# The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015

Lawrence F. Katz

Harvard University and NBER

Alan B. Krueger[1]

Princeton University and NBER

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**Abstract:** To monitor trends in alternative work arrangements, we conducted a version of the Contingent Worker Survey as part of the RAND American Life Panel in late 2015. The findings point to a rise in the incidence of alternative work arrangements in the U.S. economy from 1995 to 2015. The percentage of workers engaged in alternative work arrangements – defined as temporary help agency workers, on-call workers, contract workers, and independent contractors or freelancers – rose from 10.7 percent in February 2005 to possibly as high as 15.8 percent in late 2015. Workers who provide services through online intermediaries, such as Uber or Task Rabbit, accounted for 0.5 percent of all workers in 2015. About twice as many workers selling goods or services directly to customers reported finding customers through offline intermediaries than through online intermediaries.

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## I. Introduction

Monitoring changes in the pace and nature of work relationships is crucial to understanding the forces affecting the U.S. economy and the quality of life of American workers. Yet the U.S. Bureau of Labor Statistics (BLS) had been unable to conduct the Contingent Work Survey (henceforth, the CWS), its main survey instrument for tracking alternative (or nonstandard) work relationships in the United States since 2005, up to the time this project was started in 2015. And they had no plans at that time to carry out another CWS supplement to the Current Population Survey (CPS). To fill this void, we conducted the RAND-Princeton Contingent Worker Survey (RPCWS), a version of the CWS, as part of the RAND American Life Panel (ALP) in October and November of 2015.[2] This paper provides an analysis of the data from the RPCWS. Our findings point to a possibly substantial rise in the incidence of alternative work arrangements for U.S. workers from 2005 to 2015, with a particularly sharp increase in the share of workers being hired through contract firms.

Prior evidence has shown mixed signs of a major change in the nature of U.S. employment relationships over the last decade or so. Bernhardt (2014), for example, concludes "it has been hard to find evidence of a strong, unambiguous shift toward nonstandard or contingent forms of work—especially in contrast to the dramatic increase in wage inequality." The General Accounting Office (2015) analyzes data from the General Social Survey (GSS) and CWS and finds that an expansive definition of alternative work arrangements, which includes part-time employees, increased from 35.3 to 40.4 percent of employment from 2006 to 2010. Using a definition of alternative work more closely aligned to CWS and more years of GSS data,

[2] Following our RPCWS survey in late 2015, the BLS obtained funding in 2016 to conduct a one-time update of the CWS as part of the May 2017 CPS. The May 2017 CWS results were not publicly released until June 2018 in BLS (2018), subsequent the completion and acceptance for publication of our paper.

Abraham, et al. (2017) find that alternative work rose from 19.2 percent of the workforce in 2002 to 20.4 percent in 2014, with hardly any change in the share of independent contractors.

A comparison of our survey results from the 2015 RPCWS to the 2005 BLS CWS indicates that the percentage of workers engaged in alternative work arrangements – defined as temporary help agency workers, on-call workers, contract company workers, and independent contractors or freelancers – rose from 10.7 percent in February 2005 to somewhere in the 12.6 to 15.8 percent range in late 2015. The increase over the last decade is particularly noteworthy given that the BLS CWS showed a more modest rise in the percent of workers engaged in alternative work arrangements from 1995 to 2005. Our survey results further show that about 0.5 percent of workers indicated in late 2015 that they were working through an online intermediary, such as Uber or Task Rabbit, consistent with estimates derived by Harris and Krueger (2015) from Google search data and Farrell and Greig (2016a) from bank deposits. Thus, the online gig workforce is relatively small compared to other forms of alternative work arrangements, although it is growing very rapidly.[3]

In the remainder of this paper we describe the survey we conducted through the RAND ALP in greater detail and document the changing nature of work relationships by demographic group and other characteristics of workers and jobs. We also analyze the wages, weekly earnings, and work hours of those who are employed in alternative work arrangements in comparison to those in traditional employment relationships, as well as the reported preferences for type of work (e.g., regularly scheduled hours, permanent job) of those engaged in alternative

[3] Farrell and Greig (2016b) report that the annual growth rate in the number of workers participating in the online platform economy slowed from over 400 percent in late 2013 and most of 2014 to a 102 percent rate in July 2016, which is still explosive growth.

work arrangements. We conclude with a discussion of the possible forces behind the recent rise in alternative work arrangements.

An addendum provides a comparison and reconciliation of our findings from the 2015 RAND survey with those from the 2017 CWS and provides an updated assessment of trends in U.S. alternative work arrangements. As explained in the addendum, a higher incidence of alternative work arrangements in the 2015 RPCWS than the CWS can largely be accounted for by three factors: (1) cyclical conditions (i.e., a tighter labor market in 2017 than 2015); (2) differences in survey methods (the use of self-responses only in the RPCWS vs. half the responses being from proxy respondents in the CPS CWS); and (3) sampling issues with respect to the RAND web panel which generated an apparent oversample of multiple job holders in the RPCWS. After adjusting for these factors, the RPCWS suggests a 1-2 percentage point increase in the share of workers in alternative work from 2005 to 2015, instead of the 5 point upper-bound increase reported in this paper.

## II. The RAND-Princeton Contingent Work Survey

In the summer of 2015 we contracted with the RAND Institute to implement a standalone survey of alternative work arrangements to individuals in its American Life Panel on our behalf. The core of the questionnaire was based on the BLS's CWS. The BLS's CWS only collects information about alternative work arrangements for each individual's *main* job, and we sought to follow this practice. The CWS also imposes a hierarchical skip logic (e.g., if a worker is on a temporary help or on-call job, she is not asked whether she is a freelancer) that we did not follow (i.e., we asked workers on temporary help and on-call jobs if they were independent contractors or freelancers) to gather more complete information on work arrangements. Nevertheless, we

impose the BLS's classification hierarchy in our analysis below to make the results are as comparable as possible.[4] We augmented the survey to include questions on whether workers sold services or goods directly to customers, and, if so, whether they worked through an intermediary, such as Avon or Uber. A copy of the questionnaire is posted online and can be downloaded from https://alpdata.rand.org/index.php?page=data&p=showsurvey&syid=441.

The survey was conducted online between October 19, 2015 and November 4, 2015. A total of 6,028 subjects were invited to fill out the questionnaire, and a total of 3,850 completed the questionnaire, for a response rate of 63.9 percent. The ALP sample was recruited using a compilation of methods, including a group recruited for the University of Michigan Internet panel, a random digit dial sample, and a snowball sample.[5] RAND developed and provided a set of survey weights to align the sample to the Current Population Survey (CPS) according to age, gender, race/ethnicity, education and household income groups.[6] We further adjusted the weights to account for the over-representation of self-employed workers in the ALP.

One possible concern is that the BLS CWS was conducted in February of each year, while our RPCWS was conducted in October and November. However, we have examined historical CPS data and found no evidence of systematic seasonality between February and October or November in the share of workers who are self-employed or multiple jobholders. Historical BLS establishment survey data indicate modestly greater seasonality in temporary

[4] One area where we deviated from the BLS CWS is that our question about day labor did not preface the question by saying, "Some people get work by waiting at a place where employers pick up people to work for a day." Instead, we simply asked the second part of the question, "Were you a DAY LABORER last week?" Consequently, our question was probably overly inclusive relative to the BLS CWS. To maintain comparability, we exclude day laborers from the group of on-call workers in both the RPCWS and BLS CWS. Fortunately, day laborers are a very small group in the BLS data, so the results are not meaningfully affected.

[5] The RAND ALP sample is described here: https://alpdata.rand.org/index.php?page=panelcomposition.

[6] The RAND ALP weighting procedures are described at: https://alpdata.rand.org/index.php?page=weights.

help services employment than in total payroll employment.[7] The overall patterns suggest that seasonality is unlikely to noticeably distort the observed pattern in alternative work arrangements when we compare the CPS and RAND surveys. Another difference between the surveys we address below is that half of the respondents in past CPS CWS surveys were proxy respondents, whereas everyone in the RPCWS responded for themselves.

Column 1 of Table 1 reports descriptive statistics of workers based on the October 2015 CPS as a benchmark against which to assess the RAND ALP sample of workers.[8] Corresponding estimates from the RPCWS are presented in the next three columns. The second column provides unweighted estimates, the third column provides estimates using the weights RAND provided, and the fourth column (labeled "Alt. Weight") provides estimates where we adjusted the RAND sample weights to down weight the self-employed. Throughout the remainder of the paper we emphasize results using the adjusted weights. In some cases, we also report results weighted by the original RAND sample weights for comparison.

Although the weighted RPCWS sample is a bit younger, on average, it is broadly similar to the U.S. workforce as represented by the October CPS.[9] The RPCWS sample is about equally likely to work part-time as the CPS sample, but about 8 percentage points more likely to hold more than one job (5.2 percent versus 13.1 percent). The weighted industry and occupation distributions of the two samples are similar, however, even though these variables were not used

[7] The temporary help agency share of employment may be exaggerated by up to about 7 percent in October and November versus February because of seasonal factors.

[8] Both the CPS and RPCWS samples in Table 1 are limited to those who worked in the survey reference week.

[9] The RPCWS sample consists of individuals who are age 18 and older, whereas the CPS sample consists of those age 16 and older.

in the construction of sample weights. Nevertheless, the RPCWS sample members reported considerably higher weekly earnings than the CPS respondents.

The comparisons of the sample summary statistics for the RWCPS and October CPS raise potential concerns about the representativeness of the RWCPS respondents relative to the CPS. To probe the robustness of our conclusions, we take steps to ensure that the particular nature of the RAND ALP sample is not driving our main conclusions, such as checking the sensitivity of our findings to dropping multiple jobholders. In the addendum, we explore the robustness of our findings to further adjusting the RAND sampling weights to also take into account the higher rate of multiple job holding in the RWCPS than in the October CPS.

## III. Basic Findings on the Incidence of Alternative Work Arrangements

Table 2 reports the percentage of individuals who were employed in an alternative work arrangement based on the 1995 and 2005 CPS CWS and our 2015 RAND survey.[10] (The sum of the alternative work categories does not necessarily equal the figure in the first row because of rounding and because a small number of individuals are both on-call and contract workers in the BLS CWS.) "Independent Contractors" are individuals who report they obtain customers on their own to provide a product or service as an independent contractor, independent consultant, or freelance worker. "On-Call Workers" report having certain days or hours in which they are not at work but are on standby until called to work. "Temporary Help Agency Workers" are paid

[10] The CPS CWS tabulations are weighted by the CWS supplement weight.

by a temporary help agency. "Workers Provided by Contract Firms" are individuals who worked for a company that contracted out their services during the reference week.[11]

The CPS CWS figures in Table 2 (and throughout the rest of the paper) were computed to be as comparable as possible to the RPCWS sample. Most importantly, in both samples, we excluded the small number of day laborers from the alternative work category and we imposed the sample restriction that individuals must have worked in the survey reference week. Nevertheless, our CPS CWS tabulations are close to the BLS published numbers for 1995 and 2005, and they match exactly if we do not impose these restrictions.[12]

The RPCWS data indicate a significant rise in the incidence of alternative work arrangements from the 10.7 percent share in the CPS CWS in 2005. Using the weights that RAND provided, 17.2 percent of all workers were employed in alternative work arrangements in 2015, although that figure is probably overstated because of the over representation of self-employed workers in the ALP sample. If we instead use the Alternative Weights, which down weight the self-employed to match the October 2015 CPS, the figure is 15.8 percent, still indicating a substantial rise (and, as expected, the share of independent contractors is most notably affected by the alternative weights). Thus, using the alternative weights, we conclude that the share of workers in alternative work arrangements in their main job increased by 5.1 percentage points (or by nearly 50 percent) from 2005 to 2015. In the addendum, we show that if we further adjust the RPCWS sampling weights to account for the higher incidence of multiple job holding than in the CPS, then we find that the overall share of workers in alternative work

[11] In the published CPS CWS tabulations, contract workers are further restricted to those "who are usually assigned to only one customer and usually work at the customer's worksite." We do not impose this restriction in our tabulations of the BLS CWS or RPCWS.

[12] The BLS published figures are from http://www.bls.gov/schedule/archives/all_nr.htm#CONEMP.

arrangements to be 13.7 percent in October 2015 indicating a more modest increases of 2.9 percentage points (27 percent) from 2005 to 2015.

