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What Do We Know About Alternative Work Arrangements in the United States? A Synthesis of Research Evidence from Household Surveys, and Administrative Data

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WHAT DO WE KNOW ABOUT ALTERNATIVE WORK ARRANGEMENTS IN THE UNITED STATES? A SYNTHESIS OF RESEARCH EVIDENCE FROM HOUSEHOLD SURVEYS, AND ADMINISTRATIVE DATA

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Katharine G. Abraham and Susan N. Houseman

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Abstract

The Contingent Worker Supplement (CWS) to the Current Population Survey (CPS), fielded six times between 1995 and 2017, was designed to measure jobs that were temporary in nature as well as work arrangements thought to be associated with less commitment between workers and employers. The latter includes independent contractor and platform work, temporary help and other intermediated contract work arrangements, and on-call work, which captures a certain type of unpredictable work schedule. While the CWS provides consistent measures of the work arrangements covered in the survey over a 22-year time span, it has shortcomings. Data from other household surveys, employer surveys, and administrative records provide important complementary and sometimes conflicting evidence on the alternative work arrangements measured by the CWS.

Through a combination of new empirical analysis and a synthesis of existing research findings, we provide insights from these other data sources into the incidence and trends in alternative work arrangements, the characteristics of workers in these arrangements, and the implications of these arrangements for worker outcomes. Our analysis reveals large discrepancies between the CWS and alternate data sources in the size of the independent contractor workforce. In other cases, compared to the CWS, alternate data sources provide considerably broader measures of work arrangements, affecting our understanding of the number and characteristics of workers in them. We discuss lessons from our findings for improving the measurement of alternative work arrangements.

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I. INTRODUCTION

The Contingent Worker Supplement (CWS) to the Current Population Survey (CPS), fielded six times between 1995 and 2017, was motivated by concerns over changes in the structure of work in the U.S. economy and its implications for workers. The CWS was designed to measure jobs that were temporary, or contingent, in nature as well as work arrangements thought to be associated with less commitment between workers and employers (National Academies of Sciences, Engineering, and Medicine [NASEM] 2020). The alternative work arrangements covered in the CWS include independent contractors, which includes independent consultants and freelance workers; platform work, which usually is a type of independent contractor arrangement; temporary help and other intermediated contract work arrangements; and on-call work, which captures some unpredictable work schedules. In Abraham and Houseman (2020), we review the research literature on the CWS and provide new analyses based on pooled data from the six waves of the CWS to understand the incidence and trends in contingent and alternative work arrangements, the characteristics of workers in these arrangements, and the implications of contingent and alternative work arrangements for various dimensions of job quality.

While the CWS provides consistent measures of the work arrangements covered in the survey over a 22-year time span, it also has shortcomings. Data from other household surveys, employer surveys, and administrative records provide important, complementary evidence on the alternative work arrangements measured by the CWS. In this companion paper, we synthesize the growing body of research that draws on other data sources to examine the work arrangements covered in the CWS and present new analyses using data from several household surveys: the Survey of Household and Economic Decisionmaking, the Gallup Contract Work Module, and the American Time Use Survey. In these analyses, we provide estimates by individual and for some arrangements, job characteristics of the conditional probability that a worker will be in the alternative work arrangement, comparing results from the other data sources to those derived from the CWS.

Our literature review and empirical analyses are designed to provide further insights into the incidence and trends in alternative work arrangements, the characteristics of workers in these arrangements, and the implications of these arrangements for worker outcomes. In some cases, the comparisons reveal large discrepancies between the CWS and alternate data sources in the incidence of the work arrangement. In other cases, alternate data sources provide considerably broader measures of the work arrangement than the CWS, affecting our understanding of the share and characteristics of workers in these arrangements.

We begin the paper with an overview of the household surveys, employer surveys, and administrative data sources referenced in this paper. The next four sections of the paper are organized by work arrangement. In Section III, we examine independent contractors. Although independent contractors are the largest of the alternative work arrangements measured in the CWS and display no trend increase in their share of the workforce in that survey, other data sources show a much higher incidence and growth in the share of workers in independent

contractor work. We discuss possible reasons for these large discrepancies across data sources. We also point to evidence from several sources suggesting that the composition of workers in independent contractor arrangements has shifted toward workers with lower educational attainment and incomes.

Section IV discusses informal work and platform work, focusing especially on workers who obtain work through online platforms such as Uber, Lyft, Upwork, and TaskRabbit comparing evidence on these workers from the 2017 CWS to that from other household surveys, administrative tax data, and administrative financial data. Although most platform workers are classified as independent contractors, they obtain assignments through the platform company, which also mediates the payment for their services. Thus, platform work may be thought of as a hybrid of independent contractor and contract company work.

We examine contract company workers, including those who work for temporary help agencies, in Section V. This type of contract work is an intermediated relationship. Whereas independent contractors generally contract directly with the customer for whom they perform services, contract workers work for a business that in turn contracts with the customer. Owing to difficulties household survey respondents may have in answering questions about the contract arrangements their employers have with other businesses, the CWS uses a narrow definition of contract work, measuring workers who work primarily for one customer at the customer's worksite. We compare findings from the 2017 CWS on contract work with those from the Gallup Contract Survey Module, which uses a similar definition. We also review findings from the research literature that uses broader measures of business-to-business contracting based on statistical agency industry accounts data and business surveys.

In Section VI, we examine workers with unpredictable schedules. The CWS focuses on workers who are in on-call arrangements, defined narrowly as those who have no guaranteed work hours and only work when needed. We analyze data from other household surveys that use broader measures of unpredictable work schedules in which workers have short notice of their schedule (e.g., less than one week, or a day or less) to examine the incidence of these arrangements and the characteristics of workers in these jobs. We also review the growing literature on the implications of unpredictable schedules for worker health, productivity, and other outcomes.

In the paper's conclusion, we summarize insights from all of the available data sources on alternative work arrangements and discuss steps that could be taken to ensure timely information for researchers and policymakers about how work arrangements are changing.

II. SOURCES OF INFORMATION ABOUT ALTERNATIVE WORK ARRANGEMENTS

Household surveys, employer surveys, and administrative data, including tax data and other financial records, all provide information about various alternative work arrangements and their role in the labor market. As discussed below, each of these sources of data has strengths and

weaknesses that are relevant when interpreting the research findings presented in later sections of the report. In this section, we discuss each type of information in turn.

Household Surveys

Much of what we know about alternative work arrangements comes from household surveys. An important advantage of these surveys is that, in addition to asking about work arrangements, they collect information about individuals' demographic characteristics and family circumstances, information that provides valuable context to their work arrangements.

Interest in work arrangements—particularly online platform work—has grown significantly in recent years. We do not attempt to review all of the many household surveys that have included questions about work arrangements. Rather, our review focuses on household surveys sponsored by government and nonprofit research organizations that were designed to be representative of the population as a whole and collected information that, in our assessment, significantly advanced the understanding of alternative work arrangements.¹

Current Population Survey and American Community Survey

Although not designed specifically to measure alternative work arrangements, both the CPS and the American Community Survey (ACS) collect some useful information on class of worker. The CPS is a monthly household survey fielded by the Census Bureau for the Bureau of Labor Statistics (BLS) and is the source of many official labor market statistics.² The CPS class-of-worker question asked of employed individuals identifies whether, on their main jobs, workers are self-employed and or in wage and salary employment.³ The latter group is further differentiated by type of employer. Since 1967, the survey also has included a question about whether a self-employed person's business is incorporated or unincorporated. The unincorporated self-employed include some small business owners who generally would not be considered independent contractors, but trends in independent contractor activity should be reflected in the data on unincorporated self-employment.⁴ The ACS is an ongoing survey conducted by the Census Bureau that provides annual information similar to that collected prior

¹ Information on additional household survey data sources that did not meet our criteria can be found at the Gig Economy Data Hub, a joint endeavor of the Cornell University ILR School and the Aspen Institute Future of Work Initiative (see <https://www.gigeconomydata.org/research/data-sources>).

² For more information about the CPS, see <https://www.bls.gov/cps/>.

³ Households selected for participation in the CPS are in the sample for four months, out for eight months, and then in for an additional four months. Class of worker information for the second job is collected only in the fourth and eighth months.

⁴ Since 1995, the CPS has asked self-employed respondents in their fourth and eighth months whether they had employees, information that should be useful for distinguishing independent contractors from self-employed small business owners. Hipple (2010) reports that, in 2009, 13.6 percent of those who were unincorporated self-employed on their main job had employees.

to 2010 on the decennial Census long form.⁵ It collects class-of-worker information for employed individuals similar to that collected in the CPS.

In addition, the Annual Social and Economic Supplement (ASEC) to the CPS asks about sources of earnings over the prior calendar year.⁶ These data can be used to construct two measures of earnings from unincorporated self-employment during the year. The first captures earnings on a main unincorporated self-employment job; the second, more inclusive, measure includes earnings from additional self-employment jobs.⁷

Advantages of the CPS and ACS data include their large sample sizes, high response rates, rich contextual information, and the fact that consistent data are available on a regular basis over an extended period. The CPS samples about 60,000 households each month and, through the early 2010s, its response rate consistently exceeded 90 percent. Although response to the survey has fallen over the past decade, it remained above 80 percent through the start of 2020. Response to the ASEC supplement is lower and, like that for the monthly CPS, it has dropped, from about 85 percent through 2010 to about 70 percent in 2019. Despite this decline, the ASEC supplement response rate remains high relative to the response rates obtained by private survey organizations. The ACS currently samples about 3.5 million households per year, and its response rate consistently exceeded 95 percent of eligible households from its introduction in 2000 through 2012. The ACS response rate also has dropped somewhat in recent years, but to date it has fallen below 90 percent only in 2013 (89.9 percent) and 2019 (86.0 percent).⁸ Contextual information available on the surveys includes demographic characteristics (such as age, gender, race, ethnicity, and education) and the occupation and industry of the person's main job.

One limitation of the measures of unincorporated self-employment from the full monthly CPS sample and from the ACS is that they refer only to the main job. The ASEC earnings information can be used to produce measures of participation in unincorporated self-employment over the course of the calendar year either on the main job or on *any* job, with the caveat that, for the any-job measure, it must be assumed that earnings from second self-employment jobs are from unincorporated self-employment.

⁵For more information about the ACS, see <https://www.census.gov/programs-surveys/acs>.

⁶For more information about the ASEC supplement to the CPS, see <https://www.census.gov/data/datasets/time-series/demo/cps/cps-asec.html>.

⁷The ASEC asks explicitly whether earnings from a main self-employment job held during the year were from incorporated or unincorporated self-employment. This distinction is not made for other self-employment earnings, but as discussed in Abraham et al. (2021) and Abraham et al. (forthcoming), analysis of data on second self-employment jobs for those in their fourth and eighth months of participation in the CPS suggests that most self-employment earnings from a job other than the main job are from unincorporated self-employment.

⁸ CPS response rates can be found at <https://www.bls.gov/osmr/response-rates/home.htm#chart1a> and ACS response rates at <https://www.census.gov/acs/www/methodology/sample-size-and-data-quality/response-rates/index.php>. The CPS response rate fell sharply during the early months of the pandemic, but since has largely recovered.

Contingent Worker Supplement

The Contingent Worker Supplement to the CPS has been conducted on six occasions between 1995 and 2017—in 1995, 1997, 1999, 2001, 2005, and 2017.⁹ As discussed in greater detail in an earlier paper (Abraham and Houseman 2020), the survey was designed explicitly to collect information on alternative work arrangements and job contingency, defined based on workers' expectations about whether they could remain in their current job if they chose. The survey also asked about transitions into and out of alternative work arrangements. Individuals identified as employed in the main CPS interview are eligible for the supplement.

The supplement questions identify five different alternative work arrangements:

- 1) Temporary agency worker. Person who is paid by a temporary help agency, whether or not their job is temporary.
- 2) On-call worker. Person who is called to work only as needed, although the person can be scheduled to work for several days or weeks in a row. A person with regularly scheduled work that might include periods of being “on call” to perform work at unusual hours, such as a doctor, is not included in this category
- 3) Day laborer. Person who obtains work by waiting at a place where employers pick up people to work for a day.
- 4) Contract company worker. Person employed by a company that provides them or their services to others under contract. The BLS reports estimates for the subset of contract company workers who usually are assigned only to one customer and usually work at the customer's worksite.¹⁰
- 5) Independent contractor. Person who considers him/herself to be an independent contractor, independent consultant, or freelance worker, regardless of whether he or she is classified as self-employed or as a wage and salary worker in the monthly CPS.

These five categories are constructed to be largely exclusive of one another, with the exception that the BLS also categorizes a few on-call workers as contract company workers. Information collected as part of the monthly CPS allows independent contractors who report themselves as employees (and who thus likely are miscoded) to be distinguished from those who report themselves as self-employed. Non-independent-contractor self-employed and traditional wage and salary workers also can be distinguished in the data. Questions about work obtained through online platforms were added to the CWS in 2017.

⁹In 2016, Lawrence Katz and Alan Krueger fielded the core CWS questions to participants in the online American Life Panel (Katz and Krueger 2019a, 2019b). As they note, however, the results are not directly comparable to the CWS findings. For that reason, these data should not be used together with the CWS data to assess trends in the prevalence of alternative work arrangements.

¹⁰ The BLS used this narrow definition of contract company worker because of concerns that respondents would not be able to report reliably on contract arrangements for broader definitions that include working off-site or for multiple clients.

Similar to the estimates of unincorporated self-employment based on the monthly CPS, significant advantages of the CWS include its large sample size, high response rate, and rich contextual information. The exact number of usable observations in the CWS sample varies somewhat across years due to changes in the number of households interviewed for the CPS, which CPS sample rotation groups were designated as eligible for the CWS, and CWS nonresponse, but has averaged about 50,000 per year (Abraham and Houseman 2020). Taking into account both nonresponse to the core CPS and additional supplement nonresponse, the CWS response rate was roughly 85 percent in each wave from 1995 through 2005 and about 77 percent in 2017. Because the CWS is a supplement to the CPS, all of the information collected as part of the standard monthly CPS interview is available for CWS respondents.

A growing body of recent research suggests that the CPS may miss some informal work activities. This is because some people who are doing work to earn money are not categorized as employed and thus are not eligible for the CWS (Abraham and Amaya 2019; Katz and Krueger 2019b; Abraham et al. 2021; Bracha and Burke 2021; Abraham et al., forthcoming). Further, by design, the CWS asks about work arrangements only for the main job. For these reasons, the CWS does not provide a complete picture of the use of alternative work arrangements.

An additional concern is that the questions asked to identify independent contractors, the largest alternative work arrangement, could lead to measurement problems. More specifically, people categorized as employees in the monthly CPS are told that an independent contractor is someone who “obtains customers on their own to provide a product or service,” a restrictive phrasing that may lead some independent contractors not to report themselves as such (NASEM 2020). The BLS also found problems with the new questions about work obtained through online platforms added to the CWS in 2017 that we discuss in Section IV of the report.

General Social Survey

The Quality of Worklife (QWL) module included in the General Social Survey (GSS) in five years (2002, 2006, 2010, 2014, and 2018) is another source of information about work arrangements. The GSS is a biennial, nationally representative, personal interview survey of U.S. households funded by the National Science Foundation and conducted by the National Opinion Research Center.¹¹

Among other questions about labor market activity, the GSS QWL module includes a question about the work arrangement on respondents’ main jobs. The response options are 1) independent contractor/consultant/freelance worker; 2) on-call, work only when called to work; 3) paid by a temporary agency; 4) work for contractor who provides workers/services; or 5) regular, permanent employee. These categories are similar to those used in the CWS. The module also includes a question about work schedules. The response options to that question are 1) day shift; 2) afternoon shift; 3) night shift; 4) split shift; 5) irregular/on-call shift; and 6) rotating shifts. Since 2014, the QWL has included a question about advance notice of schedule. A similar

¹¹ For more information about the GSS, see <https://gss.norc.org/>

question together with additional questions about control over schedule and stability in the number and timing of hours was asked in 2016 as part of the GSS Flexible Work module.

Across the five years in which it has been administered, the sample size for the GSS QWL module has averaged just under 1,500 employed respondents. The 2016 GSS Flexible Work module was smaller, with just 579 respondents. With this number of available observations, there is limited scope for producing survey estimates disaggregated by worker characteristics. The GSS response rate was roughly 70 percent from 2002 through 2014, then fell to about 60 percent by the time of the 2018 wave (Morgan 2020). Similar to the CWS, the questions about work arrangements and work schedules pertain to workers' main jobs; information about arrangements and schedules on secondary jobs is not available.

Gallup Contract Work Module

The Gallup Contract Work module was designed to provide better information about all types of contract work than is available from existing household surveys. The module was fielded in four month-long waves between May–June 2018 and February–March 2019 as an add-on to the Gallup Education Consumer Pulse Survey (hereafter the Pulse Survey), a large, nationally representative telephone survey fielded by Gallup and cosponsored by the Strada Education Network.¹² The target population for the Pulse Survey is adults age 18 to 65, but during the periods that the Contract Work module was in the field, Gallup also administered the Pulse Survey's employment and core demographic questions to individuals ages 66 to 80.

Similar to the CPS, the Pulse Survey collects employment information for a specified week (the seven days preceding the interview). A standard battery of questions used on a number of different Gallup surveys asks both about work for an employer and about self-employment work. The Contract Work module consists of 14 questions concerning respondents' employment and work arrangements that were interspersed, as appropriate, among the standard Gallup employment questions. The module questions identify people who say they work for an employer but in fact are independent contractors rather than employees; other independent contractors; people who work for a contract company; people doing informal work not captured elsewhere on the survey; and anyone who obtains work through an online platform (Abraham, Hershbein, and Houseman 2019).

Approximately 15,000 responses were obtained during each of the four waves of the Contract Work module. The relatively large sample size allows users of the data to disaggregate by demographic group. The standard Pulse Survey questions emphasize reporting even of low-hours work and additional questions included in the Contract Work module probe regarding workers' employment status. For these reasons, the Contract Work module data should provide a more complete picture of independent contractor employment than data from other sources. The survey response rate is 8–10 percent, depending on the wave, higher than the response rates for

¹² For more information about the Gallup Education Consumer Pulse Survey, see <https://www.gallup.com/225695/education-consumer-survey-work.aspx>.

most online panels but low compared to the CWS and GSS. After weighting and adjustments to account for the effects of differences in the questions asked on the reporting of low-hours work and employment status, the survey's overall employment and self-employment estimates are generally consistent with those from the CPS (Abraham, Hershbein, and Houseman 2021, Appendix B).

National Longitudinal Surveys

Although they do not represent the full cross-section of employment at any point in time, the National Longitudinal Surveys (NLS) sponsored by the BLS have gathered information at regular intervals on the labor market experiences and other significant life events of several nationally representative cohorts of men and women. For the past four decades, the NLSY79 has collected labor force information for a cohort of 12,686 individuals who were ages 14 to 22 when first surveyed in 1979. These individuals were interviewed annually through 1994 and have been interviewed biennially since then.¹³ The NLSY97 has collected labor force information since 1997 for a cohort of 8,984 individuals who were ages 12 to 16 in December of 1996; they were interviewed annually through 2011 and have been interviewed biennially since then.¹⁴

Since 2002, the NLSY79 has included questions similar to those in the CWS to identify alternative work arrangements (temporary help supply workers, on-call workers, contract company workers, and independent contractors). Similar questions were added to the NLSY97 in 2006. Given the longitudinal structure of the NLS surveys, researchers could use the responses to these questions to analyze transitions into and out of alternative employment arrangements, though we are not aware of research that has done so.¹⁵ Since 2011, the NLSY97 has included questions about the amount of advance notice workers receive of their work schedules.

