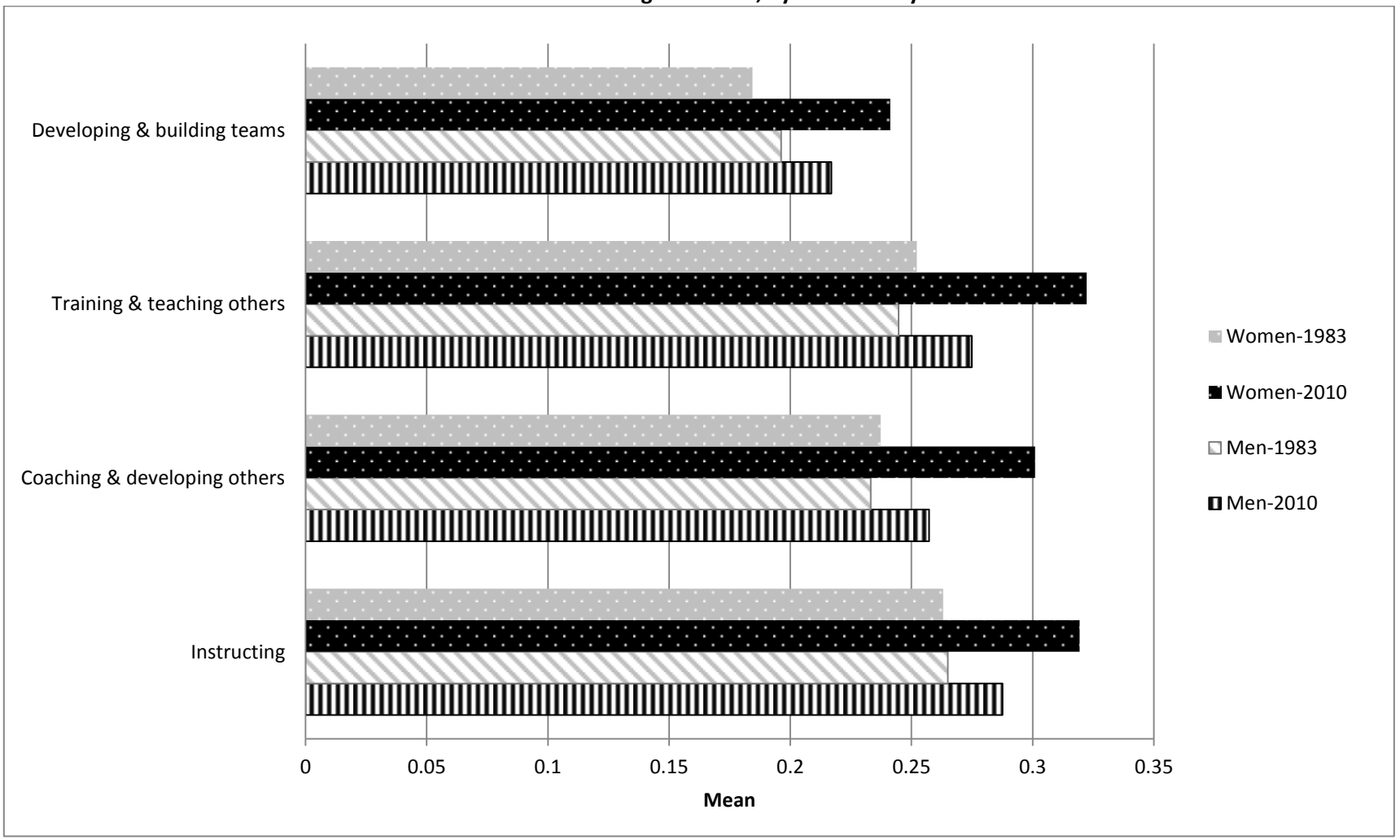
Table 10. Wage Change Estimates for Care Work, Public/Private Sector Switchers, 2003/4–2008/09.