Table 2 further indicates that all four categories of nonstandard work increased from 2005 to 2015. Independent contractors continue to be the largest group (8.4 percent in 2015), but the share of workers in the three other categories nearly doubled, from 4.0 percent in 2005 to 7.3 percent in 2015. The fastest growing category of nonstandard work involves contracted workers. The percentage of workers who report that they worked for a company that contracted out their services in the preceding week rose from 1.4 percent in 2005 to 3.1 percent in 2015.[13] Because of the concern previously noted that the RAND sample over represents multiple jobholders, who possibly could be more likely to report contract work, in the bottom of Table 2 we exclude multiple jobholders. Even in this restricted sample there was still a notable rise in the percentage of workers who were contracted out from 1.3 percent in 2005 to 2.0 percent in 2015. Alternatively, as shown in the addendum, if we reweight the RPCWS to account for the higher rate of multiple job holding, we similarly find a large rise in contracted out workers from 1.4 percent in 2005 to 2.5 percent in 2015. The different adjustments for the over-representation of multiple job holders in the RPCWS suggest that a sharp rise in contracted out workers is a robust finding.

About half of the respondents in the CPS CWS were proxy respondents (51.1 percent in 1995 and 50.1 percent in 2005), whereas all participants in the RPCWS self-responded on their own behalf. The difference in survey procedures could influence the comparison between CPS

[13] Goldschmidt and Schmieder (2017) document a large rise in domestic outsourcing ("contracting out") in Germany as well since the 1990s, with a large growth of contracted out workers being employed by business service firms and temporary help agencies. Song et al. (2019) find related evidence for the United States of an increase in worker sorting across firms by (permanent) wage levels, a pattern that is consistent with a rising reliance on contracting out of low-wage work by many firms.

CWS and RPCWS. Proxy respondents were about 2 percentage points *less* likely to report being in an alternative work arrangement than were self-respondents in both the 1995 and 2005 CPS CWS surveys. It is not clear if the survey mode has a causal effect on responses, or if the differences between proxy respondents and self-responders in the CPS reflect selection with self-responders being more likely to be engaged in an alternative work arrangement (perhaps because they are more likely to work from home, and therefore to self-respond as self-employed when an interviewer visits their home or calls). The 2 percentage point differential persists when we control for respondents' educational attainment, experience, race and sex in a linear probability model. If the 2 percentage point differential is interpreted as a mode effect, then the fact that half of CPS respondents are proxy respondents could account for 1 percentage point of the 5 percentage point rise in the share of workers in alternative work between the 2005 CPS CWS and 2015 RPCWS, or 20 percent of the increase in alternative work over the last decade. This calculation is likely to provide an upper-bound estimate of the impact of survey mode since self-respondents may truly be more likely than proxy respondents to be engaged in alternative work.

A lower-bound estimate of the share of workers employed in alternative work arrangements in 2015 can be derived by combining the proposed upper-bound adjustment for survey mode of 1 percentage point with an adjustment for the greater seasonality of temporary help agency employment of 0.1 percentage point (7 percent of the 1.6 percentage point share in the 2015 RWCPS) and with 2.1 percentage point adjustment from the addendum for the over-sampling of multiple job holders. The overall 3.2 percentage point downward adjustment of the RWCPS share to increase comparability with the CWS implies a lower-bound estimate of the growth in the alternative work arrangements share from 10.7 percent of all workers in 2005 to 12.6 percent in 2015.

## IV. Corroborating Evidence from the Internal Revenue Service

The rise in alternative work arrangements evident in Table 2, especially the increase in the share of workers who indicated that they were "working or self-employed as an independent contractor, an independent consultant, or a freelance worker" from 6.9 percent in 2005 to 8.4 percent in 2015, is a stark contrast to the declining trend in the share of employees who indicate that they are self-employed based on published CPS data. If self-employment were truly waning, one would not expect to find a rise in independent contractors, and that trend was even evident (although milder) in the 1995 and 2005 CWS as well.

Figure 1 provides some further evidence on this issue by utilizing Internal Revenue Service (IRS) data on the number of tax returns that were filed containing Schedule C (Form 1040), which is used to report income (or losses) that individuals earn from operating a business or practicing a profession as a sole proprietor. In other words, individuals file Schedule C with the IRS to report income related to self-employment activities. Figure 1 reports the number of Schedule C filers relative to total employment from the CPS each year from 1979 through 2014 as well as the number of unincorporated self-employed individuals according to the CPS relative to total CPS employment, and the total number of self-employed individuals according to the CPS relative to total CPS employment since 2000.[14] (Incorporated self-employed individuals should file a corporate income tax form, not Schedule C.) It is clear that the IRS and CPS data show divergent trends in the number of self-employed individuals. Although the proportion of

[14] The number of Schedule C filers is from Statistics of Income publication 1304 Table 1.3 available at https://www.irs.gov/uac/soi-tax-stats-individual-statistical-tables-by-filing-status#_grp1.

employees who were self-employed was similar in the CPS and IRS data in 1979, the CPS data show a declining trend while the IRS data show a rising trend.

There also is an upward trend in the number of tax returns that contain 1099-MISC income relative to total CPS employment, from 11.3 percent in 2000 to 12.5 percent in 2012, based on our tabulations of data from the U.S. Department of Treasury (2015) and BLS. Abraham, et al. (2018) report a rising trend since 2000 in several administrative measures of self-employment from tax and Census data, including a steady secular increase in self-employed non-employers (individuals with over $1,000 in business income but no employees) as a percent of employment. And Jackson, Looney and Ramnath's (2017) study of IRS data finds that "essentially all of the increase in self-employment is due to increases in sole proprietors who have little or no business-related deductions, and who therefore appear to almost exclusively provide labor services (i.e. the contractors or misclassified workers)."

We interpret the IRS data as consistent with the upward trend from 1995 to 2015 in the share of workers who reported themselves as either working or being self-employed as an independent contractor, independent consultant, or freelancer in the BLS CWS and RPCWS. Understanding the reasons underlying the divergent trends between the IRS and CPS data on self-employment should be a priority for future research.[15]

[15] A possible reconciliation is that the CPS self-employment measure only covers main jobs. If a growing share of individuals have self-employment income from secondary jobs or activities but not from main jobs or from part-year jobs, then one could see a rise in the share of tax filers reporting Schedule C income and receiving 1099s even if self-employment in their main jobs is not increasing. But the increase in the share of individuals reporting to be independent contractors in their main jobs in the BLS CWS and RPCWS does not appear consistent with a decline in self-employment in main jobs in the standard monthly CPS. Some independent contract work and freelancing in main jobs does not appear to be reported as self-employment in the standard class of worker questions in the CPS. Abraham et al. (2018) make initial progress on these issues using linked household survey and administrative tax data for the same individuals and find a notable increase in self-employment activity reported to the IRS but not in the CPS.

## V. Characteristics of those in Alternative Work Arrangements

Table 3 reports the characteristics of workers in alternative work arrangements in 1995, 2005, and 2015. Thus, the sample characteristics displayed in Table 3 are limited to employed respondents classified as a temporary help worker, on-call worker, contract company worker, or an independent contractor or freelancer in their main job.

The share of workers in alternative work arrangements who also report themselves as self-employed has declined from roughly 55 percent in 1995 and 2005 to under half (48 percent) in 2015, reflecting the growth in the share of alternative workers employed by contract firms or temporary help firms. There also has been a notable rise in the share of workers in alternative work arrangements for women. Furthermore, the share of alternative workers who are college graduates, multiple jobholders, or Hispanics have increased.

Construction and professional and business services were the two most prevalent industry groups among those in alternative work in 1995 and 2005, but the education and health services industry has surpassed them over the last decade. More than one in five workers in an alternative work arrangement was working in education or health services in 2015. Together, professional and business services, education and health, and other services represented half of all of those engaged in an alternative work arrangement. Although the manufacturing sector has received much attention related to alternative work arrangements, it accounts for only 6.2 percent of all those engaged in alternative work, and just 2.6 percent of workers who are contracted out.

Workers in alternative work arrangements are spread throughout the occupational distribution, with sales being the largest group in 2015. The occupational mix of alternative workers has become more diffuse since 2005. And a comparison of the fourth columns of

Tables 1 and 3 indicates that alternative workers work fewer hours, are more likely to be part time, and have lower weekly earnings than workers in traditional employment relationships.

## VI. Incidence of Alternative Work Arrangements

Table 4 reports the percentage of workers in various categories that are employed in alternative work arrangements in their main job.[16] For example, 6.4 percent of those aged 16 to 24 were employed in an alternative work arrangement in 2015, while 14.3 percent of those aged 25-54 and 23.9 percent of those aged 55-75 were employed in an alternative work arrangement. The 1995 and 2005 CWS also show a positive age gradient in the incidence of alternative work. Interestingly, the rise in the incidence of alternative work has been sharpest for older workers (those 55 to 75 years old) and strong for prime age workers (those 25 to 54 years old) as well. But there was no change in the percentage of workers aged 16-24 who were employed in an alternative work arrangement in their main job from 2005 to 2015, despite the large growth for all workers. Thus, the positive age gradient in alternative work has become steeper.

Table 4 shows a notable rise in the likelihood of working in an alternative work arrangement for women. From 2005 to 2015, the percentage of women who were employed in an alternative work arrangement almost doubled, rising from 8.9 percent to 17.0 percent. The percentage increased by a more modest amount for men, from 12.3 percent to 14.7 percent. Women are now more likely than men to be employed in an alternative work arrangement. The contrasting trends were particularly stark for the independent contractor category.

[16] The estimates in Table 4 for subgroups should be interpreted with some caution because of the small sample sizes in the RPCWS for many subgroups.

Workers in all educational categories experienced a rise in the likelihood of working in an alternative work arrangement. Alternative work arrangements were most prevalent in the construction and professional business services industries in 2005, but the growth of alternative work arrangements has been greater in previously lagging sectors including transportation and warehousing, information and communications, education and health care, agriculture, and public administration. Figure 2 illustrates trends from 1995 to 2015 in the share of workers in alternative work arrangements by key industries. Occupations experiencing large increases in nonstandard work from 2005 to 2015 include computer and mathematical, community and social service, education, healthcare, legal, protective service, personal care, and transportation jobs.

*Is Alternative Work Growing in High- or Low-Wage Sectors?*

To assess whether alternative work is growing in higher or lower wage sectors of the labor market, we used a regression approach. We first used the 2005 CPS Merged Outgoing Rotation Groups (MORG) file to estimate a "kitchen sink Mincer regression" of the form:

$$Y_i = \mathbf{X}_i b + e_i ,$$

where $Y_i$ is individual "i's" log hourly wage rate, $\mathbf{X}_i$ is a vector of predictor variables including years of education, years of potential experience, potential experience squared, and dummy variables indicating race, Hispanic ethnicity, sex, industry, and occupation. This regression is meant for descriptive purposes only, and the 2005 CPS MORG sample was used to estimate the regression because it is in the middle of the three surveys. We determined quintile cutoffs for predicted wages based on the distribution of $\hat{Y}_i = \mathbf{X}_i b$ using the full 2005 MORG file.

We then predicted $\hat{Y}_i$ for each individual in the 1995 and 2005 CPS CWS and the 2015 RPCWS using the individual's characteristics $\mathbf{X}_i$ and the vector of regression coefficients b

estimated from the 2005 MORG file. We used $\hat{Y}_i$ to assign individuals to a quintile of the predicted wage distribution based on the 2005 quintile wage cutoffs, and computed the weighted probability that an individual in the quintile was employed in an alternative work arrangement.

To carry out this exercise, we made one further adjustment to the 2015 RAND sample weights. We adjusted the sample weights so that the fractions of workers and self-employed workers in each predicted quintile matched the fractions in each predicted quintile from the October 2015 CPS. This reweighting was necessary because the RPCWS data under-represented the proportion of workers and over-represented the proportion of self-employed workers predicted to be in the lower quintiles, even though the initial RAND weights did a reasonable job of approximating the distribution of average worker characteristics as shown in Table 1.

Figure 3 reports the results of this exercise. To make the patterns easier to detect, in addition to showing the percentage of workers in each predicted wage quintile who are employed in an alternative work arrangement, the figure also shows the OLS regression line through the five percentages each year. Figure 3 shows that the incidence of alternative work is greater among workers who are predicted to have higher wages. The rise in the incidence of alternative work arrangements from 1995 to 2015 is similar across the predicted wage distribution as indicated by the almost parallel upward shifts in the regression lines from 1995 to 2005 to 2015.