Federal Reserve System Online Panel Surveys

Prompted by the growing interest in the “gig economy,” several recent surveys have contained questions designed specifically to learn about the prevalence of informal work activity. One is the Survey of Informal Work Participation (SIWP), conducted on five occasions from 2013 through 2017 (in December 2013; January 2015; and December 2015, 2016, and 2017) as a module added to the Federal Reserve Bank of New York's Survey of Consumer Expectations (SCE) (Bracha and Burke 2018).¹⁶ The SCE samples respondents to the Conference Board's Consumer Confidence Survey (CCS), an address-based mail survey designed to be representative of the population, who have internet access and express a willingness to participate in an online

¹³For more information about the NLSY79, see <https://www.bls.gov/nls/nlsy79.htm>.

¹⁴For more information about the NLSY97, see <https://www.bls.gov/nls/nlsy97.htm>.

¹⁵Addison and Surfield (2009) use data from earlier waves of the NLSY79 to study the effects of employment arrangements on subsequent work histories, but these data do not allow them to distinguish between contract workers and independent contractors.

¹⁶The questions on the December 2013 SIWP were not fully comparable to those asked in later survey waves.

panel on perceptions of the economy, employment, finances, and related topics. Respondents remain in the SCE sample for up to 12 months. Approximately 1,300 household heads respond to the SCE each month. The SIWP module includes both the standard core CPS employment questions and additional questions about current participation in informal income-generating activities, so that estimates of employment like those in the CPS but either excluding or including informal work not reported in answers to the standard questions can be constructed.

The Enterprising and Informal Work Activities (EIWA) Survey (Robles and McGee 2016), sponsored by the Federal Reserve Board, was administered as an online survey via the GfK KnowledgePanel in October and November of 2015. The EIWA is considerably larger than the SIWP, with some 6,898 respondents. Of these, 2,483 had engaged in what the survey terms enterprising or informal income-generating activities during the preceding six months. These individuals were asked a battery of items about these income-generating activities, which include in-person service activities such as housecleaning, landscaping, or child care; selling new or used items at garage sales or flea markets; and selling services, selling items or renting property online.

The Survey of Household Economics and Decisionmaking (SHED), an annual online survey also sponsored by the Federal Reserve Board and administered via the GfK (later Ipsos) KnowledgePanel, has included questions about informal work since 2015. The SHED sample size was 5,642 in 2015 and 6,610 in 2016, but roughly doubled in subsequent years to 12,447 in 2017, 11,316 in 2018, and 12,173 in 2019. The 2015 SHED contained a single question about whether a respondent was currently engaged in informal work activity outside of a main job (Board of Governors 2016). The 2016 SHED adopted a more detailed set of questions about informal work activity modeled on those developed for the EIWA, with respondents asked to report on informal work done outside of their main job over the prior month. The 2017 SHED collected similar information (Board of Governors 2017, 2018). The 2018 and 2019 SHEDs retained the basic structure of the questions about informal work and the one-month reference period of the two previous surveys, but respondents were asked to report all participation in informal work rather than restricting their reports to informal work outside of a main job (Board of Governors 2019, 2020). Question wording and response options varied somewhat across the 2016 through 2019 waves. For these reasons, if analyzing data pooled across multiple waves of the SHED, care must be taken to harmonize the responses. In addition to asking about informal work, the SHED surveys also include questions about work schedules. In cases where workers' schedules vary based on employers' needs, they are asked how far in advance the employer tells them what the schedule will be.

One caveat regarding the three surveys just discussed—the SIWP, the EIWA, and the SHED—is that all were administered via online survey panels. Although each is weighted to match the demographic characteristics of the target population, one might be concerned that people who are willing to participate in an online survey panel may be more likely than otherwise similar individuals to participate in informal work and to have less standard work schedules.

Taking into account losses during the course of panel recruitment, the response rates to the EIWA and the SHED are just 4 percent to 5 percent; we have been unable to locate information

regarding the response rate for the SIWP, but given the similarity of the methods used for the three surveys, it is likely to be similar.¹⁷ Although there is no one-to-one relationship between response rates and nonresponse bias (Groves and Peytcheva 2009), the surveys' low response rates reinforce concern that those participating may be atypical. As discussed by Abraham and Houseman (2019), it is at least somewhat reassuring that the estimated share of people in the 2017 SHED who earned money within the past month by driving using a ridesharing app is of the same order of magnitude as estimates for the same time period from other sources. Unfortunately, comparable benchmarks for other types of informal work are lacking.

American Time Use Survey, Leave and Job Flexibilities Module

Among other things, the Contingent Worker Supplement to the CPS asks workers about whether they worked on an on-call basis. As noted above, however, on-call work in the CWS is defined narrowly to include just workers who were called to work only when needed and was intended to capture those with no explicit or implicit guarantee of any work hours. There has been interest in broader measures that capture those whose employers vary their work schedule with little advance notice, and thus may experience hours and earnings insecurity.

The 2017–2018 Leave and Job Flexibilities module to the American Time Use Survey (ATUS) helps fill this data gap. The sample for the ATUS is drawn from respondents in the outgoing CPS rotation group. Like the GSS and SHED discussed above, the Job Flexibilities module to the ATUS includes questions for those identified as wage and salary workers about the degree of control they have over their schedules and the amount of notice regarding scheduling they receive from their employers. If a worker holds more than one job, the questions pertain to the main job. Advance notice of schedule is grouped into five categories—less than 1 week, from 1 to 2 weeks, from 2 to 3 weeks, from 3 to 4 weeks, and 4 weeks or more. The Job Flexibilities module also includes questions on whether workers' schedules primarily involve hours during weekdays, at night, or on weekends and the degree of flexibility workers enjoy in changing their schedules.

The ATUS Job Flexibilities module has several advantages—the relatively large sample size, the relatively high response rate, and the fact that the data can be linked to demographic and other information collected in the main CPS. Since 2003, the ATUS sample has included about 26,000 people per year. The survey response rate was about 55 percent through 2012, though it fell to just over 40 percent by the beginning of 2020. The Job Flexibilities module collected information on work schedule notice for about 10,000 individuals identified as wage and salary workers whose employers controlled their schedule.

¹⁷ Like the EIWA and the SHED, the SIWP is a module added to an ongoing probability-based online panel.

Employer Surveys

Through employer surveys, businesses can provide important information for policy and research that complements the information captured in household surveys. One key area in which business data may fill gaps is the measurement of contract company work, including use of temporary help services. Reporting about subcontracting relationships may be especially difficult for household survey respondents. Business survey respondents also can provide insights into how and why businesses are using nonstandard work arrangements.

Bernhardt, Spiller, and Theodore (2013) attempted to identify subcontracted jobs in their in-depth, long-form survey of low-wage workers, but abandoned the effort because of workers' inability to identify whether or not their employer was a contractor. The CWS currently attempts to measure only a subset of subcontracted work (on-site, for one client), but the potential universe of subcontracted work arrangements is much broader and more varied. Subcontracted workers may work off-site, at multiple sites, for multiple clients, or with names on their paychecks that they do not recognize or that do not match who they think their employer is. Although the GSS includes a contract worker category, it is unclear exactly what that category is capturing.

One type of information that is useful for understanding trends in contract work is data on the evolution of employment and earnings by industry. The Census Bureau collects information on employment and payrolls for detailed North American Industry Classification System (NAICS) industries every five years as part of the Economic Census. More timely but somewhat less disaggregated information on employment and earnings by industry is available from the BLS' monthly Current Employment Statistics (CES) survey. CES data are available beginning in 1990 for a range of NAICS business services industries. These include temporary help services (THS), professional employer organizations (PEO), telephone call centers, security and armored car services, janitorial services and others.¹⁸ Growth in the business services share of employment is indicative of an increase in contracting out, but one also would like to know which businesses are using these services.

Capturing firms' use of THS and PEO workers has been of particular concern to the federal statistical agencies. For many purposes, such as measuring sectoral productivity, the employees of these firms should be assigned to the industry in which they are actually working rather than to staffing services. While recognizing this issue, both Census and BLS have faced challenges in collecting the information from THS and PEO firms needed to reallocate workers to the industries in which they are working. For a number of cycles, the Economic Census has included questions for PEO firms about the industries in which leased workers are placed (Lombardi and Ono 2010), but similar questions are not asked of THS firms nor is it clear that the THS firms would be able to answer them. BLS carried out a study in 2005 to assess the feasibility of collecting information from THS and PEO firms in the CES on where they placed workers.

¹⁸ Data from the CES are available as far back as 1972 for selected business services industries defined on a Standard Industrial Classification (SIC) basis (Abraham 1990), but the SIC data are less disaggregated and, even where their titles are similar, the SIC categories are not always defined consistently with the corresponding NAICS categories.

Many THS and PEO firms did not have records concerning the industry of their clients and a substantial minority were unable or unwilling to provide this information on the CES (Bureau of Labor Statistics 2005).

An alternative strategy for learning about the use of contract services specifically and alternative work arrangements more generally is to ask the users of these services and arrangements. The Census Bureau collects data from businesses on their expenditures for various categories of material and services purchases, information that can shed light on firms' use of contracted services. The current vehicle for collecting this information is the Business Expenses Supplement (BES) conducted by the Census Bureau as a part of the Economic Census and its program of annual economic surveys.¹⁹ Historically, data collection for categories of materials purchases has been far more detailed than the categories collected for services purchases. The categories of services expenses for which firms are asked to report vary somewhat depending on the industry. Currently, for example, the Census Bureau collects expenditures on temporary staff and leased employees (staff obtained through Professional Employer Organizations) for the retail, wholesale trade, services, and manufacturing sectors. Information on business expenditures for data processing and other computer services, communications, repairs and maintenance to buildings and machinery and equipment, advertising and promotional services, and professional and technical services are also collected for services and manufacturing industries.²⁰ BES data are collected annually for the manufacturing and services sectors, but only once every five years for other industries, and they are denominated in dollars rather than the amount of labor used to produce the service in question. Another limitation is that, within each expense category, the data combine payments to individuals working as independent contractors or freelancers with payments to contract firms whose employees perform services, so that the two cannot be separated.

While these Census surveys query organizations about their expenditures for specific categories of contract services, other employer surveys have asked more general questions about organizations' use of various alternative work arrangements, including contract arrangements. During the 1980s and early 1990s, several privately sponsored surveys collected information from firms about their use of alternative work arrangements (Mangum, Mayall, and Nelson 1985; Abraham 1988; Bureau of National Affairs 1994; Axel 1995; Christensen 1995; and Kahn, Foulkes, and Heisler 2001). Houseman (2001) reports on the first nationally representative employer survey to ask about these topics. This was a telephone survey conducted in 1996; 550 respondents provided usable survey responses, a response rate of 51 percent. The survey collected information on responding firms' use of agency temporaries, short-term hires, part-time workers, on-call workers and contract workers, along with responses regarding employers' reasons for using these arrangements and information on firm characteristics useful for exploring the factors associated with the use of alternative arrangements.

¹⁹ The BES was introduced in 1997. It replaced the Assets and Expenditures Survey, which included questions not only about current expenses but also about capital expenditures and fixed assets.

²⁰ In selected years, the Census of Manufacturers, Census of Services, and Census of Wholesale Trade—which are conducted every five years as part of the Economic Census conducted by the Census Bureau—have collected information on purchased contract manufacturing services.

A second nationally representative telephone survey from the same period, the National Organizations Study (NOS II) conducted in 1996–1997, also collected information on the use of nonstandard work arrangements (Kalleberg, Reynolds, and Marsden 2003; Kalleberg and Marsden 2005). Usable responses to this survey were obtained from 1,002 firms, a response rate of 54.6 percent. A distinguishing feature of this survey is that it asked separately about the use of nonstandard work arrangements to accomplish different types of work activities. The questions distinguish nonstandard work arrangements in each of nine activities, the firm’s core activity (e.g., making cars for an auto manufacturer) plus eight non-core activities (research and development, marketing, clerical, accounting, computing and information services, security, janitorial, and machinery repair and service).

Brown, Sturgeon, and Cole (2013) report on findings from the 2010 National Organizations Survey, designed to be representative of U.S. employers of full-time workers ages 25–62, exclusive of firms with fewer than 10 employees. Of the 1,777 firms included in the survey sample, 333 provided usable responses, for an overall response rate of 18.7 percent. This survey’s focus was outsourcing and offshoring. This survey took a work functions approach, asking about domestic and international sourcing for each of eight business functions intended to be mutually exclusive and exhaustive. The eight functions were 1) the primary business function; 2) research and development; 3) sales and marketing; 4) transportation, logistics, and distribution; 5) customer and after-sales service; 6) management, administration, and back office functions; 7) informational technology (IT) systems; and 8) facilities maintenance.

More recently, the Census Bureau has added questions about firms’ use of alternative work arrangements to the Annual Survey of Entrepreneurs (ASE) and Annual Business Survey (ABS). The sample for the ASE, administered in 2014 through 2016, included approximately 290,000 employer firms per year, with just under half of them firms less than 10 years old (Foster and Norman 2016). The unit response rate—that is, the share of businesses responding—was 74.0 percent in 2014, 66.9 percent in 2015 and 64.7 percent in 2016. The sample size for the 2018 ABS (asking about 2017) was approximately 850,000 firms, of which 67.8 percent responded; that for the 2019 ABS (asking about 2018) was about 300,000 firms, of which 68.2 percent responded. The surveys ask firms whether they use each of six categories of workers—full-time employees; part-time employees; day laborers; temporary agency workers; leased workers from a leasing firm or PEO; and contract, subcontracted, independent contractors, or outside consultants. A more in-depth module to the 2015 ASE added questions regarding the share of the firm’s total workers that were of each type and, building on the business functions approach piloted in the 2010 National Organizations Survey, the types of tasks each type of worker performed.

Tax Data

Tax data are another source of information about the arrangements under which work occurs. Tax information includes both information returns—reports that those paying employee or nonemployee compensation may be required to file—and schedules associated with the filing of

individual income tax returns. Tax data delineate between income earned as an employee and income earned as an independent contractor or owner of an unincorporated business.

Almost all wage and salary income is subject to information reporting—a Form W-2 is required for any job on which an individual earns \$600 or more in wages or salary during a year.²¹ In contrast to the relatively complete coverage of the information returns for wage and salary income, the income earned by sole proprietors and others doing nonemployee work may generate no information reporting. If there is an information return, it most commonly is a Form 1099-MISC, used through 2019 to report nonemployee compensation payments of \$600 or more by a business to any individual during a year.²² Since 2011, payments to some nonemployees with online platform earnings as well as payments to some individuals who accept credit card payments have been reported on Form 1099-K.²³ Non-credit-card payments to independent contractors for services to households are not subject to any kind of information reporting.

Even if individuals do not receive information returns, they generally are required to report receipt of nonemployee compensation on their individual income tax returns. Anyone with net self-employment income for services provided totaling \$433 or more over the course of a year is required to file a Schedule SE, the form used to calculate self-employed individuals' Social Security and Medicare tax liability. Income and expenses associated with an unincorporated sole proprietorship or other self-employment activity are to be reported on a Schedule C. The requirement to include a Schedule C with a self-employed tax filer's individual return applies even if business expenses fully or more than offset the gross payments received.

Using information from Schedule SE and Schedule C, researchers have tracked changes over time in sole proprietor activity (Jackson, Looney, and Ramnath 2017; Collins et al. 2019; Lim et al. 2019; Abraham et al. 2021; Abraham et al., forthcoming). Those schedules, however, do not contain information about the individuals or firms for which a person has performed work. In contrast, a Form 1099-MISC used to report business payments of nonemployee compensation contains a tax identifier both for the payee and for the payer. This means that Form 1099-MISC data allow researchers to match individuals to the firms for which they are performing work (Collins et al. 2019). Form 1099-K shows the source of payments received, meaning that those data can be used to identify and track individuals receiving payments from platform companies (Collins et al. 2019; Garin et al. 2020).

While tax data can offer valuable insights regarding independent contracting and other self-employment work, they capture only the information reported to tax authorities, and as such do not measure off-the-books work, likely including much informal work. Underreporting of income and overreporting of expenses by sole proprietors seeking to minimize their tax liabilities is a well-documented problem (Slemrod and Bakija 2008; Internal Revenue Service 2019). A further issue, discussed in the next section of the paper, is that the incentives for taxpayers to

²¹ Wages or salaries that owners of incorporated businesses pay themselves are reported on the same form.

²² A new Form 1099-NEC was introduced in 2020 to be used for this purpose.

²³ A Form 1099-K is required when payments during a year total more than \$20,000 and more than 200 separate transactions. In the past, some online platform companies issued 1099-K's even when workers did not meet this threshold, but a number of these companies have discontinued that practice.

report their self-employment income may change over time, distorting estimated self-employment trends. In addition, because tax data are available only on an annual basis, when multiple sources of income are reported, one cannot be certain whether work relationships were contemporaneous (reflecting multiple job holding) or sequential.

Commercial Data

Private financial records are a final type of data that has proven useful for studying alternative work arrangements, especially online platform work. Examples include anonymized banking records (Farrell, Greig, and Hamoudi 2018) and anonymized records of financial transaction made by the users of online personal financial management tools (Koustas 2018). Payments originating with named platform companies can be identified in these sorts of data and the data's temporal granularity makes it possible to study the short-term dynamics of platform work participation.

Several studies carried out by researchers at the JPMorgan Chase Institute (JPMCI) have analyzed anonymized banking records consisting of transaction-level information for customers with JPMorgan Chase banking and credit card accounts (Farrell and Greig 2016a,b; Farrell, Greig, and Hamoudi 2018). Accounts with common or overlapping ownership can be linked. The research team has identified a set of platform companies and payments originating with those companies, allowing analysts to study trends in the receipt of platform payments, persistence in platform work, and the relationship between fluctuations in platform earnings and fluctuations in earnings from other sources, among other topics. The JPMCI data set is large; in their study, Farrell, Greig, and Hamoudi (2018) leverage a sample of 2.3 million families who received income from 128 online platforms. In contrast to survey data, the data reflect real transactions or operations, meaning they are not affected by low (and falling) survey response rates, by respondents' interpretations of survey questions, by recall bias, or by proxy reporting when answering survey questions. In contrast to tax data, they are not subject to incentivized underreporting or to the effects of changes in tax reporting incentives over time. The personal financial software records analyzed by Koustas (2018) have similar advantages.

Data from these sorts of commercial sources also come with caveats. First, they generally are not representative of the full target population. Reweighting can help but cannot fully solve the problem. In the case of the JPMCI data, for example, the unbanked and those who choose not to bank with Chase will always be absent, and Chase bank outlets are absent from or underrepresented in certain areas of the country. Second, the unit for which financial transactions can be observed may correspond imperfectly to the unit of interest. In the case of the JPMCI banking data, Farrell, Greig, and Hamoudi (2018) aggregated linked accounts to approximate platform participation for an entire family, but accounts held by family members are not always linked nor do individuals always funnel all their income through a single financial institution. Finally, while surveys can be designed to produce consistent measurements over time, commercial administrative data are a byproduct of operations that can change, leading to inconsistencies and breaks in the data. For example, if online platforms change or expand the

ways in which participants may choose to be paid, measurements of participation solely based on direct deposits into checking accounts may miss an increasing share of that activity over time.

III. INDEPENDENT CONTRACTING—SIZE, TRENDS, AND IMPLICATIONS FOR WORKERS

Independent contracting is a type of self-employment arrangement. No definition of what makes one an independent contractor is provided to household survey respondents, and administrative data do not directly identify independent contractors as a category of the self-employed. A conceptual distinction can be made, however, between traditional business owners, who may have employees and significant capital investment in their business, and other workers who are not employees but independently provide services to households or businesses.