	Women				
O*NET variables/indices	(1)	(2)	(3)	(4)	(5)
ΔBroad Caring/DT Index	-0.0087	-	-	-	-
	(0.0103)				
ΔNarrow Caring Index	-	-0.0133	-0.0135	-	-
		(0.0097)	(0.0092)		
ΔNarrow Develop/Teach Index	-	-0.0010	-	-0.0055	-
		(0.0109)		(0.0104)	
ΔAssisting & caring for others	-	-	-	-	-0.0409
					(0.0687)
					[-0.0061]
ΔConcern for others	-	-	-	-	-0.0412
					(0.0840)
					[-0.0049]
Δjob skills index	0.0639***	0.0612***	0.0603***	0.0610***	0.0773***
	(0.0127)	(0.0131)	(0.0087)	(0.0131)	(0.0156)
Δworking conditions index	-0.0127	-0.0127	-0.0130	-0.0139	-0.0087
	(0.0118)	(0.0117)	(0.0114)	(0.0117)	(0.0126)
ΔCPS controls	Y	Y	Y	Y	Y
Observations	5,602	5,602	5,602	5,602	5,602
R-squared	0.0280	0.0282	0.0282	0.0279	0.0293
	Men				
O*NET variables/indices	(1)	(2)	(3)	(4)	(5)
ΔBroad Caring/DT Index	-0.0248*	-	-	-	-
	(0.0130)				
ΔNarrow Caring Index	-	-0.0497***	-0.0480***	-	-
		(0.0132)	(0.0124)		
ΔNarrow Develop/Teach Index	-	0.0054	-	-0.0126	-
		(0.0140)		(0.0132)	
ΔAssisting & caring for others	-	-	-	-	-0.1215
					(0.0883)
					[-0.0181]
ΔConcern for others	-	-	-	-	-0.2157**
					(0.0959)
					[-0.0255]
Δjob skills	0.0774***	0.0690***	0.0731***	0.0671***	0.0749***
	(0.0154)	(0.0156)	(0.0115)	(0.0156)	(0.0171)
Δworking conditions	-0.0010	-0.0033	-0.0026	-0.0029	-0.0053
	(0.0109)	(0.0109)	(0.0107)	(0.0109)	(0.0113)
ΔCPS controls	Y	Y	Y	Y	Y
Observations	3,249	3,249	3,249	3,249	3,249
R-squared	0.0352	0.0386	0.0386	0.0344	0.0399

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10. Predicted effects in brackets based on one standard deviation across all workers. ΔCPS controls consist of first differences in higher order terms of experience (square, cubic, and quartic) and changes in married-spouse present, married-no spouse present, union membership, private nonprofit sector and from private-to-public. ΔJob factors consist of first-differences in each of 2 latent factor indices (job skill demands and working conditions), which were created using principal factor analysis. Dependent variable is Δln(hourly earnings), see text for a detailed description of variables.

Appendix Figures

Means of Other O*NET 'Caring' Variables, by sex for the years 1983 and 2010



Weighted means are calculated using the full CPS sample for each year excluding only workers under age 16. CPS data are matched based on 1980 Census occupation codes and 1998 O*NET (version 1.0) values. O*NET variables are measured in levels and scaled on [0,1]. See text for further discussion.

Appendix Tables

Coefficients (s.e.) for O*NET D/T Attributes and Selected Control Variables to Accompany Table 5 Regression Results (Women)

	Women				
Independent Variables	(1)	(2)	(3)	(4)	(5)
Developing & building teams	-	-	-	-	0.2266
					(0.1482)
					[0.0300]
Training & teaching others	-	-	-	-	-0.3149*
					(0.1646)
					[-0.0398]
Coaching & developing others	-	-	-	-	0.1808
					(0.1637)
					[0.0271]
Instructing	-	-	-	-	-0.5042***
					(0.1844)
					[-0.0576]
married, spouse present	0.0410***	0.0406***	0.0402***	0.0411***	0.0419***
	(0.0052)	(0.0052)	(0.0056)	(0.0053)	(0.0047)
separated/widowed/divorced	0.0105**	0.0099**	0.0101**	0.0104**	0.0112***
	(0.0042)	(0.0039)	(0.0039)	(0.0042)	(0.0039)
Black	-0.0765***	-0.0768***	-0.0759***	-0.0767***	-0.0765***
	(0.0093)	(0.0094)	(0.0097)	(0.0093)	(0.0087)
Other race	-0.0277***	-0.0277***	-0.0264***	-0.0280***	-0.0287***
	(0.0065)	(0.0065)	(0.0074)	(0.0064)	(0.0059)
Hispanic	-0.0809***	-0.0808***	-0.0809***	-0.0809***	-0.0816***
	(0.0075)	(0.0074)	(0.0074)	(0.0075)	(0.0072)
foreign-born citizen	-0.0479***	-0.0481***	-0.0469***	-0.0482***	-0.0454***
	(0.0077)	(0.0077)	(0.0080)	(0.0076)	(0.0074)
foreign-born noncitizen	-0.1445***	-0.1434***	-0.1426***	-0.1445***	-0.1379***
	(0.0129)	(0.0131)	(0.0131)	(0.0129)	(0.0128)
experience	0.0386***	0.0387***	0.0385***	0.0386***	0.0380***
	(0.0035)	(0.0035)	(0.0035)	(0.0035)	(0.0035)
experience^2	-0.0017***	-0.0017***	-0.0017***	-0.0017***	-0.0017***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
part-time (1<h<35)	-0.1005***	-0.1024***	-0.1011***	-0.1010***	-0.0963***
	(0.0172)	(0.0151)	(0.0156)	(0.0171)	(0.0146)
public	0.0501*	0.0537*	0.0477	0.0516*	0.0868***
	(0.0290)	(0.0304)	(0.0321)	(0.0290)	(0.0289)
private not-for-profit	-0.0076	-0.0060	-0.0083	-0.0070	-0.0090
	(0.0197)	(0.0209)	(0.0207)	(0.0200)	(0.0200)
union member	0.1161***	0.1152***	0.1134***	0.1163***	0.1273***
	(0.0118)	(0.0116)	(0.0113)	(0.0121)	(0.0120)