Katz and Krueger (2016) present the corresponding graphs for each category of alternative work arrangements, showing the percent of independent contractors, on-call workers, temporary help agency workers, and contracted-out workers by predicted wage quintile, respectively. Three patterns are notable. First, the upward sloping relationships found in Figure 3 are primarily due to independent contractors. Second, and not surprisingly, the likelihood that workers are employed in temporary help agency jobs and on-call jobs is higher in the lower

predicted-wage quintiles. Third, there was a rise in the likelihood of workers being contracted out to other firms for those in the highest predicted-wage quintiles, rendering a sharply upward sloping pattern by 2015. In 2015, workers with attributes and jobs associated with higher wages are the most likely to have their services contracted out. Indeed, the lowest predicted quintile-wage group did not experience a rise in contract work.

## VII. Online and Offline Intermediated Work

A major goal of our questionnaire was to provide the first nationally-representative survey-based estimates of the percent of workers working in what has been variously called "the gig economy," the "sharing economy," the "online platform economy," or the "on-demand economy." Our approach was to first ask workers: "On either your main job or a secondary job, do you do direct selling to customers?" We then followed up by asking about the nature of their direct selling activities. A total of 19.4 percent of U.S. employees responded that they were engaged in direct selling to customers on their job. The direct selling of goods or services to customers is widespread among U.S. workers, and it goes far beyond retail sales clerks.

Of those who engaged in direct selling, however, only 7 percent answered that they worked with an intermediary, such as Avon or Uber, in their direct selling activity. Among those workers who said they worked with an intermediary, about one-third said that the intermediary is online, such as Uber or TaskRabbit, and two-thirds reported that the intermediary is offline. Thus, only about 0.5 percent of all workers identify customers through an online intermediary. This figure, which requires many caveats (such as the ambiguity of the term "direct selling" and the small sample size) is nonetheless remarkably close to Harris and Krueger's (2015) estimate of 0.4 percent of the workforce based on the frequency of Google searches for terms related to

online intermediaries and to Farrell and Greig's (2016a) estimate of 0.6 percent of the working-age population (or approximately 0.4 percent of the workforce) based on the frequency of bank deposits from online work platforms. In addition, Jackson, Looney and Ramnath (2017) estimate from tax data that 0.7 percent of workers earned income during 2014 through an online platform.

## VIII. Wages and Hours

We can compare earnings and work hours of workers in alternative work arrangements and those in traditional employment.[17] The 2005 CWS collected earnings information from workers in contingent and alternative work arrangements in CPS rotation groups 1-3 and 5-7, and earnings of all employees in rotation groups 4 and 8.[18] Although we cannot distinguish between workers in alternative and traditional employment arrangements in rotation groups 4 and 8, because workers in alternative employment arrangements comprised only 10 percent of all workers in 2005, the vast majority of employees were in a traditional employment relationship. Thus, by assigning all employees in rotation groups 4 and 8 to the category of traditional employment and comparing them to workers identified in an alternative work arrangement in the other rotation groups, we only attenuate differences in earnings or hours by a small amount (approximately 10 percent).[19]

[17] See Goldschmidt and Schmieder (2017) and Dube and Kaplan (2010) for longitudinal evidence on the (approximately 10 percent) wage decline that security guards and janitors incur when they transition from direct employees to employees of business services firms in Germany and the United States, respectively.

[18] Earnings information was not collected for workers in a traditional employment relationship in rotation groups 1-3 and 5-7; and information on alternative work arrangements was not collected for workers in rotation groups 4 and 8. We exclude contingent workers who are not in alternative work arrangements in rotation groups 1-3 and 5-7.

[19] If $\theta$ is the proportion of workers in an alternative employment arrangement, the difference in mean earnings between workers in an alternative work arrangement and all workers will be $(1-\theta)$ times the difference in mean earnings between workers in an alternative work arrangement and workers in a traditional employment arrangement.

Another limitation of the CPS is that earnings are only available for the main job. For the RPCWS data, however, we collected separate information on earnings in the main job and all other jobs combined.

Table 5 presents wage regressions where the dependent variable is the natural logarithm of hourly earnings on the main job.[20] The first column reports results for a regression with the 2005 CWS data that only includes four dummy variables indicating each of the four categories of alternative work arrangements; the base group is all employees. The second column contains a standard Mincer wage regression (with controls for education, experience, race/ethnicity, and sex) augmented to include the alternative work arrangement dummies. The third column contains an augmented Mincer regression with the addition of 22 occupation dummy variables. Columns 4-6 present the corresponding regressions with the 2015 RPCWS data (although the base group consists exclusively of those in a traditional employment relationship).

Before conditioning on covariates, the 2005 and 2015 results are similar: freelancers and contract workers are paid more per hour than traditional employees, while temporary help and on-call workers are paid less. (We discount the positive but quite imprecise estimate for on-call workers in the RPCWS.) When we control for personal characteristics and occupation in the 2005 CWS, the penalty associated with working for a temporary help agency shrinks but remains significant and the other differentials become small and statistically insignificant. In the RPCWS, the estimates are less precise, but independent contractors continue to earn a positive hourly wage premium even after conditioning on personal characteristics and occupation. A positive hourly wage premium for independent contractors could reflect a compensating

[20] Hourly earnings were derived as weekly earnings (censored below $50 per week) divided by actual hours worked on the main job, and are censored below $1 per hour and above $1,000 per hour.

differential for lower benefits and the need to pay self-employment taxes. Given the imprecision of the estimates, we recommend caution in interpreting the estimates from the RPCWS.

Table 6 contains analogous regression results for the log of weekly earnings, and the pattern of results is clearer after conditioning on covariates. In the CWS, all of the categories of alternative work exhibit a large negative weekly wage differential relative to all employees except contract workers, and in the RPCWS, all of the alternative work categories, including contract workers, are paid less per week than workers in a traditional employment relationship conditional on the listed personal characteristics and occupation dummies. Independent contractors, for example, earn 33 log points less per week than employees with similar characteristics, even though they earn 16 log points more per hour. Appendix Table A presents regressions for the log of hourly and weekly wages combining earnings and hours on the main job and any secondary jobs for the RPCWS sample, with similar results to those for the main job shown in Tables 5 and 6. Obviously, the contrast between the hourly and weekly wage differentials in the main job for alternative vs. traditional workers (mechanically) reflects lower weekly hours in the main job for those in alternative work arrangements.

Table 7 reports regressions where the dependent variable is the log of hours worked on all jobs. The results show a consistent pattern with workers in alternative work arrangements working considerably fewer hours per week than traditional employees.[21] The gap in average work hours is largest for on-call workers and smallest for contract workers, although it appears to be a ubiquitous feature of working in an alternative employment arrangement.

[21] The lower weekly hours for alternative workers shown in Table 7 is quite similar when limiting the analysis to the main job, as can be seen by taking the differences between the coefficients on alternative work category indicators for log weekly wages in Table 6 and the corresponding coefficients for log hourly wages in Table 5.

An important question to address is whether work hours are typically lower for workers in alternative work arrangements by choice, or because these workers often face "hours constraints" that limit their work hours. We can compare the frequency with which workers in alternative work arrangements and traditional jobs report that they are working involuntarily part-time. We did not ask about part-time for economic reasons in the RPCWS, but the information is available from the 2005 CWS. Workers are classified as part-time for an economic reason if they worked less than 35 hours in the survey week in all jobs combined and cited a reason such as slack work or unfavorable business conditions, inability to find full-time work, or seasonal declines in demand as the reason for their part-time hours. Workers in alternative work arrangements are more than twice as likely as other workers to be classified as part-time for economic reasons (7.6 percent versus 3.3 percent). On-call and temporary help agency workers were the most likely to be classified as part-time for economic reasons (13.2 percent and 12.6 percent, respectively), while independent contractors and contracted-out workers were less likely to be so classified (6.0 percent and 6.5 percent, respectively), but all four alternative groups were more likely to be classified as part-time for economic reasons than were traditional employees.

## IX. Worker Satisfaction with Work Arrangements

The CWS asked workers who identified themselves as paid by a temporary help agency, on a temporary job, on-call workers, and independent contractors whether they would prefer a traditional employment arrangement over their current arrangement. The specific questions were tailored to the particular work arrangement. Temporary help agency employees were asked, "Would you prefer a job with a different type of employer?" All workers who reported that they

were on a temporary job – including those employed by a temporary help agency – were asked, "Would you prefer to have a job that is permanent rather than temporary?"[22] On-call workers were asked, "Would you prefer a job where you worked regularly scheduled hours?" And workers who were self-employed as an independent contractor or freelancer were asked, "Would you prefer to work for someone else rather than being an independent contractor?" (Workers who were contracted out to provide services to another company were not asked whether they would prefer to work directly for that other company.) The response set in each case was "no," "yes," "don't know," "refused," and "depends".

We asked a similar, though not identical, set of questions in the RPCWS. Temporary help agency workers on temporary jobs and on-call workers were asked the identical questions as in the CWS. Workers who were self-employed as an independent contractor or a freelancer were asked, "Would you prefer to work for someone else rather than being self-employed, an independent contractor or a freelance worker?" The response set was either "yes" or "no."

Table 8 provides a comparison of the 1995 and 2005 CWS and 2015 RPCWS data of workers' preferences concerning their work arrangement. We restricted both samples to workers who worked in the survey reference week. (We were able to exactly replicate the published CWS results without this restriction.) Because the questions and response set were close but not identical, and the sample sizes for the RPCWS were small, the results should be taken as suggestive.[23] The general pattern found in the earlier 1995 and 2005 CWS seems to hold. A

[22] A temporary job was defined as a job that "lasts only for a limited time or until the completion of a project." Not surprisingly, a large majority of temporary help agency employees reported that they were on a temporary job.

[23] The sample sizes for the 2015 RPCWS are 18 temporary help employees on temporary jobs, 57 on-call workers, and 209 independent contractors and freelancers.

large majority of temporary help agency employees on temporary jobs would prefer a permanent job and almost half of on-call workers would prefer a job with regularly scheduled hours.

The 1995 and 2005 CWS found that more than 80 percent of independent contractors and freelancers preferred their work arrangement to working for someone else, and a similar proportion responded likewise in the 2015 RPCWS.[24] It is possible that the CWS question prompts independent contractors and freelancers to reflect on the advantages of being their own boss, which elicits a favorable response, rather than the disadvantages of working fewer hours than workers in traditional employment relationships, which would elicit a less positive response. The results in Table 8 suggest substantial stability over time in workers' stated preferences regarding their work arrangements, despite the significant growth in the share of workers in alternative work arrangements over the last decade. More than 80 percent of independent contractors and freelancers continue to indicate they prefer such an arrangement to being an employee.[25] In contrast, the vast majority of those employed by temporary help agencies on temporary jobs would prefer a permanent job, and almost half of on-call workers would rather have regularly scheduled hours. Thus, it appears that many workers who become independent contractors and freelancers are sorting into those work relationships based, in part, on their preference for being their own boss, while many (and possibly most) workers in on-call and temporary help jobs have a preference for more steady employment with regular hours.

[24] Recall that allowable responses were broader in the CWS (including refused and "it depends"). If we look at the percent of independent contractors who said they would prefer to work for someone else, the figures were 9.8 percent in 1995, 8.8 percent in 2005 and 16.3 percent in 2015.

[25] A higher share of independent contractors and freelancers whose characteristics place them in the highest predicted wage quintiles preferred their arrangements over traditional employment, but upwards of 70 percent of those predicted to be in the bottom two quintiles still expressed a preference for their arrangement over employment.

## X. Conclusion

Many possible factors could have contributed to the large increase in the incidence of alternative work arrangements for American workers from 2005 to 2015 that we have documented in this paper. Worker, or supply-side, factors include shifts in workforce composition to groups with a greater preference for alternative work arrangements or increased desire for workplace flexibility. Firm, or demand-side, factors include potential growing efficiency gains to contracting out and increased rent shifting incentives. Although a fuller evaluation must await further research, we provide an initial evaluation of leading explanations.

The first explanation is that alternative work is more common among older workers and more highly educated workers, and the workforce has become older and more educated over time. A shift-share analysis, however, indicates that shifts in the age and education distribution of the workforce account for only about 10 percent of the increase in the percentage of workers employed in alternative work arrangements from 2005 to 2015.[26] Other supply-side factors, such as a possible increase in demand for flexible work hours (perhaps supported by the increased availability of health insurance as a result of the Affordable Care Act) and increased concerns about work-life balance may also have contributed (Mas and Pallais 2017). It is unlikely that supply-side factors account for the lion's share of the rise in alternative work arrangements since the rise in employees who are hired out to other firms through contract firms or temporary help agencies accounts for roughly half of the overall rise in the share of employment in alternative work arrangements in the last decade.