Independent contractors have long been common in certain industries, but there is a widespread perception that businesses in many parts of the economy increasingly are turning to independent contractors rather than hiring employees. Since the mid-2010s, numerous news stories have trumpeted the replacement of employee jobs by independent contractor arrangements and workers who piece together income from multiple sources.

Although there is a continuum of work arrangements such that the legal line between W-2 and self-employment can be blurred (Abraham, Houseman, and O’Leary 2020), there no doubt are some workers treated as independent contractors who should have been properly classified as employees. Indeed, evidence from audits of firms’ unemployment insurance filings conducted by state employment agencies points to substantial misclassification of employees as independent contractors (Carré 2015). Whether properly classified or not, workers in independent contractor arrangements do not have ready access to the benefits and protections routinely provided to traditional employees. Information on the prevalence of independent contractor arrangements thus sheds important light on workers’ circumstances.

Informal work has been a focus of recent research on independent contractors. Informal work includes work found through online platforms such as Uber, Lyft, TaskRabbit, Upwork, and others, but is a considerably broader phenomenon and may include, for example, providing services to households such as child or eldercare, cleaning, and home and yard maintenance. Several studies have suggested that informal work is not well captured by standard questions about work activity (Bracha and Burke 2018, 2021; Abraham and Amaya 2019; Katz and Krueger 2019b). Informal work generally and platform work specifically are discussed in the next section of the paper.

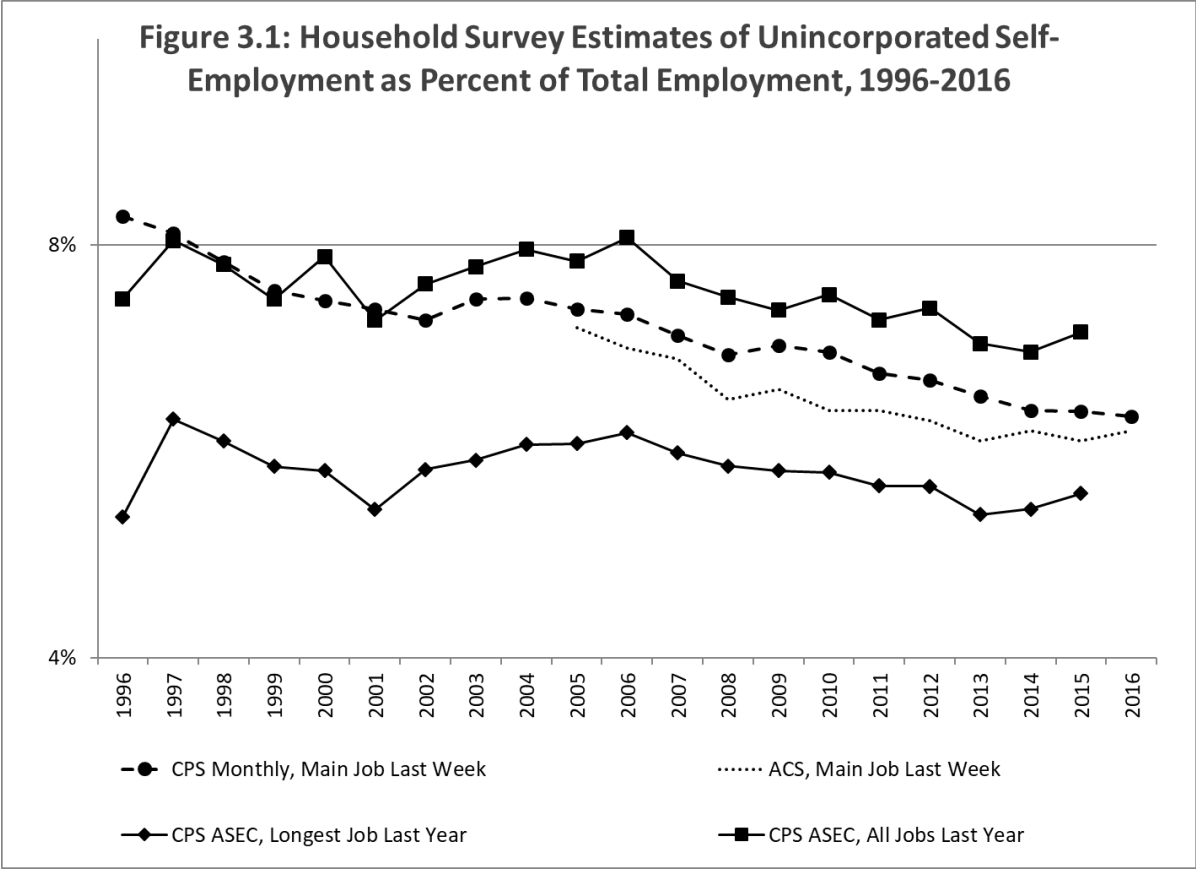
Levels and Trends in the Prevalence of Independent Contracting

The best data for assessing the share of workers who are independent contractors and how that has changed over time come from household surveys and tax records. In principle, employer surveys could provide information on businesses' use of independent contractors, but this typically has not been an explicit goal of existing employer surveys. The 2015 Annual Survey of Entrepreneurs conducted by the Census Bureau, for example, asked detailed questions about firms' use of alternative work arrangements, but independent contractors were part of a broader outsourcing category consisting of contract, subcontracted, independent contractor, or outside consultant workers, and thus are not separately identifiable.

Household Survey Estimates

One way to assess what has happened to independent contractor employment over time is to track the share of workers engaged in unincorporated self-employment. As discussed in Section II, the unincorporated self-employed include some owners of employee businesses who might not generally be considered independent contractors. So long as their share has not changed markedly over time, however, trends in the unincorporated self-employed share of the workforce should be informative about the trend in independent contractor activity.

Drawing on results reported by Abraham et al. (2021), Figure 3.1 displays unincorporated self-employment rates (unincorporated self-employment as a share of total employment) based on the monthly CPS, the ACS, and the Annual Social and Economic Supplement (ASEC) to the CPS. The various series span the period from 1996 through 2015. None of the series shows any consistent upward trend in the unincorporated self-employment rate and the two that refer to workers' main activity during the prior week (the monthly CPS series and the ACS series) have a clear downward trend. Comparing the two ASEC series, the share of workers reporting *any* unincorporated self-employment earnings averages about 30 percent higher than the share with earnings from an unincorporated self-employment main job.



SOURCE: Abraham et al. (2021).

NOTE: CPS=Current Population Survey; ACS=American Community Survey; ASEC=Annual Social and Economic Supplement. CPS and ACS are estimated share of employed persons in unincorporated self-employed on main job last week. CPS ASEC are estimated share of those with employment earnings during prior calendar year who had unincorporated self-employment earnings on longest job or unincorporated self-employment earnings on any job. See text for details.

Several surveys—the Contingent Worker Supplement to the CPS, the QWL module of the GSS, and the Gallup Contract Work module described in the previous section—have collected information explicitly on participation in independent contractor arrangements. All three surveys ask about work activity during a designated reference week. Table 3.1 summarizes these surveys’ estimates of the share of workers who are in independent contractor arrangements on their main job. Each survey provides an estimate for a recent year; the CWS and the QWL also provide evidence of how independent contractor activity has changed over time.

Table 3.1: Household Survey Estimates of the Prevalence of Independent Contracting, Main Job or Any Job (percent of workers)

Source and Year	Jobs Included	Percent of Workers
Contingent Worker Supplement, Current Population Survey		
1995	Main	6.7%
1997	Main	6.7%
1999	Main	6.3%
2001	Main	6.4%
2005	Main	7.4%
2017	Main	6.9%
Quality of Worklife Survey, General Social Survey		
2002	Main	13.8%
2006	Main	13.6%
2010	Main	13.3%
2014	Main	14.0%
2018	Main	12.1%
Contract Work Module, Gallup Education Consumer Pulse Survey		
2018–2019	Main	15.0%
2018–2019	Any	20.7%

SOURCE: Abraham and Houseman (2020) and authors' tabulations of General Social Survey (GSS) and Gallup Contract Work module data.

NOTE: Estimates refer either to being an independent contractor on the main job ("Main") or to being an independent contractor on any job ("Any"). GSS tabulations produced using GSS Data Explorer tool. All tabulations weighted. N=1,777 (2002), N=1,712 (2006), N=1,156 (2010), N=1,240 (2014) and N=1,408 (2018) for GSS. N=34,995 for Gallup Contract Work module.

The CWS and the QWL agree that there has been no long-term upward trend in independent contractor work as a share of all main jobs, but the QWL estimate of independent contracting as a share of all main jobs is nearly double that in the CWS. This difference in levels likely reflects differences in how work arrangements are identified in the two surveys.

In the QWL, employed respondents are asked, "How would you describe your work arrangement in your main job?" and shown a card with a list of possible response options, of which "Independent contractor/consultant/freelance" is the first and "Regular, permanent employee" the fifth. The CWS asks in turn about a series of possible alternative work arrangements. No one

who says that they were paid by a temporary help agency, worked as an on-call worker or day laborer, or worked for a contract company is asked whether they worked as an independent contractor. Workers not assigned to one of these other categories are asked, “Last week, were you working as an independent contractor, an independent consultant, or a freelance worker?” Individuals who had been categorized as an employee rather than self-employed in the monthly CPS are told these terms refer to “someone who obtains customers on their own to provide a product or service.”

Primacy bias—the tendency of respondents to surveys in which answer options are presented visually to choose the first option that seems reasonable (Krosnick 1999)—may be part of the explanation for the higher prevalence of independent contractor work in the QWL as compared to the CWS. This is a potential source of overstatement in the QWL estimates. On the other hand, in contrast to the CWS, the QWL does not allow proxy responses. If self-respondents are more knowledgeable about their own activities, the higher level of independent contractor work in the QWL may simply reflect more complete—and more accurate—reporting. In addition, the fact that, in the CWS, people who are categorized as on-call workers, day laborers, or contract company workers are not asked whether they worked as an independent contractor may contribute to underreporting of independent contractor work in the CWS. The qualifier attached to the version of the CWS independent contractor question given those categorized as employees—which tells respondents that an independent contractor is “someone who obtains customers on their own to provide a product or service”—also may have lowered the estimated independent contractor share of employment in the CWS relative to that in the QWL (NASEM 2020).

The estimated share of workers who are independent contractors on their main job in the Gallup Contract Work module, conducted in 2018–2019, is slightly higher than the share estimated in the QWL data for 2018. The question sequence in the Gallup module is more similar to the QWL question sequence than to that in the CWS, with everyone who reported working for pay asked some variant of a question designed to ascertain whether they were an independent contractor or an employee.²⁴ Notably, of the 15.0 percent of workers in the Gallup module who were categorized as independent contractors, 45 percent initially said they “worked for an employer” (6.7 percent of all workers) rather than that they were self-employed (8.3 percent of all workers). This suggests that asking about work as an independent contractor in a way that may discourage people initially categorized as employees from reporting it, as is the case in the CWS, could significantly lower the estimates obtained. Estimates of the share of workers doing *any* work as an independent contractor, as opposed to working as an independent contractor on a main job, also are available from the Gallup Contract Work module. This estimate (20.7 percent) is about a third larger than the estimate for the main job only (15.0 percent).

²⁴ The Gallup module tested two variants of the question to ascertain whether a person who said they worked for an employer was in fact an independent contractor. The results were similar and we have combined the responses to the two variants for the estimates reported here.

Tax Data Estimates

Tax data are another source of information that can shed light on the prevalence of independent contractor work. Like the estimates from the annual ASEC supplement to the CPS, tax data estimates refer to income earned at any point during the calendar year rather than to a person's activity during a specific reference week.

As discussed in Section II, tax law requires anyone with more than a very small amount of net unincorporated self-employment income to report it on a Schedule SE filed with their individual income tax return. This requirement applies to all unincorporated sole proprietors and partners, meaning that Schedule SE filers include some owners of unincorporated employee businesses in addition to the people one ordinarily would think of as an independent contractor. Examination of tax return data suggests that not everyone who is required to do so files a Schedule SE. Some tax filers appear to report their self-employment earnings on the "other income" line of the individual tax return rather than as self-employment income, filing neither a Schedule SE nor a Schedule C; others file a Schedule C but not a Schedule SE (Jackson et al. 2017; Collins et al. 2019). Still others fail to report some or all of their self-employment income to the tax authorities at all (Slemrod and Bakija 2008; Internal Revenue Service 2019). As a measure of independent contractor activity, the Schedule SE data thus are likely both to include some people who should not be counted and to exclude some who should be. These caveats regarding their interpretation notwithstanding, so long as tax-reporting behavior is reasonably stable over time, Schedule SE data should provide a useful indication of trends in independent contractor activity.

An alternative approach to identifying independent contractor activity in tax data is to use information returns filed by businesses that make payments to self-employed individuals. These information returns may be analyzed either alone or together with information from Schedule C. As discussed in Section II, the two key information returns are Form 1099-MISC and Form 1099-K, used to report payments of nonemployee compensation and payments mediated by credit card companies or online platforms, respectively. These information returns should capture payments for most business use of independent contractor work. All self-employed sole proprietors are legally required to file a Schedule C, the tax form used for reporting income (or losses) from an unincorporated business. Schedule C contains fields for gross business income, business expenses, and net business income. Although some sole proprietors with business income fail to file a Schedule C, those with significant business expense deductions have an incentive to do so, as expense deductions reduce taxable business income. The Schedule C information can be used to determine whether a sole proprietor has employees and what business expenses have been incurred, offering a means of distinguishing small business owners from independent contractors.

Figure 3.2 shows selected estimates of the trend in independent contractor activity based on tax data. The various series shown in the figure span the period from 2000 to 2016. The top three lines in the figure show the share of workers with Schedule SE income relative to the total

number of workers with either W2 or Schedule SE income. Jackson et al. (2017) base their estimates on a 1 percent sample of Schedule SE filers together with separate information on the total number of people subject to Social Security tax. Collins et al. (2019) use the complete set of tax records maintained by the Internal Revenue Service for their analyses.²⁵ Abraham et al. (2021) construct their estimates using a weighted sample of respondents to the ASEC supplement to the CPS linked to administrative records on W2 and Schedule SE filings.²⁶ Although the three series differ somewhat from year to year, their longer-term trends are similar—in each case, workers with Schedule SE income as a share of all workers with labor income (either W2 income or Schedule SE income) is estimated to have grown by about 2 percentage points over the decade and a half that began in 2000.

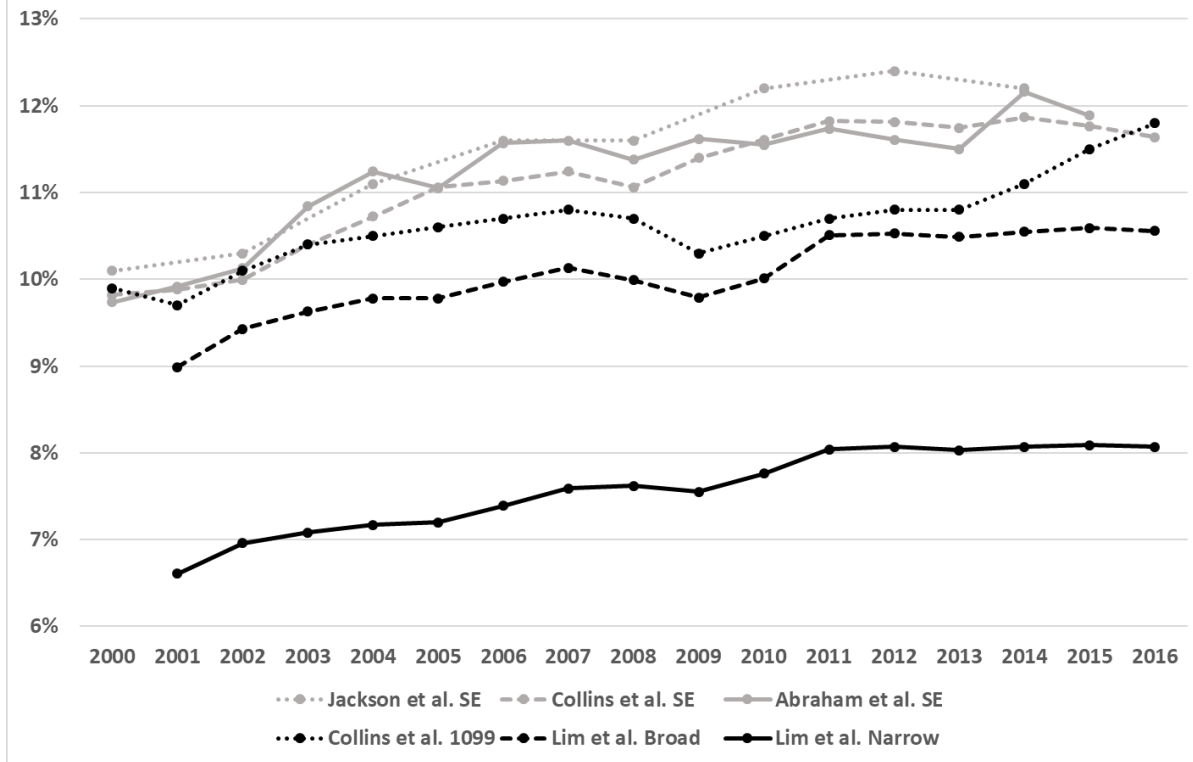
One caveat is that this apparent growth may be partly attributable to changes in reporting behavior rather than changes in self-employment activity. Although many self-employed individuals omit or underreport their self-employment income, the EITC incentivizes some low-income workers with qualifying dependents to report self-employment income on their tax returns. Using administrative tax data, Garin, Jackson and Koustas (2021) exploit information on the timing of first births to investigate possible EITC reporting effects. Even though there is no reason to expect true differences in their self-employment, new parents whose first child is born on December 31, making them potentially eligible for EITC benefits, are significantly more likely to report self-employment income on their tax return for that year than are new parents whose first child is born a day later on January 1. This difference is due entirely to self-employment income not accompanied by a firm-issued Form 1099 documenting the income and sent to the IRS. Moreover, they find that the reporting difference increases over time.

Although the structure of the EITC has changed little since the mid-1990s, Garin, Jackson and Koustas (2021) argue that the increase in the reporting effect may be attributed to growing awareness of the EITC. Their calculations imply that EITC reporting effects associated with having a first child can explain about 20 percent of the growth in the self-employment rate in tax data between 2000 and 2014, though the share of growth explained is sensitive to the choice of endpoint year and is smaller by 2018.

²⁵ For consistency with the other estimates, the total workforce used in constructing the Collins et al. SE line in Figure 3.1 is defined as all workers with W2 and/or Schedule SE income. This is less inclusive than the tax workforce definition used in Collins et al. (2019). Their broader definition also includes a small number of individuals for whom a Form 1099 is available and who appear on a tax return but report no W2 or Schedule SE income.

²⁶ The estimates reported in Abraham et al. (2021) cover the period from 1996 through 2012. Data compiled for Abraham et al. (forthcoming) and cleared for release by the U.S. Census Bureau allow the series to be extended through 2015.

Figure 3.2: Tax Data Measures of the Prevalence of Independent Contractor Work, 2000-2016



SOURCE: Jackson et al. (2017), Collins et al. (2019), Lim et al. (2019), and Abraham et al. (2021, updated).
 NOTE: Gray lines represent alternative estimates of workers with unincorporated self-employment income as percent of all workers with unincorporated self-employment income reported on Schedule SE and/or wage and salary income reported on Form W-2. Black lines represent alternative estimates of independent contractor employment identified by receipt of one or more Form 1099 reporting nonemployee compensation as percent of tax workforce. Lim et al. Broad excludes Form 1099 recipients with employees; Lim et al. Narrow further excludes those with non-car, non-travel business expense deductions in excess of \$10,000 (2001 dollars). See text for details.