*** p<0.01, ** p<0.05, * p<0.10. See notes for Table 5. Results for experience^3, experience^4, and dummies for education, region, city size, and industry are not shown.

Coefficients (s.e.) for O*NET D/T Attributes and Selected Control Variables to Accompany Table 5 Regression Results (Men)

	Men				
Independent Variables	(1)	(2)	(3)	(4)	(5)
Developing & building teams	-	-	-	-	0.1434
					(0.1073)
					[0.0189]
Training & teaching others	-	-	-	-	-0.1941
					(0.1925)
					[-0.0247]
Coaching & developing others	-	-	-	-	0.2026
					(0.1523)
					[0.0304]
Instructing	-	-	-	-	-0.2227
					(0.1678)
					[-0.0259]
married, spouse present	0.1318***	0.1320***	0.1324***	0.1315***	0.1308***
	(0.0056)	(0.0055)	(0.0057)	(0.0055)	(0.0056)
separated/widowed/divorced	0.0435***	0.0439***	0.0439***	0.0434***	0.0441***
	(0.0055)	(0.0055)	(0.0055)	(0.0055)	(0.0055)
Black	-0.1421***	-0.1410***	-0.1414***	-0.1421***	-0.1403***
	(0.0087)	(0.0086)	(0.0087)	(0.0087)	(0.0085)
Other race	-0.0573***	-0.0571***	-0.0580***	-0.0568***	-0.0551***
	(0.0091)	(0.0091)	(0.0091)	(0.0092)	(0.0089)
Hispanic	-0.1161***	-0.1157***	-0.1156***	-0.1162***	-0.1153***
	(0.0077)	(0.0076)	(0.0076)	(0.0076)	(0.0077)
foreign-born citizen	-0.0568***	-0.0570***	-0.0577***	-0.0563***	-0.0544***
	(0.0081)	(0.0082)	(0.0083)	(0.0081)	(0.0082)
foreign-born noncitizen	-0.1404***	-0.1417***	-0.1420***	-0.1399***	-0.1361***
	(0.0099)	(0.0099)	(0.0097)	(0.0100)	(0.0103)
experience	0.0356***	0.0356***	0.0357***	0.0355***	0.0355***
	(0.0023)	(0.0022)	(0.0022)	(0.0023)	(0.0022)
experience^2	-0.0011***	-0.0011***	-0.0011***	-0.0011***	-0.0011***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
part-time (1<h<35)	-0.1710***	-0.1696***	-0.1702***	-0.1709***	-0.1652***
	(0.0147)	(0.0145)	(0.0147)	(0.0147)	(0.0157)
public	0.0735	0.0752	0.0767	0.0721	0.0756*
	(0.0492)	(0.0491)	(0.0482)	(0.0497)	(0.0425)
private not-for-profit	-0.0978***	-0.0971***	-0.0945***	-0.0997***	-0.0928***
	(0.0372)	(0.0368)	(0.0364)	(0.0381)	(0.0308)
union member	0.1723***	0.1735***	0.1737***	0.1718***	0.1790***
	(0.0156)	(0.0155)	(0.0154)	(0.0157)	(0.0145)

*** p<0.01, ** p<0.05, * p<0.10. See notes for Table 5. Results for experience^3, experience^4, and dummies for education, region, city size, and industry are not shown.