[26] We divided the sample into 30 age-by-education cells. If we assign the fraction of workers in each cell that was employed in an alternative work arrangement in 2005 based on the BLS CWS and allow the share of workers in each cell to change according to the observed changes between the 2005 CPS and 2015 CPS, we predict that the overall share in workers employed in alternative work arrangements would have risen by 0.5 percentage point, compared with the 5.1 percentage point increase that was actually observed. We reach a similar conclusion using the 2015 age-by-education distribution from the RPCWS.

Second, technological changes that lead to enhanced monitoring, standardize job tasks, and make information on worker reputation more widely available may be leading to greater disintermediation of job tasks. Coase's (1937) classic explanation for the boundary of firms rested on the minimization of transaction costs within firm-employee relationships. Technological changes may be reducing the transaction costs associated with contracting out job tasks, however, and thus supporting the disintermediation of work. Furthermore, improvements in information technology and thicker markets for contractors increasingly mean large organizations may reap efficiency gains and cost savings from hiring specialized contractors for non-core activities (such as janitorial services, food services, information technology, accounting, and legal services) rather than managing such activities in-house.

Third, fairness norms and morale considerations often motivate firms to share rents with their employees and create wage compression pressures within firm boundaries. And fairness considerations seem to apply much more to traditional incumbent employees than to new hires or contractors (Kahneman, Knetsch, and Thaler 1986). Market and other forces leading to rising educational wage differentials and rising wage inequality increase the costs to firms of wage compression and of sharing rents with low-wage workers. Thus, rising wage inequality itself may have increased incentives to contract out low-wage workers and to concentrate high- and low-wage workers into different organizations. Abraham and Taylor (1996) argue that contracting out is often sought because firms seek to restrict the pool of workers with whom rents are shared, as well as to reduce the volatility of core employment. A rise in inter-firm variability in profitability is thus consistent with a greater desire for contracting out to reduce rent sharing (although increased contracting out could also have contributed to the rise in inter-firm variability in profits). Growing product market volatility can increase contracting out since

layoffs of incumbent traditional employees who typically have an implicit promise of a long-term relationship appear to be costlier to a firm's reputation as an employer than are changes in the use of contractors (Halonen-Akatwijuka and Hart 2017).

Relatedly, Weil (2014) argues that competitive pressures have increased firm demands for "flexibility" and are causing a "fissuring" of the workplace, with workers increasingly being misclassified as contract employees and work being redefined to make greater use of contract workers and independent contractors. Furthermore, Song et al. (2019) find a rising correlation of firm wage premiums with worker skills and worker wage fixed effects (the permanent wage component that persists across employers). These patterns suggest that high-rent firms are increasingly contracting out standardized and lower-wage work and restricting rent sharing to a smaller core of highly compensated workers.

Finally, it is plausible that the dislocation caused by the Great Recession in 2007-2009 may have caused many workers to seek alternative work arrangements when traditional employment was not available. To the extent this is the case then one might expect a return to a lower percentage of workers employed in alternative work arrangements over time, as the effects of the recession continue to fade. Katz and Krueger (2017) find that workers who suffer a spell of unemployment have a greatly elevated likelihood of transitioning to an alternative work arrangement but also find that cyclical labor market conditions are unlikely to explain most of the recent shift from traditional to alternative work arrangements.

Regardless of the explanation for the growth in alternative work, our findings indicate that workers in alternative work arrangements earn considerably less per week than do regular employees with similar characteristics and in similar occupations. The earnings gap derives more from workers in alternative work arrangements working fewer hours per week than from a

gap in hourly earnings. A larger share of alternative workers are involuntary part-time workers compared with employees in traditional jobs, suggesting that many in alternative work arrangements may be "hours constrained." Most temporary help agency workers and a near majority of on-call workers would prefer permanent employment with regularly scheduled hours to their current situation. A majority of workers who are independent contractors or freelancers, however, apparently value the flexibility and independence that comes with being their own boss and report that they would prefer to work for themselves rather than for someone else.

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**Table 1**
**Characteristics of Employed Workers**

| (Percent of Employed Who Worked in Survey Week) | CPS Oct-2015 | RAND Oct/Nov-2015 Unweighted | Weighted | Alt. Weight | (Percent of Employed Who Worked in Survey Week) | CPS Oct-2015 | RAND Oct/Nov-2015 Unweighted | Weighted | Alt. Weight |
|---|---|---|---|---|---|---|---|---|---|
| Self-Employment | 9.6 | 13.3 | 11.6 | 9.6 | Occupation: | | | | |
| Median Age (Years) | 46.0 | 50.0 | 41.0 | 41.0 | Management | 11.4 | 13.3 | 12.6 | 12.6 |
| Mean Age (Years) | 46.1 | 48.3 | 42.6 | 42.5 | Business and Financial Operations | 4.8 | 7.9 | 7.9 | 7.9 |
| Female | 46.8 | 55.5 | 47.1 | 47.1 | Computer and Mathematical | 2.8 | 3.4 | 3.1 | 3.1 |
| Race/Ethnicity: | | | | | Architecture and Engineering | 2.1 | 2.1 | 2.0 | 2.1 |
| White | 79.1 | 80.6 | 76.1 | 75.9 | Life, Physical, and Social Science | 1.0 | 1.5 | 1.4 | 1.4 |
| African-American | 11.8 | 8.7 | 10.1 | 10.3 | Community and Social Service | 1.7 | 4.3 | 2.9 | 2.9 |
| Hispanic | 16.6 | 15.5 | 19.7 | 19.8 | Legal | 1.2 | 1.8 | 1.4 | 1.4 |
| Educational Attainment: | | | | | Education, Training, and Library | 6.0 | 8.8 | 6.6 | 6.7 |
| Bachelor's Degree or Higher | 36.3 | 48.5 | 35.4 | 35.5 | Arts, Design, Entertainment, Sports, and Media | 2.0 | 3.3 | 2.7 | 2.6 |
| Some College or Associate's Degree | 28.9 | 37.2 | 30.1 | 30.1 | Healthcare Practitioners and Technical | 6.1 | 6.0 | 5.9 | 6.0 |
| High School Graduate | 26.6 | 12.0 | 28.3 | 28.3 | Healthcare Support | 2.3 | 3.9 | 3.9 | 3.9 |
| Less Than High School Diploma | 8.3 | 2.3 | 6.2 | 6.1 | Protective Service | 2.1 | 1.9 | 2.8 | 2.8 |
| Multiple Jobholder | 5.2 | 14.3 | 13.2 | 13.1 | Food Preparation and Serving Related | 5.5 | 3.0 | 4.5 | 4.5 |
| In Labor Force (Percent of Population) | 62.7 | 62.8 | 67.5 | 67.5 | Building and Grounds Cleaning and Maintenance | 3.9 | 1.9 | 2.7 | 2.7 |
| Part-Time Employment (< 35 Actual Hours) | 25.2 | 26.2 | 24.2 | 23.5 | Personal Care and Service | 3.5 | 3.2 | 2.8 | 2.6 |
| Part-Time Employment: First Job (< 35 Actual Hours) | 26.4 | 29.0 | 27.0 | 26.2 | Sales and Related | 10.2 | 8.5 | 8.4 | 8.3 |
| Industry: | | | | | Office and Administrative Support | 12.0 | 13.2 | 11.7 | 11.8 |
| Agriculture, Forestry, Fishing, and Hunting | 1.5 | 1.0 | 1.6 | 1.5 | Farming, Fishing, and Forestry | 0.7 | 0.5 | 0.6 | 0.5 |
| Mining | 0.6 | 0.6 | 0.5 | 0.5 | Construction and Extraction | 5.2 | 1.5 | 2.8 | 2.6 |
| Utilities | 0.9 | 0.5 | 0.9 | 0.9 | Installation, Maintenance, and Repair | 3.5 | 1.8 | 2.8 | 2.8 |
| Construction | 6.6 | 3.1 | 4.1 | 3.9 | Production | 5.7 | 4.1 | 5.0 | 5.1 |
| Manufacturing | 10.6 | 7.3 | 8.6 | 8.8 | Transportation and Material Moving | 6.3 | 3.9 | 5.4 | 5.5 |
| Wholesale Trade | 2.4 | 2.6 | 2.2 | 2.2 | Median Actual Hours Worked: Total | 40.0 | 40.0 | 40.0 | 40.0 |
| Retail Trade | 11.0 | 8.7 | 9.6 | 9.6 | First Job | 40.0 | 40.0 | 40.0 | 40.0 |
| Transportation and Warehousing | 4.4 | 3.8 | 5.4 | 5.4 | Second Job | 10.0 | 10.0 | 10.0 | 10.0 |
| Information | 2.0 | 3.3 | 3.6 | 3.7 | Mean Actual Hours Worked: Total | 38.8 | 38.5 | 39.4 | 39.6 |
| Financial Activities | 6.7 | 9.2 | 9.2 | 9.2 | First Job | 38.1 | 36.7 | 37.5 | 37.8 |
| Professional and Business Services | 11.9 | 14.5 | 13.4 | 13.2 | Second Job | 13.3 | 12.9 | 14.0 | 14.1 |
| Education and Health Services | 22.7 | 26.0 | 22.4 | 22.5 | Median Weekly Earnings: First Job ($) | 700.0 | 875.0 | 875.0 | 875.0 |
| Leisure and Hospitality | 9.1 | 5.4 | 6.0 | 6.0 | Mean Weekly Earnings: First Job ($) | 895.4 | 1014.8 | 1016.7 | 1019.6 |
| Other Services (Excluding Public Administration) | 5.0 | 5.2 | 4.8 | 4.7 | | | | | |
| Public Administration | 4.7 | 8.7 | 7.7 | 7.8 | Number of Observations | 58,629 | 2,194 | 2,194 | 2,194 |

Note: October 2015 Current Population Survey data are weighted using final weights except for weekly earnings, which are weighted using outgoing rotation group weights. 2015 RPCWS data are weighted using (1) weights developed by RAND and (2) an alternative set of weights that accounts for the over-representation of self-employed workers in the ALP sample of respondents relative to the October 2015 Current Population Survey.
Source: October 2015 Current Population Survey; 2015 RPCWS.

**Table 2**
**Alternative Work Arrangements**

| (Percent of Employed Who Also Worked During Survey Week) | CPS Feb-1995 | CPS Feb-2005 | RAND Oct/Nov-2015 Weighted | RAND Oct/Nov-2015 Alt. Weight |
|---|---|---|---|---|
| Alternative Work Arrangements | 10.0 | 10.7 | 17.2 | 15.8 |
| Independent Contractors | 6.3 | 6.9 | 9.6 | 8.4 |
| On-Call Workers | 1.6 | 1.7 | 2.8 | 2.6 |
| Temporary Help Agency Workers | 1.0 | 0.9 | 1.6 | 1.6 |
| Workers Provided by Contract Firms | 1.3 | 1.4 | 3.3 | 3.1 |
| | | | | |
| Workers Provided by Contract Firms (Single Jobholders) | 1.2 | 1.3 | 2.1 | 2.0 |
| Number of Observations | 55,453 | 42,802 | 2,194 | 2,194 |

Note: Workers provided by contract firms can be assigned to more than one customer and do not have to work at the customer's worksite. 1995 and 2005 CWS data are weighted using supplement weights. 2015 RPCWS data are weighted using (1) weights developed by RAND and (2) an alternative set of weights that accounts for the over-representation of self-employed workers in the ALP sample of respondents relative to the October 2015 Current Population Survey.

Source: 1995 and 2005 Current Population Survey CWS; 2015 RPCWS.