The remaining series shown in Figure 3.2 are estimates that use Form 1099 data to identify independent contractors. These data should not be susceptible to EITC-related reporting effects. Collins et al. (2019) count as an independent contractor anyone receiving Form 1099-MISC nonemployee compensation and/or payments reported on a Form 1099-K from any of 50 online platform companies, so long as the person had W2 income or appeared on a tax return. This count is scaled to the size of the total tax workforce, defined to include anyone with W2 income, Schedule SE income, or Form 1099 income, provided in the last case that the individual appeared on a tax return. Lim et al. (2019) start with a 1099 workforce that includes all tax filers who received a Form 1099-MISC for nonemployee compensation and/or a Form 1099-K. The broader of their two independent contractor measures excludes Form 1099 recipients who had employees and their preferred narrower measure further excludes workers with more than

\$10,000 (in 2001 dollars) in non-car, non-travel business expenses. Their count is scaled to the number of individuals with wage or self-employment income who filed a tax return.²⁷

Like the estimates based on Schedule SE data, all three of the Form 1099 workforce estimates show growth in the number of independent contractors as a share of the overall workforce since 2000 or 2001. The magnitude and timing of the increase differs somewhat across the series. Whereas the Collins et al. (2019) measure of the 1099 workforce continues to grow after 2011, the two more restricted measures produced by Lim et al. (2019) level off after that date. Since they are measuring somewhat different things, it is not surprising that their trend behavior has been somewhat different, but without being able to examine the underlying data we cannot say more definitively what accounts for the differences observed.

Contrast between Household Survey and Tax Data Estimates

One of the striking things about the estimates just discussed is the very different behavior of the household survey and tax data estimates of the trend in independent contractor activity. None of the household survey estimates—whether based on unincorporated self-employment or more specifically on self-reported independent contractor activity—show any upward trend since the mid-1990s. By contrast, all of the estimates of unincorporated self-employment and Form 1099 work activity based on tax data in Figure 3.2 show significant growth since 2000 or 2001. This significant discrepancy between the trends in estimates based on household survey versus tax data has been noted in previous studies (Katz and Krueger 2019a; Abraham et al. 2021).

Abraham et al. (forthcoming) use linked survey-administrative data to investigate the sources of the growing discrepancy between the number of people reporting income from unincorporated self-employment during the calendar year in the ASEC and the number reporting such income on their tax returns.²⁸ Over the period from 1996 through 2015, the number of people reporting unincorporated self-employment income on their tax returns but not in the ASEC grew from 7.8 million to 14.0 million. People reporting no earnings during the calendar year in the ASEC but self-employment earnings on a Schedule SE account for 24.5 percent of this growth. People who have only a wage and salary job in the ASEC but both a wage and salary job and income from unincorporated self-employment in the tax data account for 46.8 percent of the growth. Lastly, people who have only a wage and salary job in the ASEC and only income from unincorporated self-employment in the tax data account for 28.7 percent of the growth.²⁹ The growth in the size of the first two groups suggests that an increasing amount of self-employment work activity is missed by the ASEC. The growth in the size of the third group suggests that increasing numbers

²⁷ The difference between the tax workforce definitions in the two studies is that Collins et al. (2019) include people with at least one W2 who did not file a tax return, whereas Lim et al. (2019) do not. Data reported by Collins et al. (2019) show that this inclusion adds a steady 8 to 9 percent to the size of their tax workforce through 2012, then rises to 11 percent in 2016.

²⁸ Similar results are reported by Abraham et al. (2021) for the period from 1996 through 2012.

²⁹ The gap between self-employment in tax data and self-employment in the ASEC also can be affected by the number of people who are self-employed in the ASEC but not in the tax data. The size of that group, however, changed little over the 1996–2015 period.

of household survey respondents treated as self-employed for tax purposes describe themselves as employees in the ASEC.

Although the questions that elicit information about unincorporated self-employment in the monthly CPS and in the ACS are different from those asked in the annual ASEC, the trends from these various household survey measures are similar. The findings just described are consistent with other research suggesting that household surveys questions about work activity during the prior week tend both to miss some self-employment (Abraham and Amaya 2019; Bracha and Burke 2018, 2021; Katz and Krueger 2019b) and to miscode some self-employment as wage and salary work (Abraham, Hershbein, and Houseman 2019, 2021).

Characteristics of Independent Contractors

One advantage of household survey information on independent contractors is that it includes relatively rich demographic information. Analyses of data pooled across all six years of the CWS show that the pattern of independent contractor work in the CWS has changed little across survey waves (Abraham and Houseman 2020). In order to have numbers that are for a time period more consistent with the evidence from other recent data sources, however, here we present selected results based on the 2017 CWS. Where possible, we also present comparable results from the Gallup Contract Work module carried out in 2018–2019. For consistency with the CWS, for these estimates, we use information from the Gallup module on a person’s main job.

Figures 3.3a–3.3d show estimated shares of the workforce who are independent contractors by age, gender, race/ethnicity, and education. To produce these numbers, we fit weighted linear probability models of the following form:³⁰

$$(1) \quad y_i = \alpha X_i + PT_i \beta + \phi_j + \lambda_r + \epsilon_i$$

In each model, the dependent variable takes the value of one if the person is in the indicated independent contractor arrangement and zero otherwise. As noted in the preceding section, both the CWS and the Gallup Contract Work module capture individuals coded as wage and salary workers but who identify themselves as independent contractors (and so likely were miscoded as wage and salary employees). We distinguish between independent contractors initially reporting themselves as working for an organization (CWS) or for an employer (Gallup module) versus those initially reporting themselves as self-employed. In addition, we estimate models for the two groups combined. Each model includes a vector of indicator variables—age group (four groups including the omitted category); gender; race/ethnicity (White non-Hispanic, Black non-

³⁰ Here, and throughout the report, we use linear probability models to estimate equations where the dependent variable is binary. Linear probability models have the desirable property that their coefficient estimates are marginal effects estimates. Linear probability models generally yield estimates of marginal effects that are very similar to the average marginal effects generated by logit and probit models (Angrist and Pischke 2009) and this is the case for all of the linear probability model estimates we present. To account for heteroskedasticity in the error term of the linear probability models, we estimate robust standard errors.

Hispanic, Hispanic, and other); and educational attainment (high school or less, some college or associate's degree, and bachelor's degree or higher).³¹ These variables allow us to explore how a person's life-cycle stage or membership in a group that may be subject to labor market discrimination or otherwise disadvantaged in the labor market is associated with working as an independent contractor. Additional explanatory variables include a control for part-time employment (PT_i) and vectors of indicator variables that control for occupation (ϕ_j , 21 categories in the models fit using CWS data and 22 in the models fit using data from the Gallup Contract Work module), and region of the country (λ_r , four categories).³² Past research has found part-time status and occupation to be associated with being in certain alternative arrangements (see, e.g., Polivka 1996; Cohany 1996). Region is included to allow for the possibility that work arrangements may vary across areas.

For ease of interpretation, instead of presenting coefficient estimates from these models, Figures 3.3a–3.3d display the probability that employed individuals of a particular group are wage-and-salary independent contractors, self-employed independent contractors, or either type of independent contractor, calculated based on the model estimates. Unlike simple tabulations showing the share of workers belonging to a particular group who are in each of the work arrangements, the conditional probabilities reported in these figures hold other observable factors constant.

To compute the conditional probabilities, for each working sample member, we calculate the value of the outcome variable that would have been predicted had the sample member been in a given age group, of a given gender, of a given race/ethnicity, or in a given educational attainment group. In each case, we assume the person's actual values for all the other explanatory variables included in the model. We then construct probabilities for the entire population as the weighted averages of the individual probabilities calculated in this fashion. The predicted probabilities thus are computed for a population that varies only on the characteristic of interest and is representative of the U.S. population with respect to all other characteristics.³³

Work as an independent contractor displays strong age patterns (Figure 3.3a). In the CWS, conditional on working, both types of independent contractor arrangement are more common at older ages. The probability of being a self-employed independent contractor on the main job rises from 0.009 (0.9 percent) among workers ages 18–24 to 0.121 (12.1 percent) among workers age 65 plus.³⁴ There are relatively few independent contractors among those the CPS categorizes

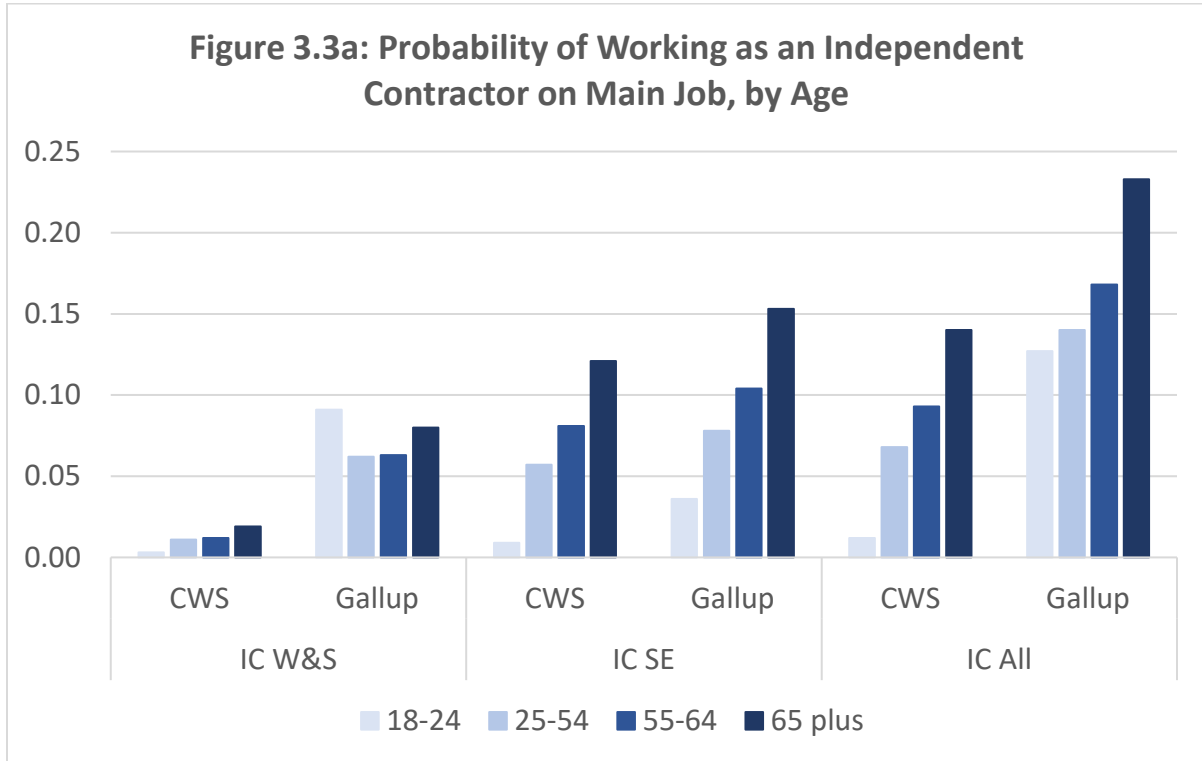
³¹ In the Gallup data, we also control for missing race/ethnicity. Results for the other group and the group with missing race/ethnicity are not shown in Figure 3.3c.

³² Because information on industry of employment is not available in the Gallup Contract Work module, our baseline specification does not control for industry. Adding controls for industry to the models estimated using the CWS data has no substantive effect on our conclusions.

³³ For example, the estimated probability of a given outcome for 18-24-year-olds is calculated by setting the value of that age dummy to one and all of the other age dummies to zero; calculating the probability for each sample member assuming they were ages 18–24 but with their actual other characteristics; and then computing the weighted average of the estimated probabilities. We used the margins command in Stata to compute these probabilities.

³⁴ A probability of 0.xyz can be expressed equivalently as xy.z percent. From this point forward in the text, we adopt the latter language for talking about the reported findings. Unless otherwise stated, all cross-group differences in probabilities discussed in the text are statistically significant at the 5 percent level or better.

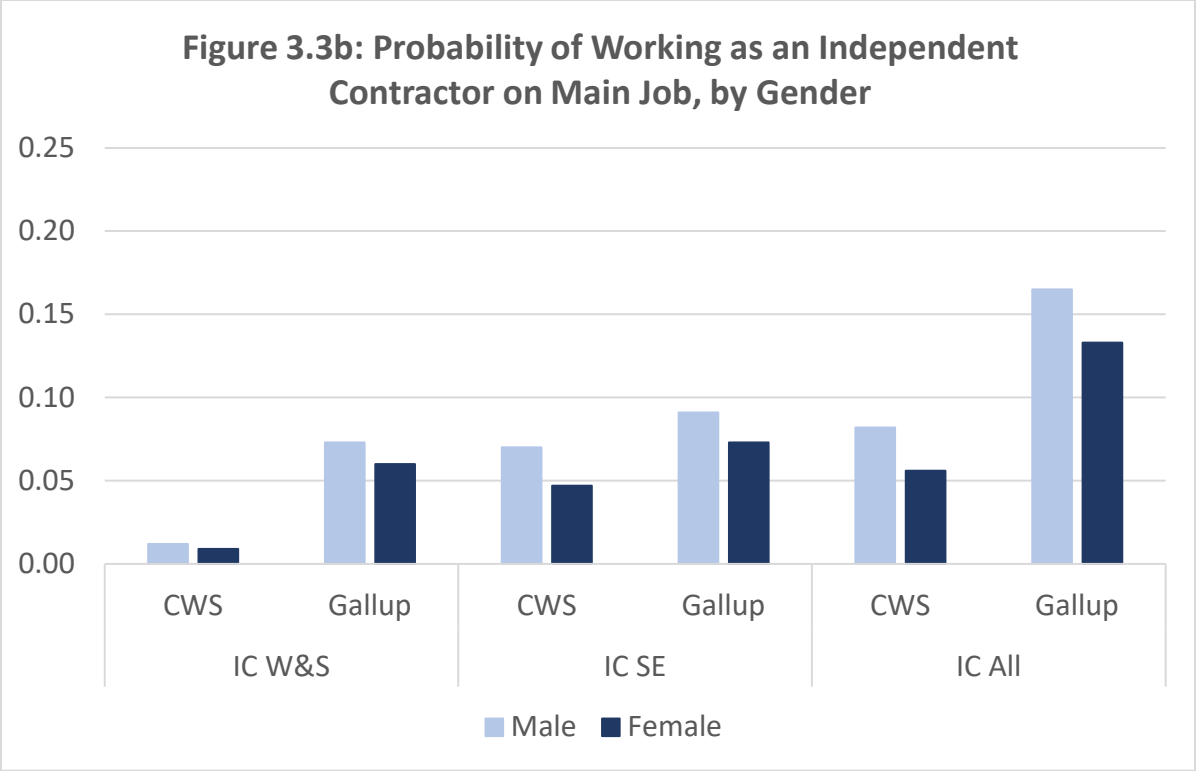
as employees, but the probability of being a wage-and-salary independent contractor also rises with age, as does the combined probability of being either a self-employed or a wage-and-salary independent contractor.³⁵



SOURCE: Authors' analysis of CWS and Gallup Contract Work module data.

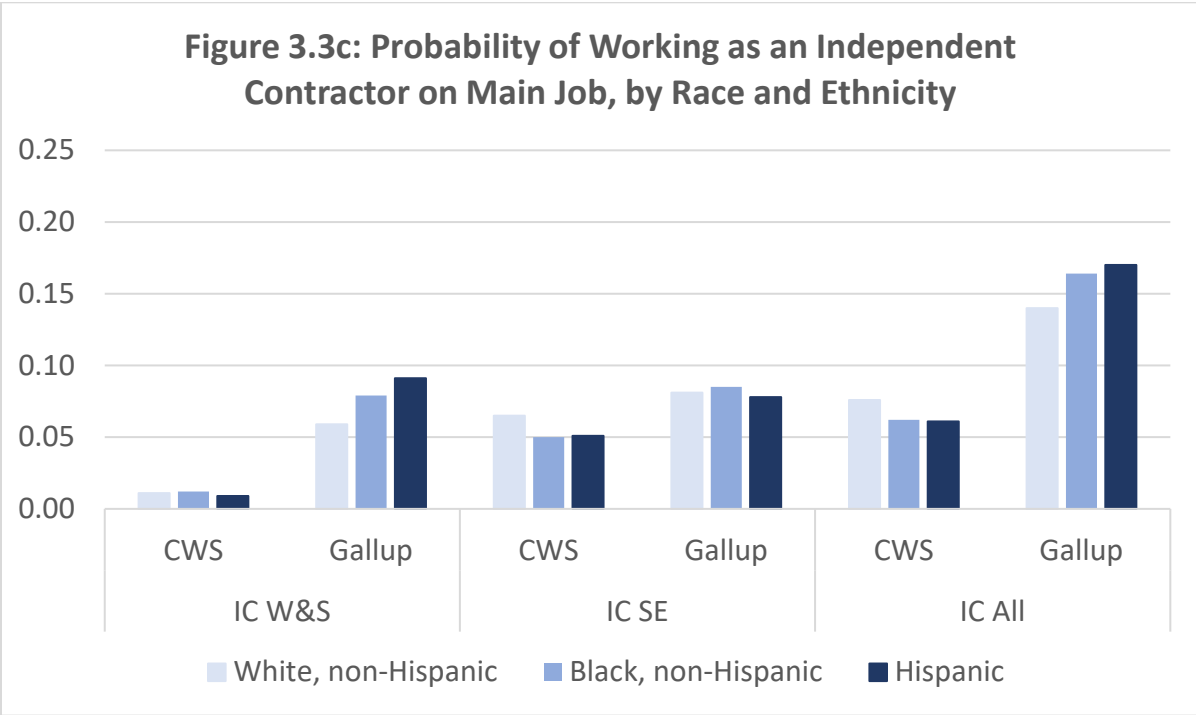
NOTE: See Figure 3.3d.

³⁵ The only cross-age-group difference that is not statistically significant is that between wage-and-salary independent contractors ages 55–65 compared to those ages 25–54.



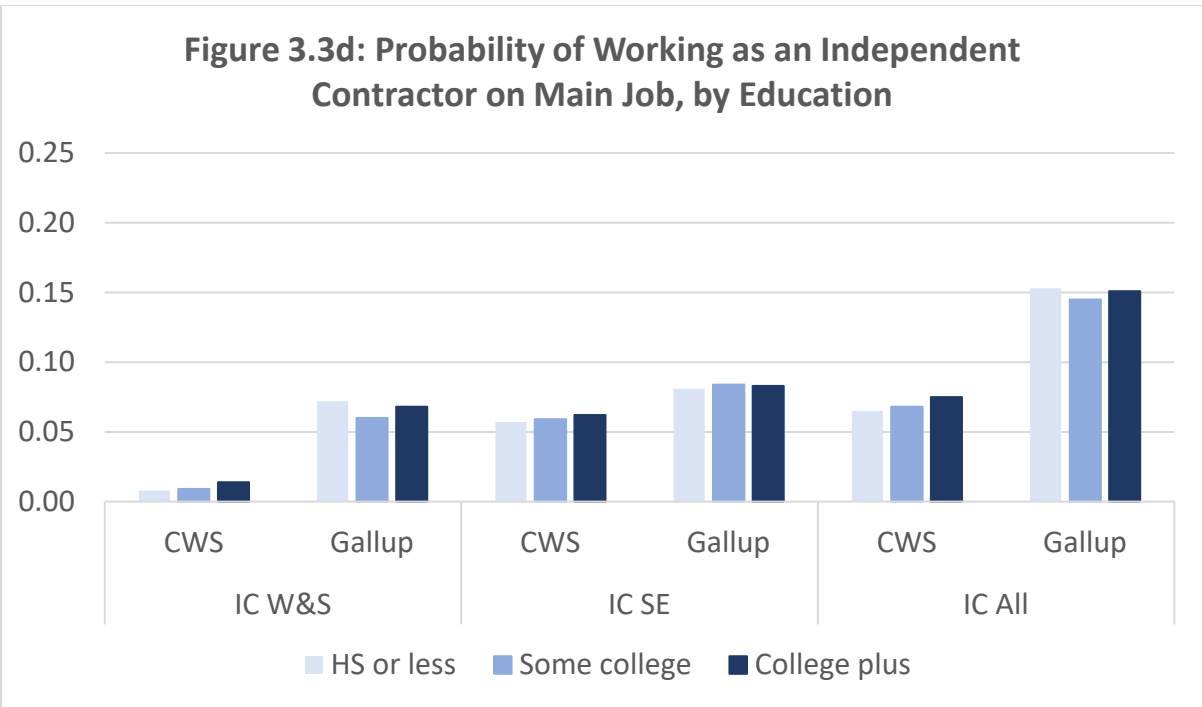
SOURCE: Authors' analysis of CWS and Gallup Contract Work module data.