Coefficients (s.e.) for O*NET D/T Attributes and Selected Control Variables to Accompany Table 7 Wage Change Regression Results—Ind/Occ Switchers (Women)

	Women				
ΔIndependent Variables	(1)	(2)	(3)	(4)	(5)
ΔDeveloping & building teams	-	-	-	-	-0.0363
					(0.0354)
					[-0.0047]
ΔTraining & teaching others	-	-	-	-	-0.0658*
					(0.0355)
					[-0.0085]
ΔCoaching & developing others	-	-	-	-	0.0748**
					(0.0348)
					[0.0111]
ΔInstructing	-	-	-	-	0.0640*
					(0.0383)
					[0.0076]
Δmarried, spouse present	-0.0446*	-0.0442*	-0.0444*	-0.0445*	-0.0450*
	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)
Δseparated/widowed/divorced	-0.0450	-0.0444	-0.0445	-0.0450	-0.0454
	(0.0280)	(0.0280)	(0.0280)	(0.0281)	(0.0280)
$\Delta experience^2$	-0.0033***	-0.0033***	-0.0033***	-0.0033***	-0.0033***
	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)
Δpart-time (1<h<35)	-0.0082	-0.0079	-0.0079	-0.0082	-0.0078
	(0.0070)	(0.0070)	(0.0070)	(0.0070)	(0.0070)
Δunion	0.0757***	0.0760***	0.0763***	0.0753***	0.0756***
	(0.0119)	(0.0119)	(0.0119)	(0.0119)	(0.0120)
Δpublic sector	0.0042	0.0020	0.0026	0.0035	0.0008
	(0.0146)	(0.0146)	(0.0146)	(0.0146)	(0.0146)
Δprivate not-for-profit	-0.0170*	-0.0173*	-0.0171*	-0.0172*	-0.0176*
	(0.0103)	(0.0103)	(0.0103)	(0.0103)	(0.0103)

*** p<0.01, ** p<0.05, * p<0.10. See detailed notes for Table 7. Results for $\Delta experience^3$, $\Delta experience^4$, and broad industry changes are not shown.

Coefficients (s.e.) for O*NET D/T Attributes and Selected Control Variables to Accompany Table 7 Wage Change Regression Results—Ind/Occ Switchers (Men)

	Men				
ΔIndependent Variables	(1)	(2)	(3)	(4)	(5)
ΔDeveloping & building teams	-	-	-	-	0.0387
					(0.0302)
					[0.0051]
ΔTraining & teaching others	-	-	-	-	-0.0005
					(0.0359)
					[-0.0001]
ΔCoaching & developing others	-	-	-	-	0.0262
					(0.0333)
					[0.0039]
ΔInstructing	-	-	-	-	0.0812**
					(0.0387)
					[0.0096]
Δmarried, spouse present	0.0140	0.0150	0.0150	0.0139	0.0150
	(0.0242)	(0.0242)	(0.0242)	(0.0242)	(0.0242)
Δseparated/widowed/divorced	0.0127	0.0125	0.0131	0.0123	0.0125
	(0.0289)	(0.0289)	(0.0289)	(0.0289)	(0.0289)
$\Delta experience^2$	-0.0025**	-0.0025**	-0.0025**	-0.0025**	-0.0025**
	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)
Δpart-time (1<h<35)	-0.0268***	-0.0269***	-0.0268***	-0.0268***	-0.0270***
	(0.0080)	(0.0079)	(0.0079)	(0.0080)	(0.0079)
Δunion	0.0831***	0.0832***	0.0837***	0.0827***	0.0828***
	(0.0108)	(0.0108)	(0.0108)	(0.0108)	(0.0108)
Δpublic sector	0.0069	0.0103	0.0113	0.0059	0.0101
	(0.0164)	(0.0164)	(0.0164)	(0.0164)	(0.0165)
Δprivate not-for-profit	-0.0267*	-0.0227	-0.0221	-0.0276*	-0.0225
	(0.0155)	(0.0155)	(0.0155)	(0.0155)	(0.0155)

*** p<0.01, ** p<0.05, * p<0.10. See detailed notes for Table 7. Results for $\Delta experience^3$, $\Delta experience^4$, and broad industry changes are not shown.