**Table 3**
**Characteristics of Workers in Alternative Work Arrangements**

| (Percent) | CPS Feb-1995 | CPS Feb-2005 | RAND Oct/Nov-2015 Weighted | RAND Oct/Nov-2015 Alt. Weight |
|---|---|---|---|---|
| Self-Employment | 53.9 | 55.8 | 53.0 | 47.5 |
| Median Age (Years) | 40.0 | 44.0 | 47.0 | 45.0 |
| Mean Age (Years) | 41.4 | 44.0 | 46.8 | 46.5 |
| Female | 37.0 | 38.6 | 50.3 | 50.8 |
| Race/Ethnicity: | | | | |
| White | 88.3 | 86.0 | 80.0 | 79.2 |
| African-American | 8.0 | 8.1 | 8.8 | 9.3 |
| Hispanic | 7.3 | 11.9 | 19.3 | 19.6 |
| Educational Attainment: | | | | |
| Bachelor's Degree or Higher | 29.9 | 32.3 | 37.7 | 38.4 |
| Some College or Associate's Degree | 29.0 | 29.7 | 30.6 | 30.1 |
| High School Graduate | 29.5 | 27.1 | 25.6 | 25.4 |
| Less Than High School Diploma | 11.6 | 10.8 | 6.1 | 6.0 |
| Multiple Jobholder | 8.0 | 7.4 | 32.0 | 33.0 |
| Part-Time Employment (< 35 Actual Hours) | 38.0 | 35.2 | 47.7 | 46.2 |
| Part-Time Employment: First Job (< 35 Actual Hours) | 40.0 | 36.9 | 53.9 | 52.4 |
| Industry: | | | | |
| Agriculture, Forestry, Fishing, and Hunting | 2.2 | 1.5 | 4.4 | 4.1 |
| Mining | 0.5 | 0.3 | 0.5 | 0.5 |
| Utilities | 0.2 | 0.5 | 0.3 | 0.4 |
| Construction | 16.9 | 18.0 | 7.0 | 6.7 |
| Manufacturing | 5.1 | 4.7 | 5.9 | 6.2 |
| Wholesale Trade | 2.7 | 2.3 | 0.6 | 0.7 |
| Retail Trade | 7.1 | 7.1 | 6.3 | 6.4 |
| Transportation and Warehousing | 4.3 | 4.3 | 5.4 | 5.4 |
| Information | 3.1 | 2.1 | 3.6 | 3.8 |
| Financial Activities | 7.4 | 7.8 | 6.4 | 6.2 |
| Professional and Business Services | 25.1 | 23.4 | 20.7 | 20.6 |
| Education and Health Services | 12.2 | 13.9 | 21.9 | 22.3 |
| Leisure and Hospitality | 2.9 | 5.1 | 4.7 | 4.6 |
| Other Services (Excluding Public Administration) | 9.4 | 7.7 | 7.4 | 7.1 |
| Public Administration | 0.9 | 1.2 | 4.7 | 5.0 |

| (Percent) | CPS Feb-1995 | CPS Feb-2005 | RAND Oct/Nov-2015 Weighted | RAND Oct/Nov-2015 Alt. Weight |
|---|---|---|---|---|
| Occupation: | | | | |
| Management | 12.0 | 11.1 | 8.8 | 8.6 |
| Business and Financial Operations | 3.5 | 5.2 | 7.4 | 7.3 |
| Computer and Mathematical | 2.2 | 2.7 | 4.1 | 4.2 |
| Architecture and Engineering | 1.6 | 2.0 | 1.3 | 1.3 |
| Life, Physical, and Social Science | 1.6 | 1.1 | 0.8 | 0.9 |
| Community and Social Service | 0.4 | 0.7 | 3.9 | 4.3 |
| Legal | 1.4 | 1.2 | 1.7 | 1.7 |
| Education, Training, and Library | 4.2 | 4.4 | 7.8 | 8.1 |
| Arts, Design, Entertainment, Sports, and Media | 4.8 | 5.6 | 6.4 | 6.2 |
| Healthcare Practitioners and Technical | 3.7 | 3.8 | 4.7 | 4.8 |
| Healthcare Support | 1.6 | 2.2 | 4.3 | 4.4 |
| Protective Service | 1.6 | 1.5 | 2.5 | 2.8 |
| Food Preparation and Serving Related | 1.3 | 1.4 | 3.1 | 3.3 |
| Building and Grounds Cleaning and Maintenance | 4.9 | 5.2 | 2.6 | 2.6 |
| Personal Care and Service | 4.8 | 6.1 | 7.5 | 7.0 |
| Sales and Related | 13.8 | 12.4 | 9.6 | 9.4 |
| Office and Administrative Support | 7.2 | 5.9 | 5.2 | 5.4 |
| Farming, Fishing, and Forestry | 1.1 | 0.6 | 2.1 | 1.9 |
| Construction and Extraction | 13.0 | 13.7 | 4.4 | 4.1 |
| Installation, Maintenance, and Repair | 3.3 | 3.8 | 2.3 | 2.2 |
| Production | 5.1 | 3.4 | 3.3 | 3.3 |
| Transportation and Material Moving | 6.8 | 5.9 | 6.1 | 6.3 |
| Median Actual Hours Worked: Total | 40.0 | 40.0 | 35.0 | 36.0 |
| First Job | 40.0 | 40.0 | 32.0 | 32.0 |
| Second Job | 10.0 | 12.0 | 8.0 | 8.0 |
| Mean Actual Hours Worked: Total | 37.3 | 37.5 | 33.3 | 33.9 |
| First Job | 36.0 | 36.3 | 29.3 | 29.6 |
| Second Job | 13.6 | 13.9 | 12.6 | 13.0 |
| Median Weekly Earnings: First Job ($) | 361.0 | 500.0 | 625.0 | 625.0 |
| Mean Weekly Earnings: First Job ($) | 508.0 | 729.8 | 869.3 | 874.4 |
| Number of Observations | 5,584 | 4,675 | 450 | 450 |

Note: 1995 and 2005 CWS data are weighted using supplement weights. 2015 RPCWS data are weighted using (1) weights developed by RAND and (2) an alternative set of weights that accounts for the over-representation of self-employed workers in the ALP sample of respondents relative to the October 2015 Current Population Survey.

Source: 1995 and 2005 Current Population Survey CWS; 2015 RPCWS.

**Table 4**

**Probability of Employed Workers Who Worked During Survey Week Also Being in Alternative Work Arrangements**

| (Percent of Each Characteristic) | CPS Feb-1995 | CPS Feb-2005 | RAND Oct/Nov-2015 Weighted | RAND Oct/Nov-2015 Alt. Weight |
|---|---|---|---|---|
| Age: | | | | |
| 16-24 Years Old | 6.7 | 7.1 | 6.8 | 6.4 |
| 25-54 Years Old | 10.0 | 10.4 | 15.4 | 14.3 |
| 55-75 Years Old | 14.1 | 15.1 | 26.4 | 23.9 |
| Gender: | | | | |
| Male | 11.7 | 12.3 | 16.2 | 14.7 |
| Female | 8.1 | 8.9 | 18.4 | 17.0 |
| Race/Ethnicity: | | | | |
| White | 10.4 | 11.2 | 18.1 | 16.5 |
| African-American | 7.5 | 8.2 | 14.9 | 14.2 |
| Hispanic | 8.5 | 9.8 | 16.9 | 15.7 |
| Educational Attainment: | | | | |
| Bachelor's Degree or Higher | 11.4 | 11.5 | 18.3 | 17.1 |
| Some College or Associate's Degree | 9.8 | 10.9 | 17.5 | 15.8 |
| High School Graduate | 9.3 | 9.9 | 15.6 | 14.2 |
| Less Than High School Diploma | 9.5 | 10.5 | 16.8 | 15.5 |
| Industry: | | | | |
| Agriculture, Forestry, Fishing, and Hunting | 12.4 | 14.4 | 47.5 | 42.9 |
| Mining | 8.1 | 8.1 | 15.9 | 15.1 |
| Utilities | 2.3 | 5.7 | 6.5 | 6.5 |
| Construction | 30.5 | 26.7 | 29.8 | 27.2 |
| Manufacturing | 3.4 | 4.3 | 11.8 | 11.1 |
| Wholesale Trade | 7.1 | 7.8 | 5.1 | 4.7 |
| Retail Trade | 6.1 | 6.3 | 11.3 | 10.6 |
| Transportation and Warehousing | 10.8 | 10.8 | 17.5 | 15.8 |
| Information | 8.5 | 9.6 | 16.9 | 16.2 |
| Financial Activities | 10.9 | 11.2 | 12.0 | 10.7 |
| Professional and Business Services | 28.0 | 25.1 | 26.6 | 24.7 |
| Education and Health Services | 6.2 | 7.0 | 16.9 | 15.7 |
| Leisure and Hospitality | 4.1 | 6.8 | 13.5 | 12.1 |
| Other Services (Excluding Public Administration) | 18.7 | 17.4 | 26.8 | 23.8 |
| Public Administration | 1.9 | 2.5 | 10.5 | 10.1 |
| Occupation: | | | | |
| Management | 10.7 | 11.9 | 12.1 | 10.7 |
| Business and Financial Operations | 9.2 | 13.2 | 16.1 | 14.5 |
| Computer and Mathematical | 14.9 | 11.7 | 22.8 | 21.6 |
| Architecture and Engineering | 7.2 | 11.0 | 10.8 | 9.9 |
| Life, Physical, and Social Science | 11.6 | 11.7 | 10.8 | 9.8 |
| Community and Social Service | 3.2 | 4.7 | 23.5 | 23.0 |
| Legal | 15.0 | 11.2 | 20.8 | 19.2 |
| Education, Training, and Library | 7.2 | 7.6 | 20.4 | 19.3 |
| Arts, Design, Entertainment, Sports, and Media | 28.8 | 31.2 | 40.2 | 37.1 |
| Healthcare Practitioners and Technical | 8.7 | 8.5 | 13.7 | 12.6 |
| Healthcare Support | 8.6 | 10.9 | 19.0 | 17.9 |
| Protective Service | 9.1 | 7.5 | 15.5 | 15.5 |
| Food Preparation and Serving Related | 2.8 | 3.0 | 12.1 | 11.3 |
| Building and Grounds Cleaning and Maintenance | 15.0 | 17.2 | 16.7 | 15.2 |
| Personal Care and Service | 22.6 | 22.5 | 46.1 | 42.1 |
| Sales and Related | 11.6 | 11.3 | 19.7 | 17.9 |
| Office and Administrative Support | 5.1 | 4.5 | 7.6 | 7.2 |
| Farming, Fishing, and Forestry | 14.7 | 11.1 | 64.2 | 59.0 |
| Construction and Extraction | 26.9 | 24.8 | 27.2 | 24.4 |
| Installation, Maintenance, and Repair | 9.1 | 10.7 | 13.9 | 12.4 |
| Production | 5.4 | 5.4 | 11.3 | 10.1 |
| Transportation and Material Moving | 9.4 | 10.0 | 19.2 | 18.2 |

Note: 1995 and 2005 CWS data are weighted using supplement weights. 2015 RPCWS data are weighted using (1) weights developed by RAND and (2) an alternative set of weights that accounts for the over-representation of self-employed workers in the ALP sample of respondents relative to the October 2015 Current Population Survey.

Source: 1995 and 2005 Current Population Survey CWS; 2015 RPCWS.

**Table 5**
**Regressions of Log Hourly Wages From Main Job**

| | 2005 CWS | | | 2015 RPCWS | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Independent Contractors | 0.160 | 0.016 | -0.008 | 0.187 | 0.144 | 0.162 |
| | (0.021) *** | (0.020) | (0.020) | (0.083) ** | (0.082) * | (0.081) ** |
| On-Call Workers (Excluding Day Laborers) | -0.111 | -0.045 | -0.030 | 0.174 | 0.226 | 0.282 |
| | (0.035) *** | (0.036) | (0.034) | (0.237) | (0.247) | (0.253) |
| Temporary Help Agency Workers | -0.235 | -0.097 | -0.087 | -0.226 | -0.154 | -0.158 |
| | (0.045) *** | (0.041) ** | (0.039) ** | (0.112) ** | (0.123) | (0.116) |
| Workers Provided by Contract Firms | 0.092 | 0.060 | 0.016 | 0.124 | 0.016 | -0.024 |
| | (0.034) *** | (0.030) * | (0.030) | (0.093) | (0.078) | (0.075) |
| Years of Education | | 0.093 | 0.069 | | 0.103 | 0.086 |
| | | (0.002) *** | (0.002) *** | | (0.010) *** | (0.010) *** |
| Years of Experience | | 0.034 | 0.030 | | 0.020 | 0.018 |
| | | (0.001) *** | (0.001) *** | | (0.007) *** | (0.007) *** |
| Years of Experience Squared | | -0.001 | -0.000 | | -0.000 | -0.000 |
| | | (0.000) *** | (0.000) *** | | (0.000) ** | (0.000) * |
| Race: | | | | | | |
| African-American | | -0.170 | -0.129 | | 0.018 | 0.075 |
| | | (0.016) *** | (0.015) *** | | (0.061) | (0.060) |
| Asian/Pacific Islander | | -0.044 | -0.042 | | 0.002 | 0.073 |
| | | (0.024) * | (0.022) * | | (0.091) | (0.080) |
| Other | | -0.033 | -0.048 | | -0.048 | -0.059 |
| | | (0.030) | (0.028) * | | (0.086) | (0.083) |
| Hispanic Ethnicity | | -0.084 | -0.065 | | 0.017 | 0.055 |
| | | (0.015) *** | (0.015) *** | | (0.063) | (0.062) |
| Female | | -0.217 | -0.179 | | -0.193 | -0.180 |
| | | (0.010) *** | (0.011) *** | | (0.038) *** | (0.041) *** |
| Controls for 22 Occupations | No | No | Yes | No | No | Yes |
| Adjusted R-Squared | 0.005 | 0.259 | 0.320 | 0.007 | 0.137 | 0.206 |
| Number of Observations | 18,651 | 18,651 | 18,651 | 2,171 | 2,171 | 2,171 |

Levels of Significance: *** = 0.01, ** = 0.05, * = 0.10

Note: 2005 CWS regressions are weighted using either supplement weights or outgoing rotation group weights as applicable. 2015 RPCWS regressions are weighted using an alternative set of weights that accounts for the over-representation of self-employed workers in the ALP sample of respondents relative to the October 2015 Current Population Survey.