NOTE: See Figure 3.3d.



SOURCE: Authors' analysis of CWS and Gallup Contract Work module data.

NOTE: See Figure 3.3d.



SOURCE: Authors' analysis of CWS and Gallup Contract Work module data.
 NOTE: IC W&S=wage-and-salary independent contractors. IC SE=self-employed independent contractors. IC All=all independent contractors. Figures show conditional probabilities of being an independent contractor on the main job based on coefficients from weighted linear probability regressions. CWS regressions fit using 2017 data. All models include dummies for age group, gender, race/ethnicity, education, part-time status, occupation, and region as explanatory variables. Probabilities calculated with the Stata margin command using the default average probabilities of outcome setting. All estimated probabilities are weighted. Probabilities on a scale from zero to one shown on vertical axis. N=47,651 for CWS estimates and N=34,995 for Gallup Contract Work module estimates.

The Gallup results in the figure differ from the CWS results in two important ways. First, as already noted, a much larger share of workers are independent contractors on their main job in the Gallup data than in the CWS, in large part because the Gallup survey identifies more wage-and-salary independent contractors. Second, although the probability of being a self-employed independent contractor in the Gallup data rises sharply with age, from 3.6 percent at ages 18–24 to 15.3 percent among those age 65 plus, the probability of being a wage-and-salary independent contractor is U-shaped rather than upward sloping with age. That is, in the Gallup data, the probability of being a wage-and-salary independent contractor on the main job is higher both for the youngest workers (those ages 18–24) and for the oldest workers (those age 65 plus) than for prime age workers (those ages 25–54). The difference in the age pattern for wage-and-salary independent contractor work in the two surveys likely reflects the Gallup module better identifying such arrangements than the CWS.

The two data sets agree that men are more likely than women to be an independent contractor (Figure 3.3b). As shown in Figure 3.3c, in the CWS, non-Hispanic Whites are overrepresented in

the panel that combines wage-and-salary and self-employed independent contractors compared to both Hispanics and non-Hispanic Blacks. The opposite is the case in the Gallup data, where non-Hispanic Whites are underrepresented among wage-and-salary independent contractors and, as a result, are the group least likely to be working in any independent contractor arrangement. As with the different patterns of independent contractor work by age in the two surveys, this likely is because the Gallup data better identify wage-and-salary independent contractors.

Figure 3.3d displays probabilities of being an independent contractor by educational attainment. This is one place where analyzing the 2017 CWS data separately rather than analyzing CWS data pooled across all six waves, as in Abraham and Houseman (2020), produces a somewhat different result. In the pooled CWS data, the probability of being in either type of independent contractor arrangement rises uniformly with education. There is also a positive education gradient in the 2017 CWS data, but it is less pronounced and, in the case of self-employed independent contractors, none of the differences across education groups are statistically significant.³⁶ The flattening of the education gradient is consistent with the Abraham and Houseman (2020) finding that the growth in independent contractor employment since the mid-1990s has been more pronounced at lower education levels. In the Gallup data, the relationship between education and the probability of being a self-employed independent contractor is essentially flat, with no significant differences across the three education groups, and the relationship between education and the probability of being a wage-and-salary independent contractor is U-shaped rather than upward sloping. Again, the difference in the pattern of wage-and-salary independent contractor work between the two surveys likely reflects the Gallup data better capturing these arrangements.

Evidence from administrative data provides additional insights into the characteristics of the independent contractor workforce and how the composition of that workforce has changed over time. Lim et al. (2019) find that, in each tax year from 2001 through 2016, the largest share of independent contractors under their preferred definition are in tax filing units with adjusted gross income (AGI) in the top quartile of the AGI distribution.³⁷ They also find, however, that the rate of growth in independent contracting has been fastest in tax filing units in the bottom half of the AGI distribution. The *firms* for which growth in the use of independent contractors has been greatest are those with median wages in the lowest quartile of the distribution, consistent with the growth having occurred disproportionately among lower-skilled independent contractors.

Job Quality of Independent Contractor Work

Much of the evidence on the quality of independent contractor work comes from the CWS. Abraham and Houseman (2020) reviewed that evidence, examining the compensation of independent contractors compared to traditional wage and salary workers; preferences for

³⁶ College graduates are significantly more likely to be either a wage-and-salary independent contractor or in any independent contractor arrangement than those with some college or with no more than a high school education.

³⁷ The preferred definition in Lim et al. (2019) is individuals with Form 1099 employee compensation who do not themselves hire employees or have large non-car, non-travel business expense deductions.

working as an independent contractor as opposed to working for someone else; and the conclusions to be drawn from the pattern of transitions into and out of independent contractor work. Our analysis in that paper distinguished independent contractors categorized as self-employed in the monthly CPS (self-employed independent contractors) from those categorized as employees (wage-and-salary independent contractors). Because demographic characteristics may be associated with the outcomes of interest, the analysis held them constant to focus more cleanly on the association between work arrangements and job quality.³⁸

To start, we fit models in which measures of earnings, health insurance coverage and retirement plan coverage were regressed on a set of work arrangement dummy variables together with demographic and other controls. Across all six waves of the CWS, we found that self-employed independent contractors had weekly earnings that were 3.4 percent higher than the weekly earnings of workers with similar characteristics in traditional wage and salary jobs. The point estimate of the difference for wage-and-salary independent contractors also was positive, but not statistically significant. In contrast, however, we found that independent contractors were 10 to 12 percentage points less likely than regular employees to have health insurance from any source and 17 to 18 percentage points less likely to have a retirement plan. We have reestimated these models using just the 2017 CWS data. The results, not reported here, are largely consistent with those based on the data pooled across all six survey waves as reported in Abraham and Houseman (2020), though the point estimate of the gap in health insurance coverage between independent contractors and employees is smaller in 2017 than in the pooled data. This may reflect an increase in the availability of health insurance under the Affordable Care Act.

Another way to assess the quality of independent contractor work is to ask those doing it whether they would prefer a more traditional employment arrangement. In the CWS, the question asked of independent contractors is whether they would prefer to work for someone else. As reported in Abraham and Houseman (2020), in data pooled across all six CWS waves, the large majority of independent contractors—91.8 percent of self-employed independent contractors and 82.3 percent of wage-and-salary independent contractors—answer “no” to this question. In models with a binary dependent variable for whether an independent contractor would prefer to work for someone else and demographic plus other controls as explanatory variables, the share saying “yes” varies somewhat across demographic groups; most notably, it is higher for younger than for older workers. In all groups, however, a strong majority report that they prefer to work for themselves. In estimates using only the 2017 CWS data not reported here, we observe very similar patterns.

These findings suggest that independent contractor work often is a satisfying arrangement, but that this is not the case for everyone. Evidence on differences in the preferences expressed by independent contractors who entered that arrangement via different routes reinforces this conclusion. We report in Abraham and Houseman (2020) that, among self-employed independent contractors who had been in that arrangement for less than three years, those who had lost their previous job were more than twice as likely as those who had quit their previous

³⁸The models examining compensation and preferences also controlled for occupation, industry, and part-time status. In addition, all models controlled for region and survey wave.

job to say they would prefer to work for someone else. Similarly, we found that among all self-employed independent contractors, those who had been unemployed in the prior month were more than three times as likely as those employed in the previous month to say they would prefer to be working for someone else. The relative likelihood of those who had been unemployed in the previous month preferring to work for someone else is even larger among the smaller group of independent contractors who are coded as wage and salary workers in the monthly CPS but report being independent contractors in the CWS.

Sample size limitations mean that similar estimates based on the 2017 CWS data alone are considerably noisier than the estimates reported by Abraham and Houseman (2020) based on data pooled across all six CWS waves. Results using just the 2017 CWS data, however, produce point estimates that are consistent with individuals who became independent contractors after having lost a previous job being more likely than those who had quit their previous job to prefer working for someone else. The same is true of independent contractors who were unemployed rather than employed in the prior month.³⁹ All of this suggests that a subset of independent contractors are pushed into that arrangement by a lack of other opportunities rather than being positively attracted to independent contractor work.

The results on independent contractors' compensation and preferences just described pertain to people who were independent contractors on their main job. In many cases, however, work as an independent contractor supplements earnings from a wage and salary job. Administrative data also shed light on changes in how workers are using independent contractor arrangements. From 2001 to 2016, there was substantial growth both among independent contractors relying primarily on self-employment as a source of income and among independent contractors supplementing wages and salaries with self-employment income. Both Collins et al. (2019) and Lim et al. (2019) note that independent contractor work as a supplemental source of income began to grow more rapidly at the end of their period as online platform companies began to emerge. Over the 2001 to 2016 period as a whole, however, Lim et al. (2019) find that proportional growth in independent contractor work as a primary source of income has been just as large as that in independent contractor work as a supplemental activity. The greatest proportional growth, they find, has occurred among women in the bottom quartile of the income distribution for whom it is the primary source of income. Although the use of independent contracting to supplement wage and salary earnings is an important phenomenon, the fact that there has been substantial longer-term growth in independent contracting in relatively low-income households who rely on it as a primary source of income makes clear that it is not the whole story.

Public Policy Initiatives

The fact that independent contractors lack employer-provided benefits and largely fall outside the system of legal protections applicable to employees creates significant policy concerns. As

³⁹ The estimated differences based just on the 2017 data are not statistically significant.

just discussed, independent contractors are significantly less likely than are employees to have health insurance or a retirement plan, though the gap in health insurance coverage appears to have narrowed somewhat in recent years. Independent contractors also are not covered by the unemployment insurance system or workers compensation system. Nor do they enjoy the protections afforded by the Fair Labor Standards Act, the Family and Medical Leave Act, the Age Discrimination in Employment Act, and other laws and regulations written with more traditional employment arrangements in mind (Harris and Krueger 2015).

Adding to these concerns, there is reason to believe that a significant number of independent contractors should be classified as employees (Carré 2015). Misclassification as an independent contractor deprives workers of important legal protections. Our data do not allow us to say what fraction of independent contractors are misclassified employees. The evidence from the Gallup Contract Work module cited above that 45 percent of independent contractors first answered that they worked for an employer, however, suggests that there may be a sizable number of such workers. Much of the current policy debate over worker classification has focused on platform companies, whose workers often occupy a gray zone, displaying characteristics of both employees and the self-employed, but concerns about worker misclassification encompass more than just platform work.

Responding to concerns about the misclassification of employees as independent contractors, many states have acted to make it more difficult for firms to misclassify their workers. Since 2007, more than half of states have established interagency task forces to address the issue of employee misclassification. Of the 28 task forces identified in a 2020 report, 9 were created or expanded between 2017 and 2019 (National Employment Law Project 2020).

California's Assembly Bill 5 (AB5), signed into law in September 2019, was drafted to clarify when firms must classify workers as employees. Proponents have argued it will reduce misclassification. Under the law, most platform company independent contractors would have been reclassified as employees. A successful initiative on the ballot in California in November 2020 (Proposition 22, funded by Uber, Lyft and DoorDash) would exempt app-based drivers from AB5. Instead, the initiative's language stipulates that these drivers will continue to be classified as independent contractors and be covered by labor policies specific to rideshare drivers (Conger 2020). A California court, however, ruled that the ballot initiative was unconstitutional, leaving the classification of California platform drivers in limbo as rideshare companies appeal the decision (Conger 2021).

At the federal level, on January 6, 2021, the U.S. Department of Labor issued a final rule that would have made it easier to categorize certain workers, such as gig workers, as independent contractors under the Fair Labor Standards Act (Penn 2020). On March 2, however, the rule's effective date was postponed for 60 days (Penn 2021) and on May 10 it was withdrawn (National Law Review 2021).

IV. INFORMAL AND PLATFORM WORK—SIZE, TRENDS, AND IMPLICATIONS FOR WORKERS

There has been growing interest in recent years in informal work activity, defined broadly as occasional work activities or side jobs that are not part of a regular job or business. Work mediated through online platforms such as Uber, Lyft, TaskRabbit, and Upwork has garnered special attention. For many participants, platform work is a form of informal work activity. A full evaluation of informal and platform work requires an understanding of the role such activity plays for workers, including whether it is the worker’s primary source of income or supplements income from another source.

Estimates of the Prevalence of Informal Work

Recent studies have produced evidence on how well the questions about employment asked in standard household surveys capture informal work. Abraham and Amaya (2019) report on a survey experiment administered in the summer of 2016 to a sample of respondents recruited via Amazon’s Mechanical Turk. Study participants were asked the key CPS employment questions for each member of their household. Questions probing for additional work done during the survey reference week raised the share counted as employed by several percentage points and the share of the employed holding multiple jobs by 15 to 20 percentage points. Katz and Krueger (2019b) report that, in a different sample of Amazon Mechanical Turk respondents surveyed in 2015, probing about small paid jobs after respondents had answered questions similar to those asked in the monthly CPS raised the multiple job holding rate from 39 to 77 percent. Bracha and Burke (2021) report on results from the 2015 Survey of Informal Work Participation (SIWP), administered to household heads participating in an online panel, which asked a set of questions about informal work followed by the standard CPS employment questions. Incorporating informal work uncovered in these questions raised the employment rate by 4.5 percentage points and the multiple job-holding rate by more than 11 percentage points compared to the estimates based on the standard CPS employment questions. Although it is important to be cautious about conclusions based on convenience samples or online panels that may not be fully representative, these findings nonetheless suggest that the standard CPS employment questions likely are missing some informal work activity.

Several household surveys conducted in recent years have sought explicitly to measure the prevalence of informal work. The top panel of Table 4.1 reports estimates from the 2015 Enterprising and Informal Work Activities (EIWA) Survey and the 2018 and 2019 waves of the Survey of Household Economics and Decisionmaking. As described in Section II, each of these surveys contains a battery of questions asking about different types of informal work activity. The numbers reported in the table represent the share of either all adults or all employed adults who engaged in one or more of these activities. Although similar, the specific types of informal work about which respondents were queried differ somewhat across the surveys. Potentially more important, the EIWA asked about participation in informal work over a six-month reference period, whereas the reference period for the SHED is a single month. Both the EIWA

and the SHED were administered to the GfK (later Ipsos) KnowledgePanel, a probability-based online panel.

Table 4.1: Selected Estimates of the Prevalence of Informal and Platform Work (percent)

Source	Year	Target Population	Reference Period?	Percent
<u>Informal Work</u>				
EIWA	2015	Age 18+	Previous 6 months	36%
SHED	2018	Age 18+	Previous month	29%
SHED	2019	Age 18+	Previous month	31%
SHED	2018	Employed 18+	Previous month	34%
SHED	2019	Employed 18+	Previous month	37%
<u>Any Platform Work</u>				
CWS	2017	Employed age 18+	Previous week	1.1%
Gallup	2018–19	Age 18+	Previous week	2.1%
Gallup	2018–19	Employed age 18+	Previous week	3.1%
JPMCI	2013	Chase banking households	Month of March	0.3%
JPMCI	2018	Chase banking households	Month of March	1.6%
JPMCI	2018	Chase banking households	Year ending in March	4.5%
OPE	2012	Tax workforce	Calendar year	0.0%
OPE	2013	Tax workforce	Calendar year	0.0%
OPE	2014	Tax workforce	Calendar year	0.2%
OPE	2015	Tax workforce	Calendar year	0.6%
OPE	2016	Tax workforce	Calendar year	1.1%

SOURCE: EIWA estimates from Robles and McGee (2016). SHED estimates authors' tabulations; CWS and Gallup Module estimates authors' tabulations; JPMCI estimates from Farrell, Greig, and Hamoudi (2018); and OPE estimates from Collins et al. (2019).

NOTE: EIWA=Enterprising and Informal Work Activities survey. SHED=Survey of Household Economics and Decisionmaking. CWS=Contingent Worker Supplement. Gallup=Gallup Contract Work Module. JPMCI=JPMorgan Chase Institute. OPE=online platform employment. JPMCI estimates share of households with Chase banking relationships for which income from any of 128 platform companies recorded. OPE estimates share of tax workforce receiving one or more Form 1099s from any of 50 platform companies.

In 2015, according to data from the EIWA, 36 percent of the U.S. population age 18 and older engaged in at least one type of informal work activity during a six-month reference period. Not surprisingly given the survey's shorter one-month reference period, the estimates of the overall prevalence of informal work from the SHED are somewhat lower than the EIWA estimates. The SHED estimates of the prevalence of informal work during the previous month among adults age 18 and older were 29 percent for 2018 and 31 percent for 2019, both below the 36 percent estimated for 2015 in the EIWA. The share of *employed* adults reporting informal work during the previous month (34 percent in 2018 and 39 percent in 2019) is several percentage points

higher than the share among all adults. This is much higher than the multiple job-holding rate in standard household surveys, indicating that some do not report informal work when answering those surveys' questions about employment.⁴⁰

According to the estimates from the EIWA and the SHED, roughly a third of American adults are involved in informal work activity. One caveat to this conclusion is that both the EIWA and the SHED are online panel surveys. This matters because the people who are willing to participate in an online panel also might be more likely than others with similar observable characteristics to have done informal work.⁴¹ Still, these data suggest that a large number of people participate in this sort of work.

Estimates of the Prevalence of Platform Work

Work mediated through online platforms has garnered particular attention in recent years. Both the Contingent Worker Supplement to the CPS and the Gallup Contract Work module include questions about online platform work. Researchers also have used tax data and private financial records to study trends in platform work.

Household Survey Estimates

The CWS introduced questions about platform work in 2017. All supplement respondents were asked about work intermediated by a mobile app or online platform. The intent of the survey questions was to capture arrangements in which the worker uses an app or platform to connect directly to customers or short-term jobs or tasks and is paid through the app or platform. Although only individuals the CPS categorized as employed were eligible for the supplement, in contrast to other CWS questions, the platform work questions pertain to any work a person did during the survey reference week, whether or not it was their main job.

In reviewing the responses to the CWS questions, BLS staff concluded that some respondents had not fully understood what they were being asked and reported activities that should not have been included. Examples of the types of problematic responses identified included affirmative responses from a real estate agent who obtained customers through the web, a gravel delivery person who used an app to obtain route directions, and a fast-food worker who prepared orders that customers placed through an app. In light of these problems, BLS staff undertook a careful review of the data, devising a set of editing rules intended to identify and remove false positive

⁴⁰ The 2016 and 2017 SHEDs contain questions about informal work similar to those on the later SHEDs. Although respondents to those surveys were asked to report only informal work outside of a main job, meaning that the estimates are not strictly comparable to the responses to the later waves of the SHED, the estimates are very similar to those shown in the table. The SIWP has produced similar estimated rates of participation in informal work for its target population of household heads.