Source: 2005 Current Population Survey CWS; 2015 RPCWS.

**Table 6**
**Regressions of Log Weekly Wages From Main Job**

| | 2005 CWS | | | 2015 RPCWS | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Independent Contractors | 0.075 | -0.113 | -0.136 | -0.331 | -0.348 | -0.330 |
| | (0.021) *** | (0.020) *** | (0.020) *** | (0.103) *** | (0.100) *** | (0.095) *** |
| On-Call Workers (Excluding Day Laborers) | -0.497 | -0.404 | -0.368 | -0.579 | -0.494 | -0.396 |
| | (0.038) *** | (0.037) *** | (0.034) *** | (0.241) ** | (0.230) ** | (0.246) |
| Temporary Help Agency Workers | -0.309 | -0.147 | -0.145 | -0.676 | -0.523 | -0.501 |
| | (0.048) *** | (0.043) *** | (0.040) *** | (0.193) *** | (0.216) ** | (0.190) *** |
| Workers Provided by Contract Firms | 0.116 | 0.057 | 0.012 | -0.122 | -0.241 | -0.302 |
| | (0.039) *** | (0.034) * | (0.033) | (0.117) | (0.101) ** | (0.090) *** |
| Years of Education | | 0.106 | 0.080 | | 0.120 | 0.101 |
| | | (0.002) *** | (0.003) *** | | (0.013) *** | (0.013) *** |
| Years of Experience | | 0.059 | 0.052 | | 0.043 | 0.041 |
| | | (0.002) *** | (0.001) *** | | (0.009) *** | (0.008) *** |
| Years of Experience Squared | | -0.001 | -0.001 | | -0.001 | -0.001 |
| | | (0.000) *** | (0.000) *** | | (0.000) *** | (0.000) *** |
| Race: | | | | | | |
| African-American | | -0.137 | -0.088 | | -0.170 | -0.092 |
| | | (0.018) *** | (0.017) *** | | (0.094) * | (0.092) |
| Asian/Pacific Islander | | -0.002 | 0.006 | | -0.055 | 0.051 |
| | | (0.028) | (0.026) | | (0.129) | (0.114) |
| Other | | -0.049 | -0.069 | | -0.120 | -0.137 |
| | | (0.034) | (0.032) ** | | (0.098) | (0.094) |
| Hispanic Ethnicity | | -0.057 | -0.022 | | 0.038 | 0.097 |
| | | (0.018) *** | (0.017) | | (0.073) | (0.069) |
| Female | | -0.396 | -0.330 | | -0.343 | -0.296 |
| | | (0.011) *** | (0.012) *** | | (0.047) *** | (0.048) *** |
| Controls for 22 Occupations | No | No | Yes | No | No | Yes |
| Adjusted R-Squared | 0.009 | 0.338 | 0.414 | 0.024 | 0.183 | 0.261 |
| Number of Observations | 18,651 | 18,651 | 18,651 | 2,171 | 2,171 | 2,171 |

Levels of Significance: *** = 0.01, ** = 0.05, * = 0.10

Note: 2005 CWS regressions are weighted using either supplement weights or outgoing rotation group weights as applicable. 2015 RPCWS regressions are weighted using an alternative set of weights that accounts for the over-representation of self-employed workers in the ALP sample of respondents relative to the October 2015 Current Population Survey.

Source: 2005 Current Population Survey CWS; 2015 RPCWS.

**Table 7**
**Regressions of Log Actual Hours Worked on All Jobs**

| | 2005 CWS | | | 2015 RPCWS | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Independent Contractors | -0.093 | -0.137 | -0.128 | -0.413 | -0.386 | -0.386 |
| | (0.015) *** | (0.014) *** | (0.014) *** | (0.089) *** | (0.090) *** | (0.091) *** |
| On-Call Workers (Excluding Day Laborers) | -0.408 | -0.370 | -0.353 | -0.706 | -0.675 | -0.639 |
| | (0.034) *** | (0.032) *** | (0.032) *** | (0.217) *** | (0.200) *** | (0.204) *** |
| Temporary Help Agency Workers | -0.072 | -0.042 | -0.052 | -0.433 | -0.354 | -0.330 |
| | (0.031) ** | (0.032) | (0.031) * | (0.167) *** | (0.177) ** | (0.171) * |
| Workers Provided by Contract Firms | 0.022 | -0.004 | -0.001 | -0.172 | -0.182 | -0.198 |
| | (0.024) | (0.024) | (0.023) | (0.086) ** | (0.086) ** | (0.086) ** |
| Years of Education | | 0.019 | 0.015 | | 0.018 | 0.015 |
| | | (0.001) *** | (0.001) *** | | (0.006) *** | (0.007) ** |
| Years of Experience | | 0.028 | 0.026 | | 0.024 | 0.024 |
| | | (0.001) *** | (0.001) *** | | (0.004) *** | (0.004) *** |
| Years of Experience Squared | | -0.001 | -0.001 | | -0.001 | -0.001 |
| | | (0.000) *** | (0.000) *** | | (0.000) *** | (0.000) *** |
| Race: | | | | | | |
| African-American | | 0.034 | 0.041 | | -0.163 | -0.146 |
| | | (0.007) *** | (0.007) *** | | (0.077) ** | (0.077) * |
| Asian/Pacific Islander | | 0.041 | 0.045 | | -0.050 | -0.023 |
| | | (0.010) *** | (0.010) *** | | (0.079) | (0.075) |
| Other | | 0.002 | 0.002 | | -0.078 | -0.083 |
| | | (0.013) | (0.013) | | (0.057) | (0.057) |
| Hispanic Ethnicity | | 0.054 | 0.065 | | 0.015 | 0.029 |
| | | (0.007) *** | (0.007) *** | | (0.042) | (0.046) |
| Female | | -0.169 | -0.144 | | -0.157 | -0.135 |
| | | (0.004) *** | (0.005) *** | | (0.031) *** | (0.035) *** |
| Controls for 22 Occupations | No | No | Yes | No | No | Yes |
| Adjusted R-Squared | 0.009 | 0.111 | 0.128 | 0.079 | 0.144 | 0.164 |
| Number of Observations | 63,427 | 63,427 | 63,427 | 2,188 | 2,188 | 2,188 |

Levels of Significance: *** = 0.01, ** = 0.05, * = 0.10

Note: 2005 CWS regressions are weighted using final weights. 2015 RPCWS regressions are weighted using an alternative set of weights that accounts for the over-representation of self-employed workers in the ALP sample of respondents relative to the October 2015 Current Population Survey.

Source: 2005 Current Population Survey CWS; 2015 RPCWS.

**Table 8**
**Employment Preferences of Workers in Alternative Work Arrangements**

| (Percent) | CPS Feb-1995 | CPS Feb-2005 | RAND Oct/Nov-2015 |
|---|---|---|---|
| Temporary Help Agency Workers: | | | |
| Prefer a Job With a Different Type of Employer | 63.9 | 57.2 | N/A |
| Temporary Help Agency Workers With Temporary Jobs: | | | |
| Prefer a Job That is Permanent | 82.9 | 83.5 | 76.9 |
| On-Call Workers: | | | |
| Prefer a Job With Regularly Scheduled Hours | 57.7 | 45.1 | 44.7 |
| Independent Contractors: | | | |
| Prefer to Work for Themselves | 82.7 | 82.5 | 83.7 |

Note: 1995 and 2005 CWS data are weighted using supplement weights. 2015 RPCWS data are weighted using an alternative set of weights that accounts for the over-representation of self-employed workers in the ALP sample of respondents relative to the October 2015 Current Population Survey.
Source: 1995 and 2005 Current Population Survey CWS; 2015 RPCWS.

**Appendix Table A**
**Regressions of Log Total Wages in 2015 RPCWS**

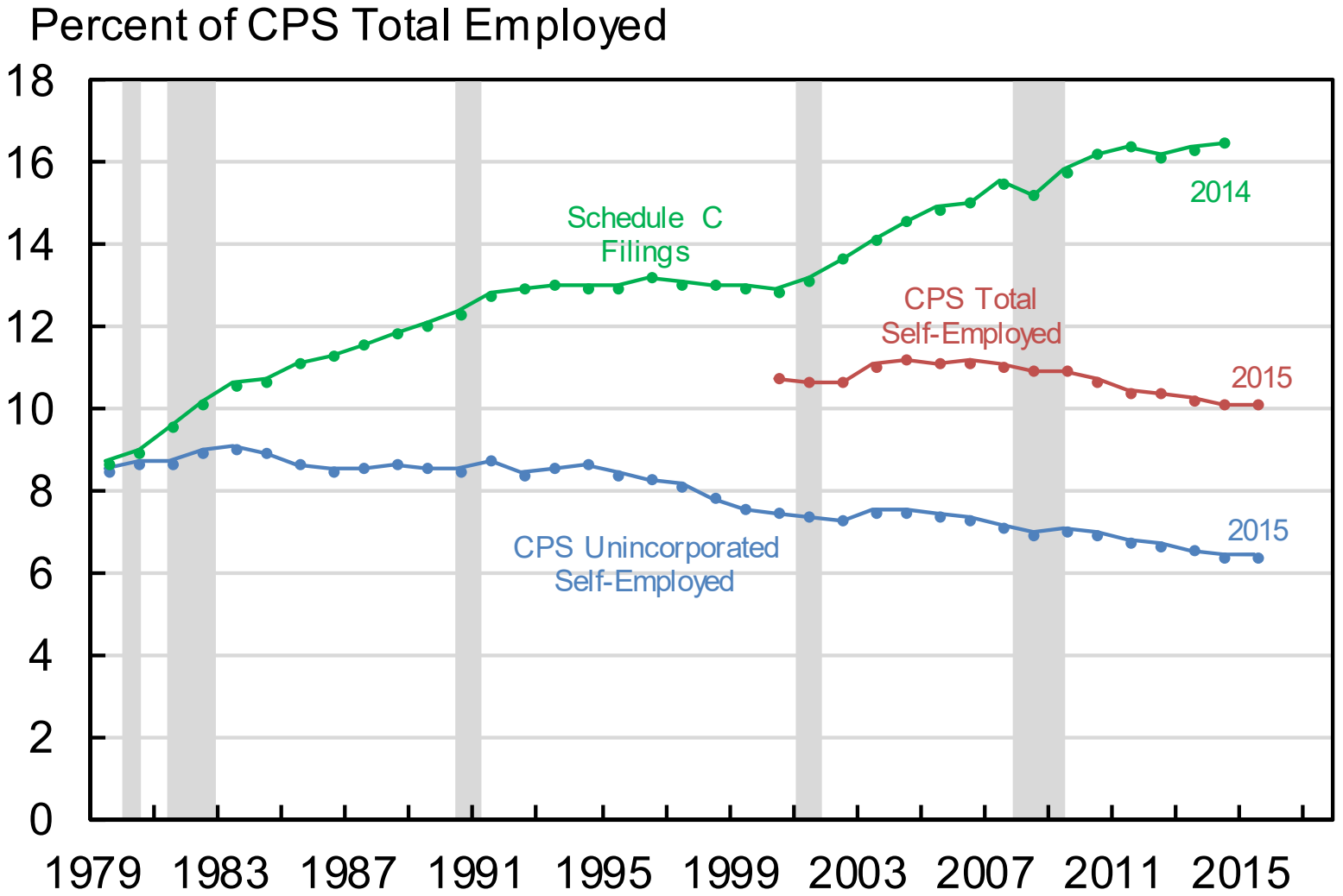
| | Total Hourly Wages | | | Total Weekly Wages | | |
|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
| Independent Contractors | 0.209 | 0.166 | 0.182 | -0.208 | -0.223 | -0.208 |
| | (0.080) *** | (0.079) ** | (0.078) ** | (0.103) ** | (0.100) ** | (0.095) ** |
| On-Call Workers (Excluding Day Laborers) | 0.158 | 0.210 | 0.262 | -0.460 | -0.375 | -0.284 |
| | (0.237) | (0.248) | (0.253) | (0.224) ** | (0.212) * | (0.232) |
| Temporary Help Agency Workers | -0.230 | -0.157 | -0.158 | -0.662 | -0.510 | -0.487 |
| | (0.112) ** | (0.122) | (0.116) | (0.195) *** | (0.216) ** | (0.191) ** |
| Workers Provided by Contract Firms | 0.147 | 0.037 | -0.006 | -0.025 | -0.144 | -0.208 |
| | (0.094) | (0.080) | (0.077) | (0.132) | (0.117) | (0.108) * |
| Years of Education | | 0.103 | 0.087 | | 0.120 | 0.101 |
| | | (0.010) *** | (0.010) *** | | (0.013) *** | (0.012) *** |
| Years of Experience | | 0.019 | 0.017 | | 0.043 | 0.041 |
| | | (0.007) *** | (0.006) *** | | (0.009) *** | (0.008) *** |
| Years of Experience Squared | | -0.000 | -0.000 | | -0.001 | -0.001 |
| | | (0.000) * | (0.000) * | | (0.000) *** | (0.000) *** |
| Race: | | | | | | |
| African-American | | 0.020 | 0.079 | | -0.149 | -0.072 |
| | | (0.060) | (0.059) | | (0.095) | (0.093) |
| Asian/Pacific Islander | | -0.025 | 0.044 | | -0.074 | 0.025 |
| | | (0.089) | (0.080) | | (0.130) | (0.114) |
| Other | | -0.043 | -0.054 | | -0.129 | -0.146 |
| | | (0.086) | (0.083) | | (0.099) | (0.095) |
| Hispanic Ethnicity | | 0.007 | 0.045 | | 0.027 | 0.082 |
| | | (0.063) | (0.062) | | (0.074) | (0.070) |
| Female | | -0.193 | -0.178 | | -0.350 | -0.309 |
| | | (0.037) *** | (0.041) *** | | (0.047) *** | (0.047) *** |
| Controls for 22 Occupations | No | No | Yes | No | No | Yes |
| Adjusted R-Squared | 0.008 | 0.142 | 0.214 | 0.016 | 0.181 | 0.214 |
| Number of Observations | 2,171 | 2,171 | 2,171 | 2,171 | 2,171 | 2,171 |

Levels of Significance: *** = 0.01, ** = 0.05, * = 0.10

Note: 2015 RPCWS regressions are weighted using an alternative set of weights that accounts for the over-representation of self-employed workers in the ALP sample of respondents relative to the October 2015 Current Population Survey.

Source: 2015 RPCWS.

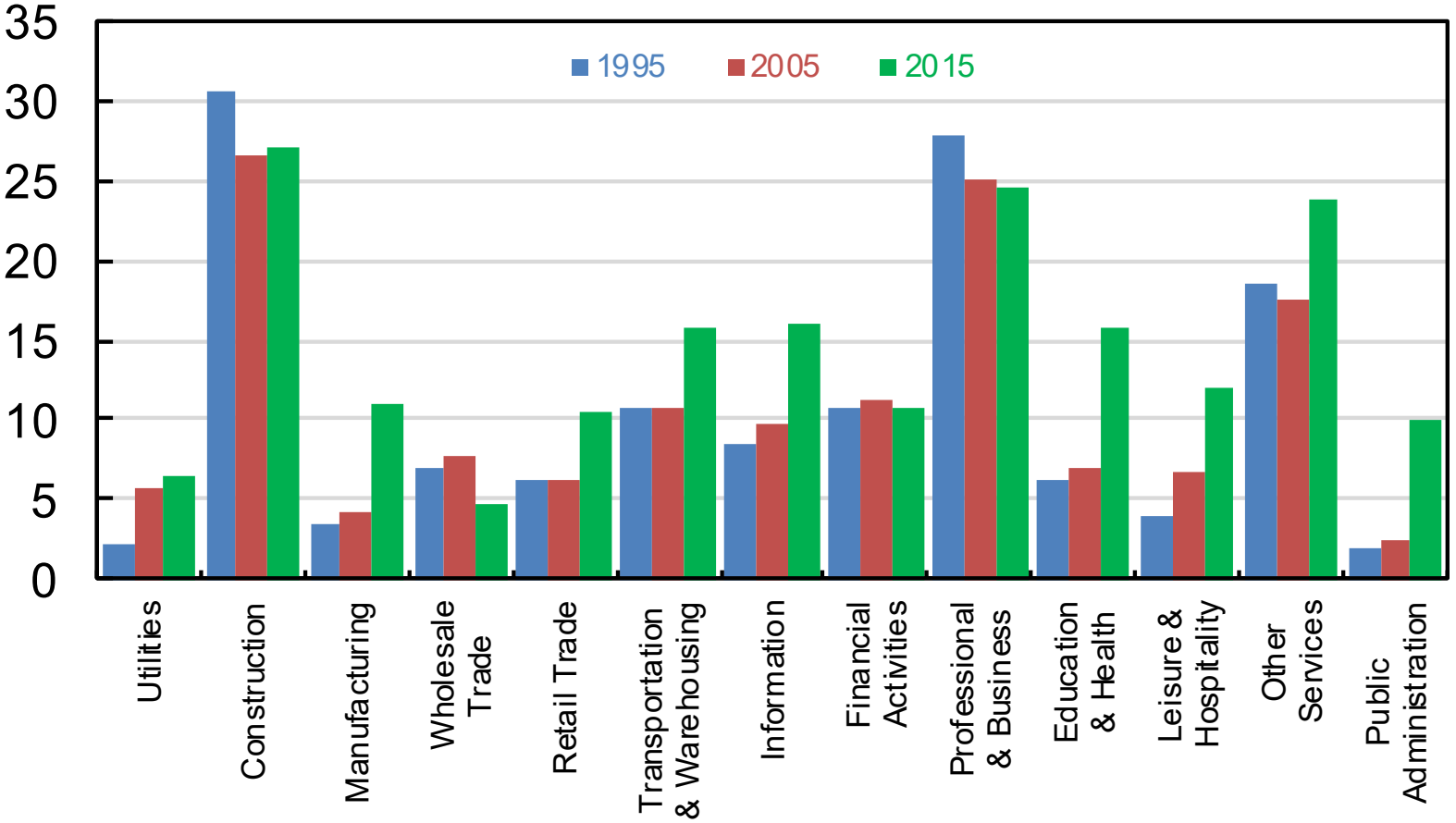
# Figure 1: Trends in Self-Employment




Note: Shading denotes recession.
Source: Current Population Survey; IRS Statistics of Income Publication 1304 (Table 1.3).

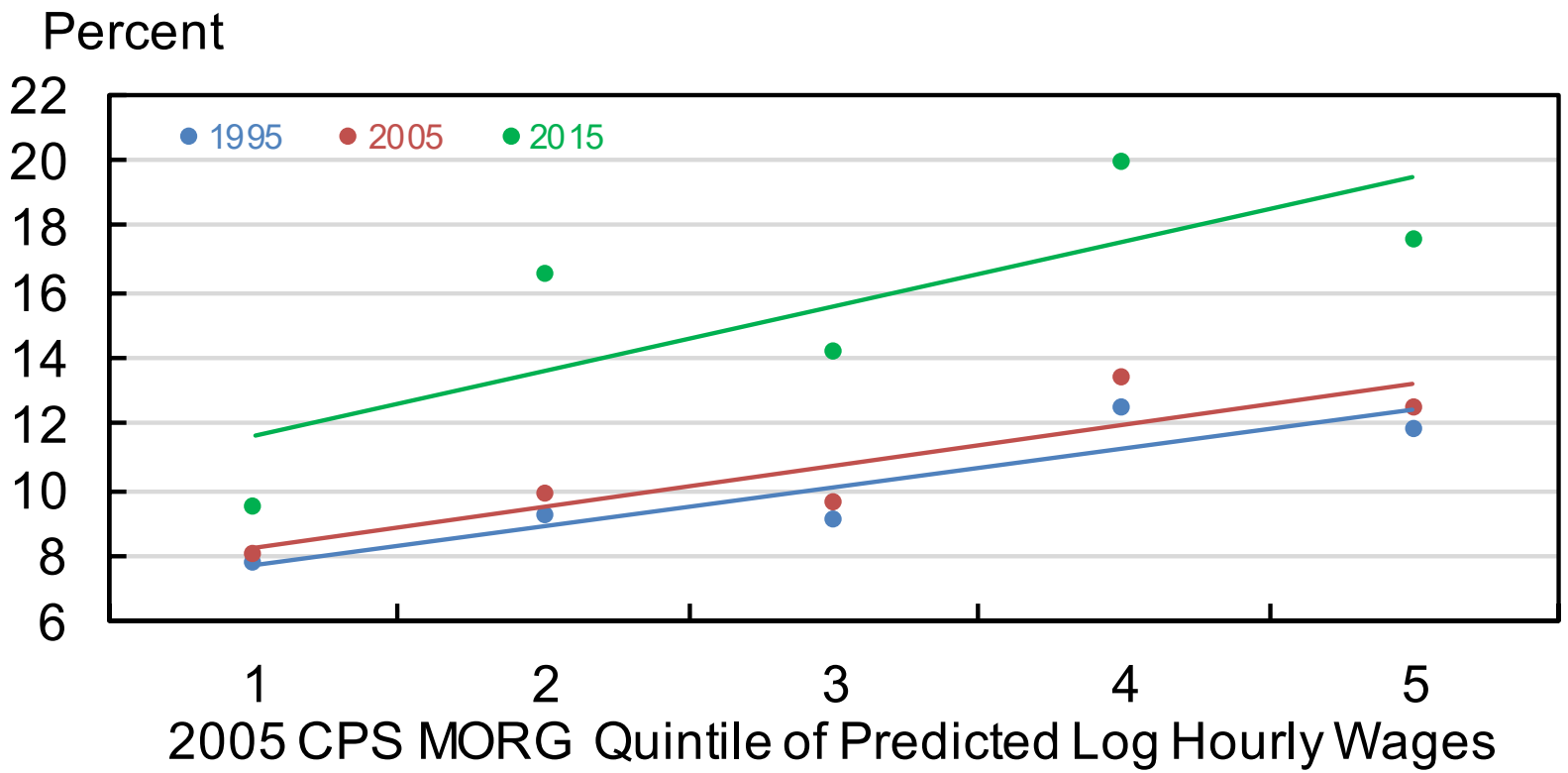
# Figure 2: Probability of Alternative Work by Industry

Percent of Total Employed Who Worked During Survey Week




Note: 1995 and 2005 CWS data are weighted using supplement weights. 2015 RPCWS data are weighted using an alternative set of weights that accounts for the over-representation of self-employed workers in the ALP sample relative to the October 2015 Current Population Survey.
Source: 1995 and 2005 Current Population Survey CWS; 2015 RPCWS.

# Figure 3: Probability of Being in Alternative Work Arrangements




Note: Mincer regression of log hourly wages on years of education, years of experience, years of experience squared, industry, occupation, race, Hispanic ethnicity, and gender using 2005 CPS MORG. 1995 and 2005 CWS data are weighted using supplement weights. 2015 RPCWS data are weighted using an alternative set of weights that accounts for both (1) the under-representation of the proportion of workers and (2) the over-representation of the proportion of self-employed workers in the lower quintiles of predicted log hourly wages relative to the October 2015 Current Population Survey.
Source: 1995 and 2005 Current Population Survey CWS; 2015 RPCWS.

**Addendum: Reconciling the 2017 BLS Contingent Worker Survey**

**October 29, 2018**

After the RAND version of the CWS was conducted, the BLS announced plans to include a new CWS supplement as part of the May 2017 CPS. Results of the May 2017 CWS were not released until after this paper was accepted for publication. In contrast to the 2015 RPCWS, the CWS showed a small decline in the percentage of workers in alternative work arrangements from 2005 to 2017. In this Addendum, we attempt to reconcile the 2015 RCPWS with the May 2017 CWS, and provide an updated summary of our views of trends in alternative work arrangements in the U.S. labor market. A more detailed comparison of the RPCWS and the 2017 CWS is included in Katz and Krueger (2018).