⁴¹ Although there is not a monotonic relationship between response rates and nonresponse bias (Groves and Peytcheva 2008), very low response rates may exacerbate concerns about sample representativeness. Response rates for the EIWA and each wave of the SHED are under 5 percent.

responses to the questions about electronically mediated work. More than two-thirds of those originally answering “yes” to one or both of the questions about electronically mediated work were determined to be false positives, and the share of all workers estimated to have done electronically mediated work fell from 3.3 percent in the unedited data to 1.0 percent in the edited data (Current Population Survey staff 2018). The 1.1 percent estimate reported in Table 4.1 is slightly higher than the 1.0 percent reported by the BLS because, for comparability with estimates from other sources, it refers to participation among adults age 18 and older rather than among persons age 16 and older.

The Gallup Contract Work module administered in 2018–2019 also sought to measure the incidence of platform work. The module asked all respondents who reported any nonemployee work the following question:⁴²

For any of the work you did in the past seven days, did you connect directly with new customers or clients through a mobile app or online platform?

Half of the eligible sample was randomly assigned to receive a version of the question that also included examples of the types of work the person might have done. Here we have pooled the answers to the two question versions. The Gallup module was fielded in four waves. Examining the responses to the platform work question during the first two waves of survey fielding, we observed that the share of respondents answering “yes” seemed implausibly high relative to other estimates of the incidence of platform work. To reduce possible confusion, an additional question was added in the third and fourth waves of the survey:

Did the customers pay you directly, or did they pay the mobile app or online platform which then pays you?

The Gallup estimates reported in Table 4.1, based on the data from these later waves, count only respondents who answered affirmatively to the first question and also said that they were paid through the app or platform as participants in the online intermediary workforce. The estimated share of adults age 18 plus who participated in platform work during the previous week based on the Gallup data is 2.1 percent; the estimated share for employed adults is about 50 percent higher (3.1 percent).

Estimates Based on Administrative Data

In a series of innovative papers (Farrell and Greig 2016a,b; Farrell, Greig, and Hamoudi 2018), researchers at the JPMorgan Chase Institute (JPMCI) have used data on deposits from online platform companies into the accounts of Chase banking customers to measure trends in online platform work. Their latest estimates incorporate payments originating from 128 separate platforms. As shown in Table 4.1, Farrell, Greig, and Hamoudi (2018) report that, in March 2018, 1.6 percent of families with JPMorgan Chase banking relationships received deposits that

⁴² The universe for this question included those who initially reported themselves to be employed by an employer but, when probed, reported being an independent contractor, independent consultant, or freelancer.

originated with an online platform company. This is up substantially from 0.3 percent in March 2013. The share of families participating in platform work over the prior year is substantially higher than the share participating over the prior month (4.5 percent versus 1.6 percent as of March 2018). Although Farrell, Greig, and Hamoudi (2018) do not report exact numbers for other points in time, a figure plotting the share of families with any platform work over the prior year shows that it too grew rapidly between 2013 and 2018.

While the JPMorgan Chase estimates are in line with or even somewhat higher than estimates from other sources, the list of online platform companies considered in compiling the data is not exhaustive. Perhaps more important, some online platform payments may not flow through recipients' checking accounts. The largest share of online platform payments is for transportation services. In 2015, Lyft introduced its Express Pay option, and Uber followed in 2016 with Instant Pay. Both services allow drivers to transfer money they have earned instantly to a debit card rather than have it deposited at regular intervals into their checking account. Other platforms' payment arrangements vary, with some offering deposit to a checking account as the only option, others offering multiple payment options that include deposit to a checking account, and still others appearing not to have deposit to a checking account as an option at all. These estimates also have the limitation that they are restricted to households that have banking relationships with JPMorgan Chase.

Tax data are another important source of information on platform work. Collins et al. (2019) use information contained on Form 1099-MISC and Form 1099-K to identify individuals who received payments during the year from any of 50 online platform companies. Their population of interest is the tax workforce, defined to include anyone who had one or more W2s, filed a Schedule SE, or received at least one Form 1099 and appeared on a tax return. As shown in Table 4.1, in 2012 and 2013, less than 0.1 percent of the tax workforce received platform income documented on a Form 1099. By 2016, this was true of 1.1 percent of the tax workforce. Although not conceptually comparable in that they refer to individuals rather than families, these estimates are notably lower than the JPMCI estimate of the share of families receiving platform income over the prior year. Platform participation has been growing and the JPMorgan Chase estimate shown in the table refers to the situation as of early 2018 rather than as of the end of 2016. This difference in timing, however, accounts for less than half of the difference in the two estimates.⁴³

One caveat concerning the tax data analyzed by Collins et al. (2019) is that they do not capture work that does not lead to the issuance of a Form 1099. Tax rules do not require a platform company to file a Form 1099-K to report platform income unless the worker received more than \$20,000 and participated in more than 200 transactions during the year. Although many platform companies have chosen to file a Form 1099-K even for workers whose earnings did not meet these thresholds, it is not a requirement and several of the larger platform companies have said

⁴³ Farrell, Greig, and Hamoudi (2018) do not cite exact platform participation numbers for years other than those shown in Table 4.1. Their figure showing trends in participation rates indicates that, as of December 2016, about 3.5 percent of households had participated in platform work during the prior calendar year, still much higher than the 1.1 percent of the tax workforce participating reported by Collins et al. (2019).

they will drop this practice. In addition, in defining the tax workforce, Collins et al. (2019) exclude individuals who received a Form 1099 from a platform company but did not file a tax return, though including these people would have had only a small effect on the numbers.

Although there are some notable differences between the various estimates of participation in online platform work, making apples-to-apples comparisons difficult, they are consistently an order of magnitude smaller than the estimated rates of participation in informal work shown in the top panel of Table 4.1. The main reason to be interested in platform work, then, is not so much the size of the current platform workforce but rather its rapid growth, which can be seen both in the JPMCI estimates and in the estimates based on tax data reported by Collins et al. (2019).

Characteristics of Informal and Platform Workers

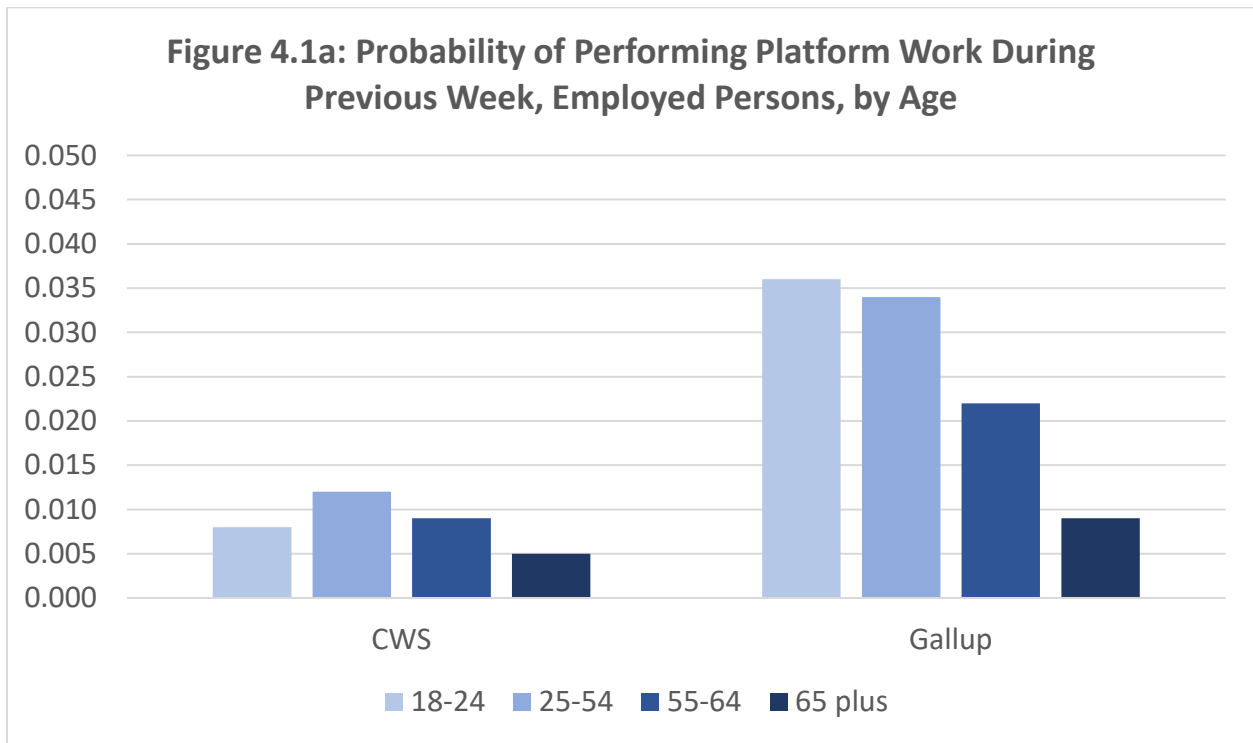
Several existing studies provide evidence on the characteristics of those engaged in informal work. Abraham and Houseman (2019) report results based on the 2016 and 2017 SHED. Age is the characteristic most notably associated with participation in informal work—the share of adults with income from informal work is highest (41.3 percent) for those age 18–24 and falls off in each subsequent 10-year age group. The share is higher for Hispanics than for non-Hispanic Whites (31.7 percent versus 26.9 percent). It is slightly higher for those with a college education (29.5 percent) than for those with a high school education or less (27.2 percent).⁴⁴ Rates of participation vary substantially between those whose household incomes often vary from month to month (36.6 percent) compared to those whose household incomes are generally the same from month to month (24.8 percent), and between those who are finding it difficult to get by (38.4 percent) compared to those who are living comfortably (24.4 percent). These differences may be a product of work arrangements on the primary job. Part-time employees are substantially more likely to participate in informal work (35.0 percent) than are full-time employees (28.3 percent), and self-employed individuals and independent contractors are even more likely to do so (44.8 percent and 44.3 percent, respectively).

We also are interested in the characteristics of those who participate in platform work. Figures 4.1a–4.1d report estimates from the CWS (conducted in 2017) and the Gallup Contract Work module (conducted in 2018–2019) of the probability that an individual of given age, gender, race/ethnicity, or education reports platform work. Both surveys ask only those categorized as employed about their participation in platform work. The numbers we have calculated therefore represent shares of the employed population age 18 and older who engaged in platform work during the previous week. As in the previous section of the paper, to produce these estimates, we run weighted linear probability models with a dummy variable for platform work participation as

⁴⁴ While at first blush the higher incidence of informal work among the college educated may seem surprising, the composition of informal work varies considerably by educational attainment. Informal or side jobs involving the provision of personal services are considerably more prevalent among those with a high school education or less, while those involving online tasks are considerably more prevalent among the college educated. Other informal or side jobs, which includes offline sales and miscellaneous activities, are somewhat more common among those with higher educational attainment. Taken together, the incidence of informal work is highest among the college educated.

the dependent variable and indicator variables for demographic characteristics (age, gender, race/ethnicity, and education), usual part-time status, occupation, and region on the right-hand side.⁴⁵

Figure 4.1a reports estimates of the association between age and the probability of engaging in platform work. In both the CWS and the Gallup data, controlling for other characteristics, the rate of platform work participation is significantly higher among those age 25–54 than among those age 55–64 or age 65 plus. Patterns of platform work by gender are shown in Figure 4.1b. Controlling for other factors, men are more likely than women to report platform work in the Gallup data, but this is not the case in the CWS data. As shown in Figure 4.1c, both surveys show that the estimated conditional probability of platform work is highest among non-Hispanic Blacks, though the difference between non-Hispanic Blacks and both non-Hispanic Whites and Hispanics is statistically significant only in the Gallup data. Finally, as shown in Figure 4.1d, similar to the pattern for informal work more generally found by Abraham and Houseman (2019) in the SHED data, the CWS and the Gallup data agree that the probability of platform work is greater among those with a college degree than among those with lower levels of education.⁴⁶



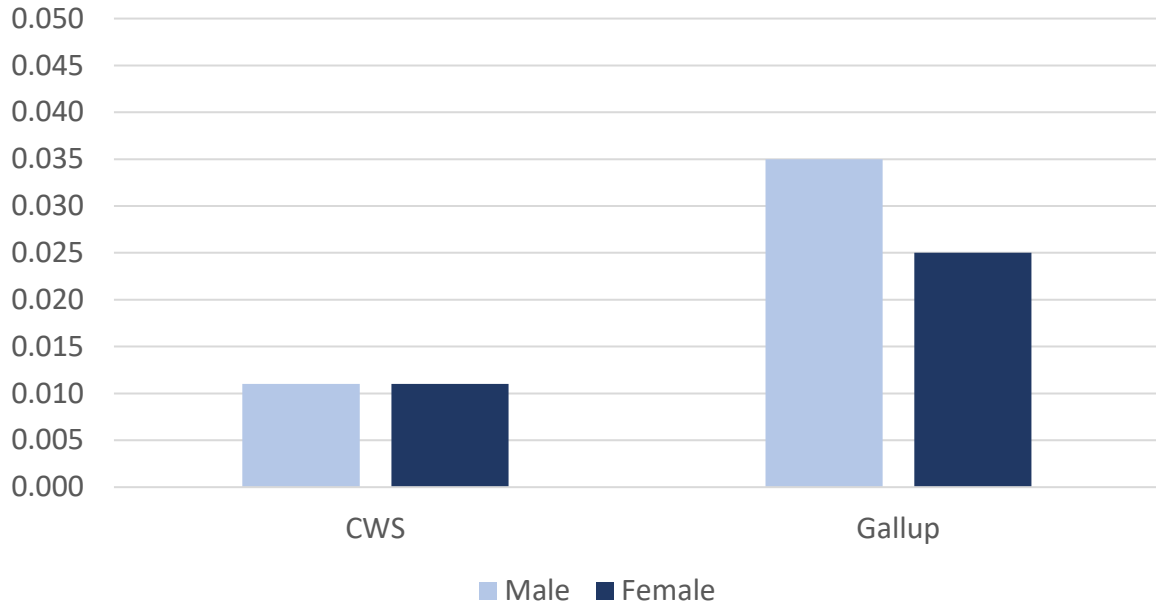
SOURCE: Authors’ analysis of CWS and Gallup Contract Work module data.

NOTE: See Figure 4.1d.

⁴⁵ As in the previous section of the paper, unless otherwise stated, all cross-group differences in probabilities discussed in the text are statistically significant at the 5 percent level or better.

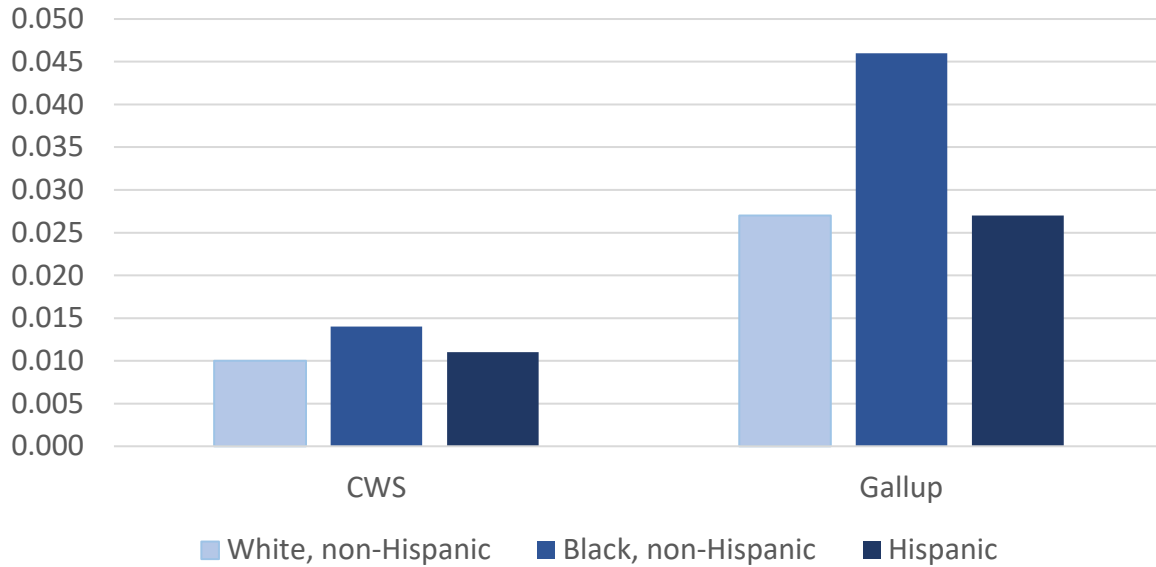
⁴⁶ In the Gallup data, the difference between the probability for college graduates versus those with no more than a high school education is statistically significant, but the difference between the probability for college graduates versus those with some college is not.

Figure 4.1b: Probability of Performing Platform Work during Previous Week, Employed Persons, by Gender



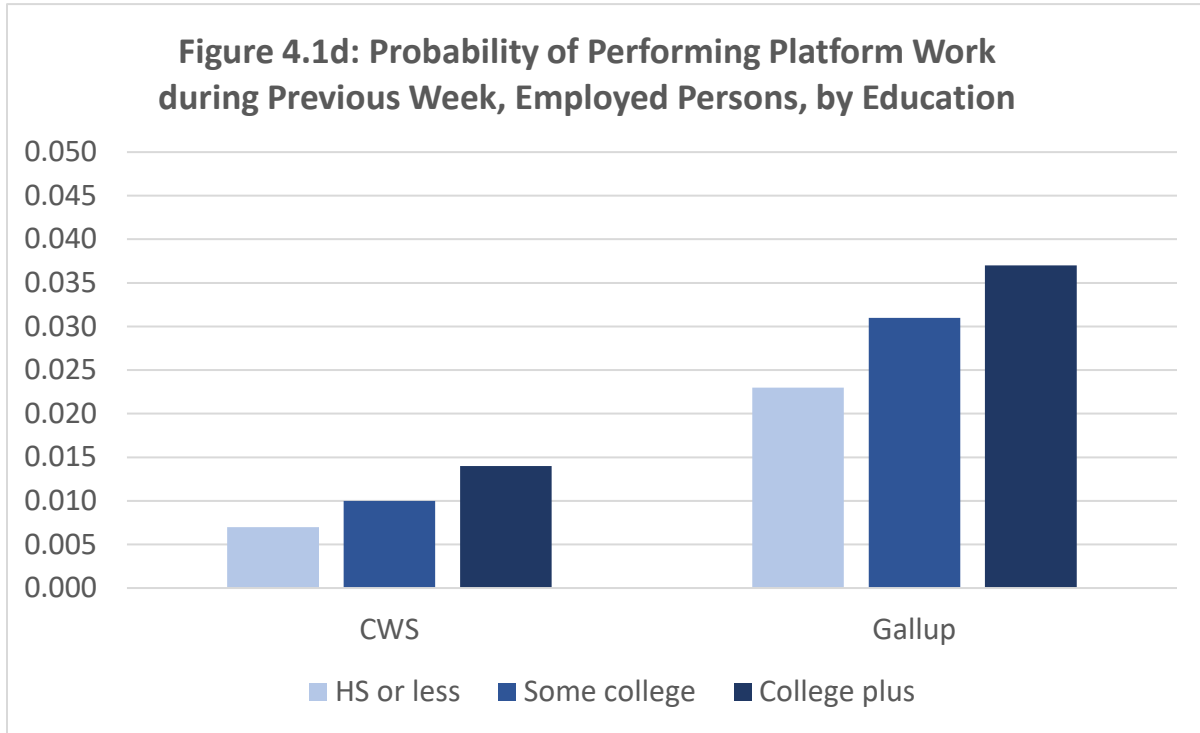
SOURCE: Authors' analysis of CWS and Gallup Contract Work module data.
 NOTE: See Figure 4.1d.

Figure 4.1c: Probability of Performing Platform Work during Previous Week, Employed Persons, by Race and Ethnicity



SOURCE: Authors' analysis of CWS and Gallup Contract Work module data.

NOTE: See Figure 4.1d.



SOURCE: Authors' analysis of CWS and Gallup Contract Work module data.

NOTE: Figures show conditional probabilities of performing platform work based on coefficients from weighted linear probability regressions. CWS regressions fit using 2017 data and Gallup regressions using data from third and fourth survey waves. All models include dummies for age group, gender, race/ethnicity, education, part-time status, occupation, and region as explanatory variables. Probabilities calculated with the Stata margin command using the default average probabilities of outcome setting. Probabilities on a scale from zero to one shown on vertical axis. N=47,651 for CWS estimates and N=17,341 for Gallup Contract Work module estimates.

Role of Informal and Platform Work for Workers

Discussion of informal and platform work often seems to presume that such work replaces a traditional job. In fact, however, it more often appears to supplement income from a traditional job.

In their analysis of data from the 2016 and 2017 SHED, Abraham and Houseman (2019) find that informal work is a primary source of income for few of those who participate in it. In their data, an estimated 28.1 percent of adults age 18 and older participated in informal work during the prior month, but only 4.5 percent (16 percent of those engaged in informal work) reported that this work was a primary source of income. Even if it is not the main income source, however, informal work can be an important supplement to income. In the 2016 and 2017 SHED data, 10.7 percent of adults (38 percent of those engaged in informal work) reported that

informal work was an important source of household income, and 9.6 percent (34 percent of those engaged in informal work) said it accounted for 10 percent or more of household income.

Evidence on the patterns of participation in platform work paints a picture consistent with that for informal work more generally. Farrell, Greig, and Hamoudi (2018) show that the majority of households with platform income at any point during the year receive such income in three or fewer months. Analysis of the JPMCI data also suggests that platform work can play an important role in smoothing fluctuations in income from other sources. Farrell and Greig (2016a) show that households in their data experience significant month-to-month earnings fluctuations. For those with a history of platform work, this work offsets lower earnings from other sources in the months when it occurs.

Analyzing data for 18,000 rideshare drivers from a large online personal financial service company, Koustas (2018) provides direct evidence that income from platform work helps to offset declines in participants' earnings from other sources, reducing the fluctuations in their overall income. He finds that rideshare income replaces three-quarters of the income lost when earnings from a primary payroll employment job decline. In addition, he shows this translates into substantial smoothing of consumption expenditures.

Finally, Abraham et al. (2018) report findings based on tax data consistent with a role for platform income to supplement income from another job or to offset income reductions due to job loss. Income earned through a rideshare platform should be reported as Schedule C self-employment income in the taxi and limousine services industry. Coinciding with the growth of ridesharing as an alternative to traditional taxi services, Abraham et al. (2018) find that there has been substantial growth in the share of drivers with both rideshare income and wage and salary income. Moreover, as access to ridesharing platforms has spread, workers displaced from their jobs have become more likely to subsequently report Schedule C income from driving.

Public Policy Initiatives

Much of the public policy concern around informal and platform work has been focused on the treatment of platform workers and especially on rideshare drivers. A central question is whether these workers should be treated as employees or as independent contractors. As noted in the previous section of the paper, under California's Assembly Bill 5 (AB5) passed in September 2019, most platform company workers would have been reclassified as employees rather than independent contractors. Subsequently, Proposition 22, a ballot initiative stipulating that special rules would apply to rideshare drivers and that they would continue to be classified as independent contractors, was approved by California voters in November 2020 (Conger 2020). A California court, however, has since voided Proposition 22, ruling that it is unconstitutional. At the time of this writing, rideshare companies were appealing the decision (Conger 2021).

The heterogeneity among online platform workers complicates the regulation of this type of work. Some participants rely on platform work as a primary source of income. As we have documented, however, for many, platform work is a supplemental source of income. Rules that

best protect full-time platform workers may make it more difficult for workers who would like to supplement their income from another job to do so. Finding a way to balance these perhaps disparate interests will be a challenge going forward.

V. BUSINESS-TO-BUSINESS CONTRACTING

The previous two sections examined businesses' use of various types of independent contractors—individuals who are hired by a business to perform certain tasks but who are not employees of the organization. In this section, we focus on businesses' use of other companies as contractors or subcontractors to supply goods and services needed in the production of their products. Businesses must decide whether to make or buy intermediate goods and services required for a business's final product. For example, an automobile manufacturer must decide whether to produce each of the car parts, hire its own maintenance and cleaning staff for the assembly plant, internally handle the logistics of getting parts and vehicles where they are needed, or purchase some or all of these goods and services from other businesses. These make or buy decisions determine the boundary of the firm. Virtually all businesses purchase some intermediate goods and services from other businesses, and hence engage in some outsourcing.

The research and policy questions related to outsourcing, therefore, focus on whether and how business-to-business contracting has changed over time and the implications any changes have for workers and firms. The mid-20th century saw the rise of large integrated firms. Business historians argued that these large integrated firms emerged because they were more efficient. Arms-length transactions with supplier firms suffered from coordination and other problems that could be reduced by bringing functions into the firm (see, for example, Chandler [1977] and Williamson [1975]). Yet, as discussed in Bernhardt et al. (2016), the latter part of the 20th century saw a reversal of the move toward vertical integration.

Two types of explanations have been offered for this reversal. One, put forth in the economics and management literature, focuses on advances in information and communications technology. In the 1980s, the rise of international competition placed cost pressures on domestic companies and new production and management technologies facilitated the monitoring and enforcement of contracts. At the same time, a new management philosophy espoused a focus on core competencies and the outsourcing of functions that others could perform more efficiently (Porter 1985).

Another perspective emphasizes a series of institutional changes. These included the shift of power from labor to capital that accompanied the decline of unions and capital market deregulation and the concomitant increase in the power of institutional investors who focused on maximizing shareholder value and short-run profits. According to proponents of this view, these institutional shifts encourage the sell-off of less profitable, lower value-added parts of the supply chain (Bernhardt et al. 2016). In his theory of the fissured workplace, David Weil describes a process whereby, in response to capital market pressures, companies shed activities that are not part of their core competencies, but “maintain tight control of outcomes of subsidiary

organizations in the orbit around its competence through standards, monitoring, and mechanisms of enforcement” (Weil 2019, p. 148). Weil’s concept of fissuring encompasses the outsourcing of certain functions to other businesses but is broader and includes, for instance, the franchise model that has become ubiquitous in the retail and hospitality industries and is growing in other sectors.

It is generally assumed that firms contract out certain functions because it lowers their costs and raises their profitability. The implications of outsourcing for workers depend on how cost savings are achieved. If outsourcing increases efficiency and improved productivity translates into higher wages, workers may benefit. On the other hand, the outsourcing of functions sometimes can be a mechanism for lowering workers’ wages, particularly when the outsourced task is low value-added. Owing to pay equity norms, low-wage workers may earn more if they are employed by an integrated firm with both high- and low-wage workers than if they are concentrated in a firm with other low-wage workers (Goldschmidt and Schmieder 2017; Weil 2019). Later in this section of the paper, we discuss the empirical evidence on the effects of contracting out on compensation and other aspects of job quality. First, however, we review evidence on trends in business-to-business contracting, the number of workers in such contract arrangements, and the characteristics of these workers.

Incidence and Trends in Business-to-Business Contracting

Business-to-business contracting is ubiquitous, which has raised questions about what should be included in measures of outsourcing. Additionally, serious data gaps present challenges to estimating inter-firm expenditures and the number of workers involved in outsourcing. Government data on firms’ spending on intermediate goods and services is spotty and often available only at highly aggregated levels, especially for services inputs. Even when firms contract out workers to work at a client firm’s worksite, business and household survey data typically only record the business that pays the worker, not the business for which the worker performs work. For example, in administrative data and most business surveys, temporary help workers are recorded as employees of the temporary help agency, but the data generally do not capture the business where the temporary help worker is assigned. A few special household and business surveys have endeavored to collect this sort of information at selected points in time.⁴⁷ In light of the data challenges, researchers have taken different approaches to measuring the incidence of business-to-business contracting and trends in its use.

Estimates from Input-Output Data

Several studies have relied on the input-output tables constructed by the Bureau of Economic Analysis (BEA) to measure trends in domestic purchases of goods and services inputs from other domestic suppliers, which capture changes in the structure of supply chains. Hammerling (2020)

⁴⁷ Housman and Bernhardt (2017) provide a more in-depth discussion of data challenges in measuring domestic outsourcing in the United States.

points to the conceptual difficulty and disagreement over what should be measured. Hammerling nets out exports and imports from the BEA I-O tables to construct three measures of purchases of domestic intermediate inputs—what she terms *inter-firm contracting*—from 1968 to 2014. Her broadest measure of inter-firm contracting includes all intermediate goods and services. A second measure includes just services inputs, and her narrowest measure includes only services that she deems firms feasibly could produce in-house, such as IT services or call center service support. Excluded from this last measure are service purchases such as utilities, insurance, and financial services, which would be difficult for most firms to provide for themselves. Growth in inter-firm transactions is greatest for the last category, services that are feasibly produced in-house. Hammerling finds that the share of the gross output of all services sold as an intermediate input grew from 43 to 46 percent between 1968 and 2014. Over the same period, the share of the total output of services feasibly produced in-house sold for intermediate use grew from 67 percent to 79 percent.

Hammerling's measure of services that can be feasibly produced in-house was based on earlier work by Yuskavage, Strassner, and Mederios (2008), who constructed a similar measure for the economy over the period 1997 to 2008. Those authors find that although the share of these intermediate inputs in the economy remained constant, real purchased services and real purchased services classified as outsourcing (i.e., intermediate inputs to other businesses) increased significantly faster than real materials and energy inputs, though the growth of services for final consumption was greater than the growth of services designated as outsourcing.

Manufacturing and Professional and Business Services

Several studies have focused on the extent to which the decline of employment in U.S. manufacturing can be accounted for by manufacturers' outsourcing practices. Berlingieri (2014) uses the changing input-output structure of the U.S. economy to estimate the effects of domestic outsourcing on sectoral employment. Like other researchers, Berlingieri points to the high employment growth in professional and business services, which primarily provide services inputs to other business, as evidence of domestic outsourcing. Berlingieri estimates that the change in the input-output structure accounts for 36 percent of the growth in services employment and 25 percent of the decline in manufacturing employment from 1948 to 2002, and that most of that change is attributable to the growth of professional and business services.

The staffing industry, primarily comprised of temporary help services, is an important component of professional and business services. During the 1990s, a period of rapid employment growth in the U.S. economy, staffing services accounted for about 10 percent of the net growth in payroll employment. Rather than relying on business expenditure and input-output data, as was done in the previously mentioned studies, Dey, Houseman, and Polivka (2012) exploit a unique question in the CWS, which asked individuals reporting that they worked for a temporary help agency the industry of the client to which they were assigned. They combine this information from the CWS with data from the Occupational Employment Statistics program to estimate the share of staffing industry workers assigned to manufacturing by occupation over time. They find that the growth in staffing services employment largely was driven by demand

from manufacturers, confirming earlier analysis by Segal and Sullivan (1997). They estimate that all staffing services added 2.3 percent to manufacturing employment in the United States in 1989, 8.2 percent in 2000, and 9.2 percent in 2006. Most of that employment (about 80 percent in 2006) came from temporary help services.⁴⁸

Following a rapid expansion in the 1980s and 1990s, temporary help employment as a share of all nonfarm payroll employment peaked at around 2 percent in 2000. Since that time, the temporary help employment share has fluctuated with the business cycle—declining during downturns and increasing during expansions—but displayed no trend growth. In trying to explain this leveling off, Mas and Pallais (2020) suggest that temporary help employment primarily serves to smooth fluctuations in demand and that the need for such smoothing may not have changed much over time. We would argue, however, that the reasons behind the lack of growth in overall temporary help employment are more complex. Manufacturing largely accounted for the rapid growth in temporary help use in the 1990s, but manufacturing employment plummeted in the 2000s, dropping by a third—nearly 6 million jobs—from 2000 to 2010, according to BLS Current Employment Statistics data. In 2019, prior to the start of the most recent recession, employment in the manufacturing sector was still down by 26 percent, or 4.4 million jobs, compared to 2000. Given the collapse of manufacturing employment, it is perhaps surprising that temporary help’s overall employment share has remained stable rather than falling. The fact that it has implies that usage of temporary help workers must have expanded in some industries. Indeed, in an update of their work through 2015, Dey, Houseman, and Polivka find further expansion of temporary staffing in manufacturing (Dey, Houseman, and Polivka 2017).⁴⁹

Estimates from Business Surveys

Several surveys of businesses conducted since the 1990s have included questions about employers’ use of contract workers or their contracting out of business functions (e.g., Abraham 1988; Houseman 2001; Kalleberg, Reynolds, and Marsden 2003, 2005). These surveys provide point-in-time estimates of the incidence of domestic outsourcing or on-site use of contractors and have provided insights into the reasons business outsource. The 2010 National Organization Survey is a relatively recent survey that queried companies about domestic as well as international outsourcing by business function. These data show that a sizable minority of businesses use domestic contractors for facilities management (34 percent), IT systems (34 percent), transportation services (30 percent), sales and marketing (22 percent), research and development (20 percent), management, administration and back-office functions (14 percent), and customer service (12 percent) (Nielson and Sturgeon 2014). Respondents provided estimates of the costs incurred for each function broken out by domestic in-house costs, domestic external

⁴⁸ The rest came from Professional Employer Organizations. Temporary help services employment was combined with PEO employment in data prior to 2000.

⁴⁹ In recent years, Census Bureau surveys have collected information on business expenditures on temporary help services and professional employer organizations that will better inform BEA estimates in the input-output tables of the industries utilizing these services. To our knowledge, these data have yet to be exploited in research studies.

costs, and international costs. The cost share accounted for by domestic outsourcing was highest in transportation services (12.6 percent), information technology systems (12.4 percent), and facilities maintenance (14.5 percent) (Brown, Sturgeon, and Cole 2013).

More recently, the Census Bureau included questions on the types of workers that firms use in its Annual Survey of Entrepreneurs (ASE), administered between 2014 and 2016. As discussed in Section II, the ASE broke out workers into six categories: 1) full-time paid employees, 2) part-time paid employees, 3) paid day laborers, 4) temporary staffing obtained from a temporary help service, 5) leased employees from a leasing service or a professional employer organization, and 6) contractors, subcontractors, independent contractors, or outside consultants, defined as workers who received a Form 1099 or payment from another company. In the 2015 ASE, respondents were asked about the intensity of their use of each type of worker, specifically the percent of all workers each worker type accounted for on average in that year, and also the types of tasks each worker type performed. Although the ASE was discontinued, the Census's Annual Business Survey (ABS) has since included questions on the types of workers firms use, but not on their intensity of use or how they are used. These surveys are a potentially valuable source of information on the incidence of use of various contract arrangements, the types of firms that employ them, and, in 2015, on the extent and nature of firms' use of these arrangements. The Census Bureau provides limited tabulations of the data from the ASE and ABS questions, and research using the micro data from these surveys has yet to be made public.

Estimates from Household Surveys: The Contingent Worker Supplement and the Gallup Contract Work Module

The CWS asked respondents identified as employees in the main CPS a series of three questions about contract work. First, they were asked whether their employer contracted out them or their services to others. This provides a broad measure of the number engaged in contract work. If they answered yes to this first question, they then were asked whether they primarily worked for one client, and, if so, if they worked at the client's worksite. Those engaged in contract work who also answered that they primarily work for just one client and did so at the client's worksite provide a narrow measure of contract work.⁵⁰ Although the CWS asks a broad question about whether workers' employers contract out them or their services to others, respondents may be unable to report accurately on their employer's business-to-business contract arrangements, particularly if the worker performs the tasks for multiple customers at their employers' worksite. Out of concern about respondents' interpretation of the first question and hence the types of work it captures, the BLS has emphasized the narrow contract work measure in its reporting.

⁵⁰ Below is wording for these three questions in the CWS:

- 1) [Some companies provide employees or their services to others under contract. A few examples of services that can be contracted out include security, landscaping, or computer programming.] Did (you/NAME) work for a company that contracts out (you/him/her) or (your/his/her) services last week?
- 2) (Are/Is) (you/he/she) usually assigned to more than one customer?
- 3) (Do/Does) (you/he/she) usually work at the customer's worksite?

In the Gallup Contract Work Module, administered four times during 2018 and 2019, respondents were asked a set of similarly worded questions.⁵¹ Nevertheless, several differences in the two surveys could result in different estimates of the incidence of contract work. First, the CWS only queried about a person’s main job while the Gallup module asked about contract work arrangements on any of the jobs the respondent held in the past week, which would make the Gallup measures of contract work higher, all else the same. Second, while the CWS used proxy respondents, the Gallup module did not. To the degree that individuals are less knowledgeable about the contract work arrangements of other household members than they are of their own, this difference would also increase the incidence of contract work measured in the Gallup module compared to the CWS. Third, not all wage and salary workers are asked questions about contract work in the CWS. The CWS separately queries respondents about their work for temporary help agencies; respondents indicating that they work for a temporary help agency are not asked the contract work questions. The Gallup survey module does not ask specifically about temporary agency work. Because temporary help agencies contract out their employees to work primarily for one customer at the customer’s worksite, however, temporary help workers should be captured in both the broad and narrow contract work measures in the Gallup module. Additionally, in the CWS, wage and salary workers were asked if they worked as an independent contractor, independent consultant, or freelance worker. Wage and salary workers who identified as independent contractors were not asked questions about whether their employer contracted them or their services out to others, although in the Gallup survey module such workers were asked these questions. Finally, while the question wording in the two surveys was similar, it was not identical. In particular, in the first question, the CWS gives examples of contract work (security, landscaping, or computer programming), which may clarify the type of work targeted by the question but also limit the number of people who report doing such work.

The incidence of contract work using the broad definition is considerably lower in the 2017 CWS than in the 2018–19 Gallup contract module. In the CWS, 1.6 percent of wage and salary workers reported that their employer on their main job contracted them or their services out, while 11.0 percent of Gallup respondents reported that an employer on a main or secondary job contracted out them or their services. The difference in the incidence of contract work measured in the two surveys is considerably smaller when the narrow definition is used. Among wage and salary workers, the percent of respondents reporting that they are contracted out, primarily work for one customer, and work at the customer’s worksite is 0.7 percent in the CWS and 2.0 percent in the Gallup module.

⁵¹ As described in Abraham, Hershbein, and Houseman (2019), respondents were randomly assigned to one of two versions of the questions on contract work. Here, we report results for respondents who answered questions that were similar to those appearing on the CWS. The wording for these questions was as follows:

- 1) In the last 7 days, did your employer contract you or your services out? [for those with one employer] or In the last 7 days, did any of your employers contract you or your services out? [for those with more than one employer]
- 2) [“Thinking about the job where you were an employee...”] On this job, are you usually assigned to more than one client or customer?
- 3) Do you usually work at the client's or customer’s worksite?

All else the same, the fact that Gallup respondents are asked about contract work on any job with an employer and CWS respondents are queried only about contract work on a main job would make the Gallup measure of contract work higher. We find, however, that this factor can explain little if any of the differential in the narrow contract work measure in the two surveys.⁵² Although we cannot formally test the importance of other factors in explaining the difference, the fact that the CWS measure excludes temporary agency workers potentially explains a large share of the differential for the narrow contract work measure. Including temporary help workers raises the percent of wage and salary workers in the CWS who are in contract work under the narrow definition from 0.7 percent to 1.6 percent. In the analysis reported below, we focus on the narrow definition of contract work, in which workers are contracted out primarily to one client and work at the client's worksite. For the CWS, we report measures that exclude and include temporary help workers.