There are a number of important differences between the RPCWS and the CPS CWS surveys. First, the RPCWS survey was conducted online, while the CWS is conducted in person or over the phone. Second, the RPCWS sample was recruited through a variety of means (e.g., a group recruited for the University of Michigan Internet panel, a random digit dial sample, and a snowball sample), and in all likelihood is less representative of the U.S. workforce than the CPS CWS sample. Third, all individuals self-respond about themselves in the RAND survey, while the BLS accepts proxy responses as well as self-responses in the CPS including the CWS. Fourth, the U.S. labor market was weaker in October-November 2015, when the RPCWS was conducted, than it was in May 2017, when the BLS CWS survey was conducted. Fifth, the sample size for the RPCWS survey is considerably smaller than the CPS.

As explained below, the higher incidence of alternative work arrangements in the 2015 RPCWS than the CWS can largely be accounted for by three factors: (1) cyclical conditions (i.e., a tighter labor market in 2017 than 2015); (2) differences in survey methods (the use of self-

responses only in the RPCWS vs. half the responses being from proxy respondents in the CPS CWS); and (3) sampling issues with respect to the RAND web panel which generated an apparent oversample of multiple job holders in the RPCWS. After adjusting for these factors, the RPCWS suggests a 1-2 percentage point increase in the share of workers in alternative work from 2005 to 2015, instead of the 5 point upper-bound increase reported in Table 2 of our original paper.

*Reweighting the RAND Survey*

Table A.1 reports the percent of workers engaged in various measures of alternative work arrangements from the RPCWS survey and all of the CPS CWS surveys. (The CPS CWS results differ very slightly from those in Table 2 of our original paper because we restrict the sample to workers age 18 and older to match the RPCWS.) The first column of the table shows unweighted results from RPCWS, which show a substantially higher share of workers in alternative jobs than we reported in Table 2 of our paper. The unweighted results are biased by non-representative sampling in the RPCWS, however.

RAND developed a set of survey weights to adjust the ALP sample to more closely match the CPS based on age, gender, race/ethnicity, education and household income groups. These weights did not take into account self-employment or multiple jobholding, however. The RAND weighted sample contained a substantially higher percentage of workers who identified as self-employed than was the case in the CPS. Consequently, as we explained in our paper, we further adjusted the RAND weights to match the CPS self-employment rate in October 2015. Results using these weights, called "Altwt", are presented in Column 2.

Multiple job holding is another dimension in which the RAND sample does not match the CPS sample. In the unweighted RPCWS sample, 14.3 percent of workers reported multiple jobs, and in the weighted sample 13.1 percent reported multiple jobs. The corresponding figure from the October 2015 CPS is 5.2 percent. We did not previously adjust the RAND sample to match the CPS in terms of the proportion of workers who held multiple jobs, however.[1] Because multiple job holders may be more likely to work in alternative jobs, for this Addendum we created a new set of weights ("Altwt 2") that adjusted the Altwt weights to down weight multiple job holders, and match the October 2015 CPS. Tabulations using these weights are reported in column 3 of Table A.1. Using the second set of weights causes the share of workers in alternative jobs to fall by 2.1 percentage points (from 15.8 percent to 13.7 percent), and accounts for 40 percent of the 5.3 percentage point gap between the RPCWS survey and the 2017 CWS.

*Business Cycle Effects*

The bottom row of Table A.1 reports the seasonally adjusted unemployment rate in each month when the RAND and CWS surveys were conducted. The unemployment rate was 1.1 percentage point *lower* when the latest CWS was conducted in May 2017 than it was when the previous CWS was conducted in February 2005, and it was 0.7 percentage point lower in May 2017 compared with when the October -November 2015 RPCWS was conducted. If a tighter job market increases the fraction of workers who are in traditional employment, then cyclical factors would affect comparisons of the share of workers in alternative work over time.

[1] To partly address this discrepancy in our earlier paper, in one set of results we compared the share of contract workers who were single job holders. This narrowed the gap between the 2015 CWS and the RPCWS sample by 1 percentage point.

The unemployment rate averaged 4.3 percent in February 1999 and February 2001, the same as it was in May 2017. Thus, a simple way to adjust for unemployment rate differences is to compare the average of the 1999 and 2001 CWS surveys to the 2017 CWS survey. The share of workers in alternative work arrangements rose by 1 percentage point from 1999-2001 to 2017, from 9.5 percent to 10.5 percent. A 0.6 percentage point increase in independent contractors was responsible for most of this rise.

Notice also that the unemployment rate was about the same when the CWS was conducted in 1997 and 2005, which provides another set of years to compare the growth in alternative work at similar points of the business cycle. Over this eight-year period, the share of workers in alternative jobs rose by 0.6 percentage point, again mainly because of a rise in independent contractors. These figures suggest that, cyclically adjusted, the share of independent contractors in the workforce is rising by 0.04 to 0.08 percentage point per year.

From 1997 to 1999, the unemployment rate fell by 0.8 percentage point and the CWS showed a 0.6 percentage point drop in the alternative work share. The decline in the unemployment rate between 2015 and 2017 was in the same ballpark, so the business cycle could perhaps account for 0.6 percentage point of the difference between the 2015 RPCWS and the 2017 CWS.

One puzzle evident in the CPS data is that, although the cyclically adjusted share of independent contractors in CWS is rising slowly over time, the share of workers who report themselves as self-employed in the basically CPS is declining over the same time periods.

*Proxy Respondents*

Proxy respondents are likely to be less knowledgeable about the employment status of the person for whom they are reporting than the person him or herself, and possibly less willing to provide answers that lead to supplemental questions about alternative work arrangements as well. This could create a "mode" bias where proxy respondents are more likely to report that a household member is employed in a traditional job than that household member would be had he or she been a self-respondent. Table A.2 reports various statistics on proxy and self-respondents from the CWS. The share of responses in the CWS from proxy respondents has hovered close to 50 percent in all of the waves of the survey, while the RAND survey only accepts self-responses. The percent of responses from proxy respondents was 51.1 percent in 1995 and 48.9 percent in 2017. In our paper, we reported that proxy respondents were about 2 percentage points *less* likely to report being in an alternative work arrangement than were self-respondents in the 1995 and 2015 CPS CWS surveys. Table A.2 indicates that this gap has grown to 2.9 percentage points in 2017. Although it is not clear if survey mode has a causal effect on responses, or if self-responders are truly more likely to be engaged in an alternative work arrangement (perhaps because they work from home, and therefore are available to self-respond as self-employed when an interviewer visits their home or calls), the 2 percentage point differential persisted after we controlled for respondents' educational attainment, experience, race and sex in a linear probability regression model.

If the difference in the alternative work percentage is interpreted as a survey mode effect, then the fact that half of CPS respondents are proxy respondents would account for 1.5 percentage point of the difference between the 2015 RPCWS survey and the 2017 CWS.

Notice also that the percentage of self-respondents in alternative jobs tend to show a somewhat stronger upward trend over time than the correspondent percentage for proxy

responses. This is particularly apparent for independent contractors, where the share of independent contractors who are proxy respondents has fallen from 46.5 percent in 1995 to 41 percent in 2017. The entire drop from 2005 to 2017 in the share of workers in alternative jobs occurred among proxy respondents in the CWS. The rate held steady for self-respondents.

*Electronically Mediated Work*

The May 2017 CWS contained a new set of questions on electronically mediated work to measure the share of workers who found work through online platforms. Although BLS acknowledged problems in the way many respondents interpreted these new questions, and recoded two thirds of affirmative responses, the results indicated that about 1 percent of workers were engaged electronically mediated work.[2] This compares very closely to our finding that in the fall of 2015 "only about 0.5 percent of all workers identify customers through an online intermediary," especially given a likely upward trend in such activity from 2015 to 2017.

*Conclusion*

We can account for just over 4 percentage points of the 5.3 percentage point difference in the share of the work force in alternative work arrangements between the 2015 RPCWS and the 2017 CWS if: 2.1 percentage points is a result of differential sample representativeness reflected in greater multiple jobholding in the RAND survey; 1.5 percentage point is due to the use of proxy respondents in CWS; and 0.6 percentage point is the result of differences in the state of the

[2] The BLS tabulation of electronically mediated employment from the May 2017 CWS are available at https://www.bls.gov/cps/electronically-mediated-employment.htm#highlights.

business cycle between 2015 and 2017. The latter is a real effect of the economy, and not a result of differences in survey methods.

With the benefit of hindsight, we conclude that comparisons of trends in work arrangements across surveys with different sampling frames (as is the case for the CPS and RAND American Life Panel) and at different points of the business cycle require extra caution, even after the best attempts to the make surveys as comparable as possible.

We conclude that there likely has been a modest upward trend in the share of the U.S. workforce in alternative work arrangements during the 2000s based on the cyclically-adjusted comparisons of the CPS CWS's, measures using self-respondents in the CPS CWS, and measures of self-employment and 1099 workers from administrative tax data (see Figure 1 of our paper and the associated discussion). The growth in alternative work arrangements is not as sharp as suggested by our initial comparison of the 2015 RWCPS and the 2005 CPS CWS if more consistent measures are compared over time. In view of the latest CWS data, and the fact that the previous wave of the CWS was conducted in early 2005, it is particularly inaccurate to conclude from our work that, "94% of all new jobs under Obama were part-time," as Tyler Durden of ZeroHege argued.[3] Instead, there appears to have been a gradual rise in the share of workers in alternative jobs since the early 2000s, and that trend was not hastened by the emergence of electronically mediated jobs.

**Additional Reference**

Lawrence F. Katz and Alan B. Krueger, "Understanding Trends in Alternative Work Arrangements in the United States," paper prepared for Russell Sage Foundation journal conference, September 2018.

[3] See **https://www.zerohedge.com/news/2016-12-23/top-white-house-economist-admits-94-all-new-jobs-under-obama-were-part-time.**

Table A.1: Self-Employed and Alternative Work Arrangements

| | Rand Unwt. | Rand Altwt | Rand Altwt 2 | 1995 CWS | 1997 CWS | 1999 CWS | 2001 CWS | 2005 CWS | 2017 CWS |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Any Alternative Work Arrangement | 20.5 | 15.8 | 13.7 | 10.1 | 10.2 | 9.6 | 9.4 | 10.8 | 10.5 |
| Independent Contractors | 11.7 | 8.4 | 7.2 | 6.4 | 6.4 | 6.1 | 6.1 | 7.0 | 6.7 |
| On-Call Workers | 2.6 | 2.6 | 2.4 | 1.5 | 1.5 | 1.5 | 1.5 | 1.7 | 1.6 |
| Temporary Help Agency Workers | 2.0 | 1.6 | 1.7 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 |
| Contract Workers | 4.2 | 3.1 | 2.5 | 1.3 | 1.4 | 1.3 | 1.1 | 1.4 | 1.4 |
| Observations | 2,194 | 2,194 | 2,194 | 54,415 | 53,493 | 49,420 | 36,574 | 42,087 | 46,071 |
| Unemployment Rate (SA) | 5.0 | 5.0 | 5.0 | 5.4 | 5.2 | 4.4 | 4.2 | 5.4 | 4.3 |

Note: This table reports the percent of employed workers who are in alternative work arrangements. The sample contains employed workers who are aged 18 or more. Individual categories may not add to the total due to rounding or changes in definitions that improve comparability between the RPCWS and CPS CWS. Column 1 reports unweighted figures from the 2015 RPCWS, column 2 reports figures using a set of weights that accounts for the overrepresentation of self-employed workers, and column 3 reports figures using a set of weights that further accounts for the overrepresentation of multiple job holders in the American Life Panel, both relative to the October 2015 Current Population Survey. Columns 4-9 are from the 1995, 1997, 1999, 2001, 2005, and 2017 Contingent Worker Survey Supplements and are weighted using supplement weights.

Table A.2: Proxy Respondents and Alternative Work Arrangements

| | Proxy Respondents | | Alt. Work Arr. | |
|---|---|---|---|---|
| | All Respondents | Independent Contractors | Self-Respondents | Proxy Respondents |
| | (1) | (2) | (3) | (4) |
| 1995 | 51.1 | 46.5 | 10.9 | 9.2 |
| 1997 | 50.6 | 43.9 | 11.2 | 9.0 |
| 1999 | 50.8 | 44.9 | 10.6 | 8.5 |
| 2001 | 50.8 | 44.0 | 10.4 | 8.3 |
| 2005 | 50.1 | 43.9 | 11.8 | 9.6 |
| 2017 | 48.9 | 41.0 | 11.8 | 8.9 |

Note: This table reports the percent of respondents in the CWS who were proxy respondents and the percent of respondents who were in alternative work arrangements. Column 1 reports the percent of CWS respondents who were proxy respondents and column 2 reports the percent of independent contractors who were proxy respondents. Columns 3 and 4 report the percent of self-respondents and proxy respondents, respectively, who reported being in an alternative work arrangement. All columns are weighted using supplement weights.