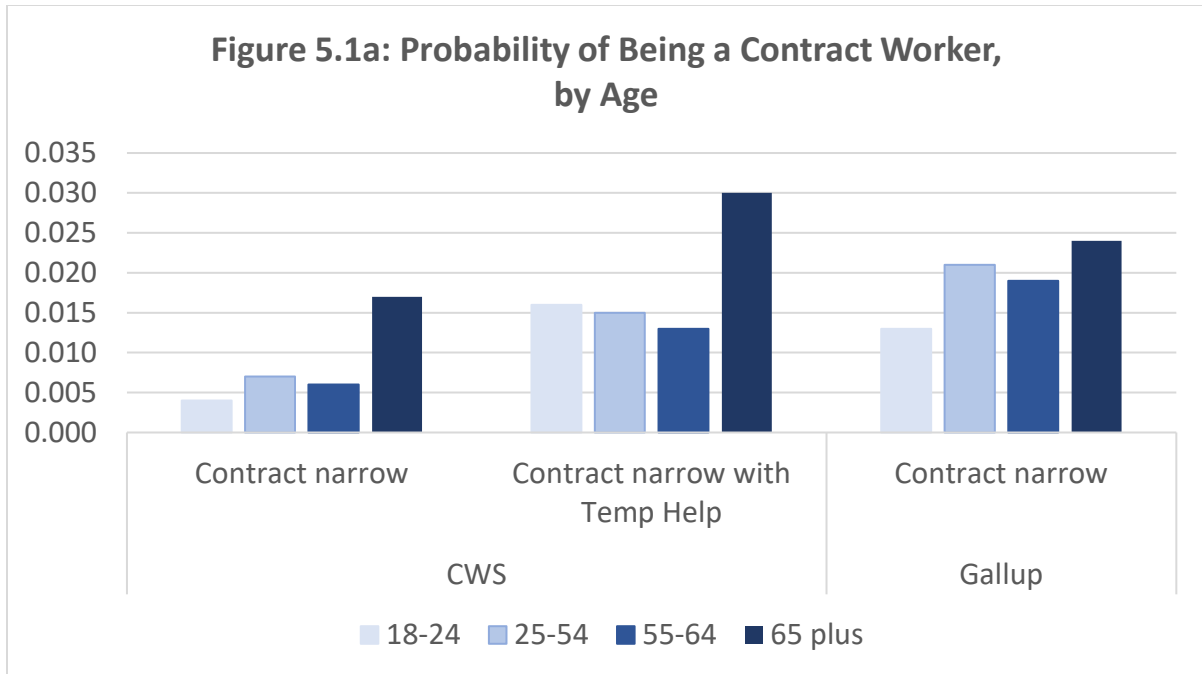
The Characteristics of Workers in Contract Arrangements

Figures 5.1a—5.1d use the CWS and Gallup module data to estimate the probability that a wage and salary worker is contracted out to primarily one customer and works at the customer's worksite by age, gender, race/ethnicity, and educational attainment. As with previous graphs, these estimates are based on linear probability models that also control for occupation, region, and part-time status.⁵³

In both data sets, contract work generally increases with age (Figure 5.1a) and is higher among minorities (Figure 5.1c), controlling for other observables. The probability of being in a contract arrangement increases from 0.4 percent for those age 18–24 to 1.7 percent among those age 65 plus in the CWS measure that excludes temporary help workers, from 1.6 percent to 3.0 percent in the CWS measure that includes temporary help workers, and from 1.3 percent to 2.4 percent in the Gallup measure. Though the differences by age in the Gallup measures are insufficiently precise to be statistically significant at conventional levels, in both of the CWS measures, workers age 65 and older are significantly more likely to be in a contract work arrangement than are workers who are younger than 65. In the CWS measure that includes temporary help workers, Hispanics are about twice as likely as White non-Hispanics to be in contract work (2.1 percent versus 1.1 percent). In the Gallup data, Hispanics are more than twice as likely to be in contract work as White non-Hispanics (3.3 percent versus 1.5 percent); Blacks are also significantly more likely than non-Hispanic Whites to work in contract arrangements in the more inclusive CWS measure of contract work, owing to the high incidence of temporary help employment among Blacks.

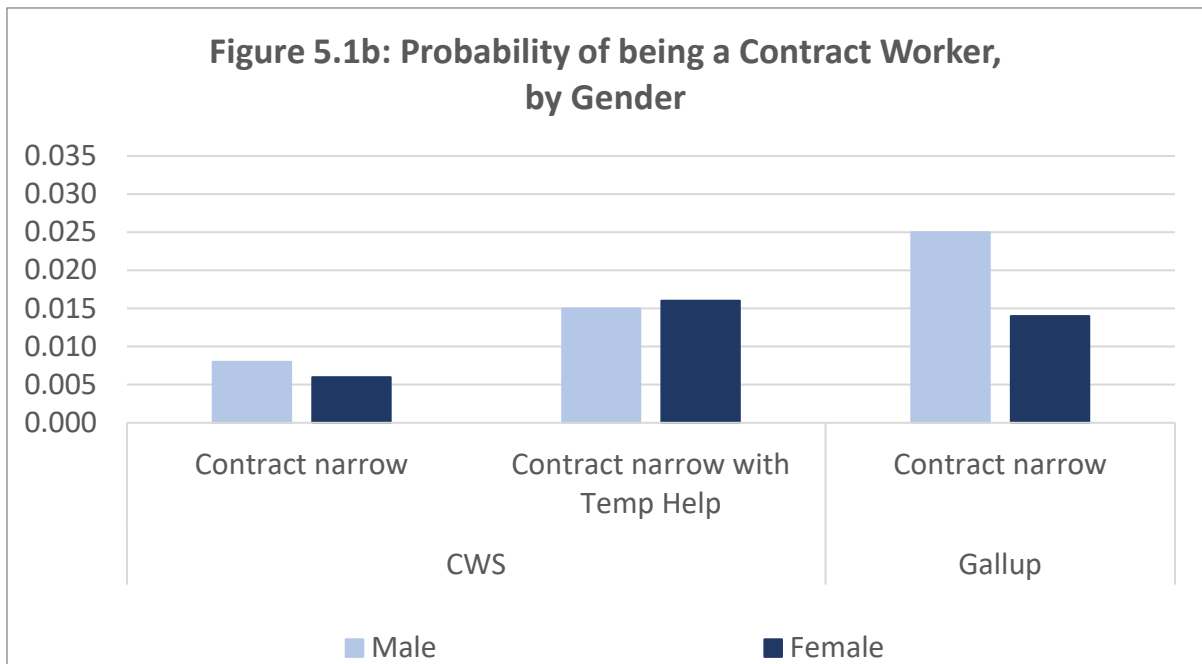
⁵² If Gallup respondents hold more than one employer job in the reference week, they are asked whether on any of their jobs their employer contracts them out. If they reply "yes" to this question, they are not asked whether the contracting out occurs on the main or secondary job. Under the extreme assumption that contract work occurs only on secondary jobs among multiple job holders, this factor would explain less than 0.2 percentage points of the differential between the Gallup and CWS narrow contract work measure.

⁵³ As in earlier sections, unless otherwise stated, all cross-group differences in probabilities discussed in the text are statistically significant at the 5 percent level or better.



SOURCE: Authors' analysis of 2017 CWS and Gallup Contract Work module.

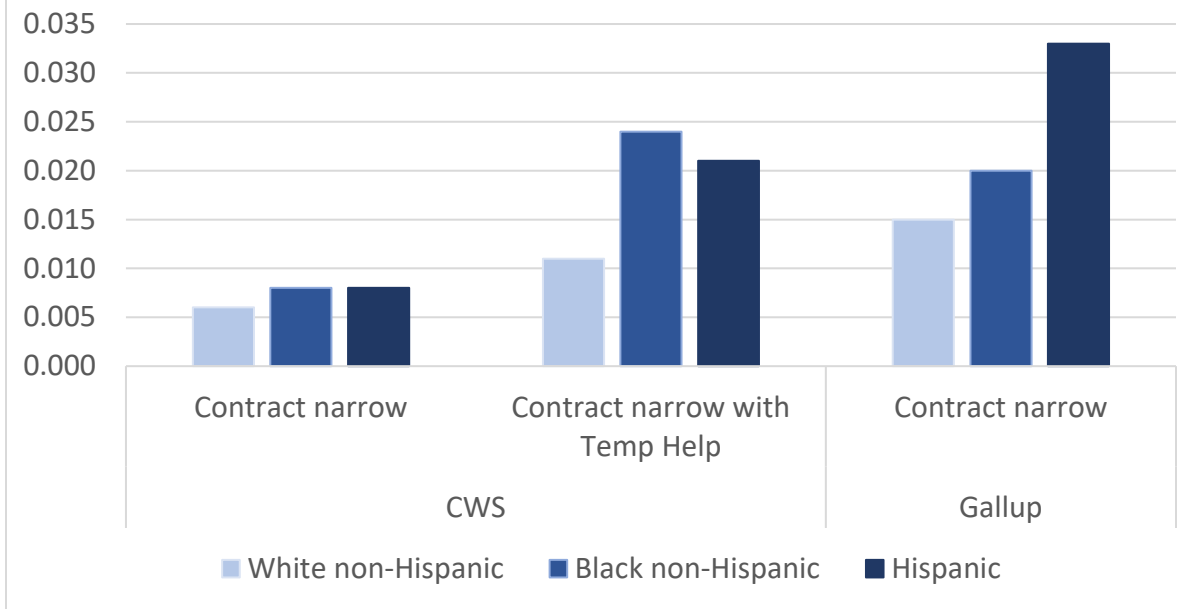
NOTE: See Figure 5.1d.



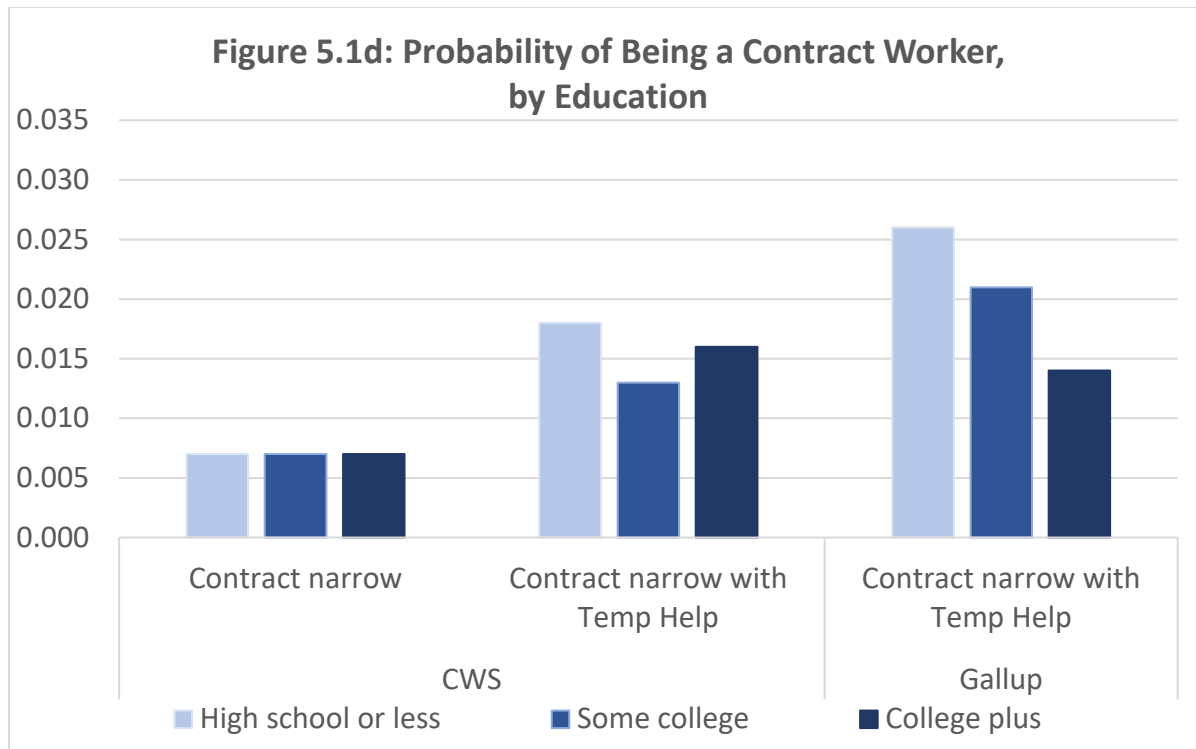
SOURCE: Authors' analysis of 2017 CWS and Gallup Contract Work module.

NOTE: See Figure 5.1d.

Figure 5.1c: Probability of Being a Contract Worker, by Race and Ethnicity



SOURCE: Authors' analysis of 2017 CWS and Gallup Contract Work module.
 NOTE: See Figure 5.1d.



SOURCE: Authors’ analysis of 2017 CWS and Gallup Contract Work module.

NOTE: Contract narrow refers to respondents who report their employer contracts them out to a customer *and* that they work primarily for one customer at the customer’s worksite. Contract work questions in the CWS are not asked of those who report they work for a temporary help agency, whereas the Gallup measure may capture temporary help workers. CWS estimates refer to main job and Gallup estimates to any job. See text for further details. Figures show conditional probability of being in contract work arrangement based on coefficients from weighted linear probability regressions. All models include dummies for age group, gender, race/ethnicity, education, occupation, geographic region, and part-time status. Probabilities calculated with the Stata margin command using the default average probabilities of outcome setting. Probabilities on a scale from zero to one shown on vertical axis. N=41,869 for CWS estimates and N=13,727 for Gallup Contract Work module estimates.

The two data sets are less consistent in their patterns by gender (Figure 5.1b) and educational attainment (Figure 5.1d). While gender differences in the probability of being in contract work are small in both CWS measures, women are considerably less likely than men to be in a contract arrangement according to the Gallup data (1.4 percent versus 2.5 percent). The Gallup data also suggest that, controlling for other factors, contract work arrangements decline steadily with educational attainment, with the college educated being significantly less likely than those with a high school education or less to be in a contract arrangement. Neither CWS measure of contract work shows this pattern.

As discussed above, a major goal of the Gallup contract work module was to identify individuals who reported working for an employer but who, with further probing, identified themselves as an independent contractor. We term such respondents “miscoded employees” or “wage-and-salary independent contractors.” The CWS also queries individuals coded as employees in the main

CPS if they are independent contractors but does not ask these respondents the contract work questions. Nevertheless, it is possible that they are in such an arrangement. For example, a participant in one of the focus groups we conducted in developing the Gallup module questions reported working for an employer who contracted him out to other businesses to perform IT support. Upon probing, he reported that his employer gave him a Form 1099, not a W-2, indicating that he was being treated as an independent contractor.

Interestingly, the Gallup data suggest that this type of contract work is more common among independent contractors who are miscoded as employees than among employees. For example, in the sample receiving questions similar to those asked in the CWS, the incidence of the narrow definition of contract work in the Gallup module was double among miscoded employees (3.9 percent) compared to employees not miscoded (1.8 percent).⁵⁴ The prevalence of this type of contract arrangement—in which a third party assigns workers who are treated as independent contractors to client organizations—warrants further study.

Effects of Contract Work on Worker Outcomes

The theoretical predictions about the effects of outsourcing on worker outcomes are ambiguous. If efficiency drives business decisions to outsource, workers may be better off under contract work arrangements, as gains in productivity may be shared with workers in the form of higher compensation. If, on the other hand, outsourcing is a mechanism to lower labor costs and improve profitability but does not lead to substantial efficiency gains, workers may be worse off (Freeman 2021).

Evidence of the effects of contract work arrangements on hourly wages and earnings is mixed. Studies find that, controlling for observables, temporary help workers' earnings are substantially lower than those of regular wage and salary workers (e.g., Autor and Houseman 2010; Abraham and Houseman 2020). It is also true, however, that temporary agency workers are more likely to transition to unemployment or out of the labor force (Houseman and Polivka 2000), meaning that lower weekly or quarterly earnings may reflect unstable employment and hence lower hours. Studies that compare hourly wages of temporary help workers and direct-hire employees find that the temporary help workers earn similar or even higher wages than comparable direct-hire employees (Segal and Sullivan 1997; Autor and Houseman 2010; Hamersma, Heinrich, and Mueser 2014). Using data from the CWS and controlling for observables, non-temporary-help contract workers assigned to one client and working at the client's worksite enjoy weekly earnings that, on average, are about 8 percent higher than the earnings of regular wage and salary workers (Abraham and Houseman 2020). In contrast, in a study that included worker fixed effects, which helps control for unobservable factors that may influence wages, and focused on contracted out janitors and security guards, Dube and Kaplan (2010) find a wage penalty of 4 to

⁵⁴The incidence of contract work using the broad definition was 29.3 percent among independent contractors miscoded as employees compared to 9.4 percent among employees. Independent contractors miscoded as employees also report significantly higher rates of contract work when responding to alternate question wording in the Gallup contract module.

7 percent for janitors and 8 to 24 percent for guards. They also find that industries that historically offered higher wage premiums to these workers were more likely to outsource this work. Studies of call centers find that outsourced call center workers earn lower wages compared to in-house call center workers, both union and non-union (Batt, Doellgast, and Kwon 2006; Batt and Nohara 2009).

Using unique German data on outsourcing events affecting workers in several low-wage occupations (food, cleaning, security, and logistics services), Goldschmidt and Schmieler (2017) find that, following the outsourcing event, wages of the outsourced workers fell by 10 to 15 percent relative to those in similar jobs that were not outsourced. Goldschmidt and Schmieler estimate that the outsourcing of these services can account for 9 percent of the increase in wage inequality in Germany since the 1980s.

Research also generally finds that contract workers fare worse on other dimensions of job quality. Contract workers, including temporary help workers, are less likely to receive benefits such as health insurance and retirement benefits (Abraham and Houseman 2020; Batt, Doellgast, and Kwon 2006; Batt and Nohara 2009). Some studies also have found a higher incidence of workplace injuries among contract workers, including temporary staffing workers (Rebitzer 1995; Morris 1999; Smith et al. 2010; Muzaffar et al. 2013; Foley et al. 2014; Boden, Spieler, and Wagner 2016). Weil (2014) further argues that small subcontractors are more likely to violate wage and hours and other employment laws, leading, on average, to lower compensation and worse working conditions for their workers.

VI. UNPREDICTABLE WORK SCHEDULES

Work schedules may vary across several dimensions and are an important characteristic of jobs. Work schedules that deviate from daytime and weekday schedules to include evening, night, or weekend work may be regarded as nonstandard (Gerstel and Clawson 2018). Work schedules also may vary in the hours an individual works from week to week and in the predictability of those hours; we focus on these latter dimensions of the work schedule, which capture elements of contingency.

Contingent jobs in the CWS are defined as ones that are not expected to last because the organization's need for the worker is temporary. Temporary jobs are likely to lead to employment gaps, which in turn may result in employment and earnings instability. Even if they are not temporary, however, from the workers' perspective, jobs may result in undesired earnings instability if work hours are unpredictable and variable.

Incidence and Characteristics of Workers with Variable and Unpredictable Hours

Fugiel (2020) develops a typology of work schedules that distinguishes 1) whether employees exercise control over their schedule or if the schedule is largely dictated by the employer, 2) how much advance notice of their schedule employees receive, and 3) whether weekly hours are volatile (defined as varying more than 25 percent in the last month). Employers may grant employees considerable latitude in setting their hours; in these cases, variable hours and schedules set with short notice are a benefit to workers. In contrast, if the employer sets the schedule, hours volatility and short notice are likely a negative for workers. In this situation, Fugiel likens the option employers may exercise to vary schedules to options in financial markets. By exercising this option to vary hours of work in response to fluctuations in demand, employers shift risk onto workers.

Fugiel and Lambert (2019) summarize evidence on the overall incidence of different types of work schedules across the three dimensions in Fugiel's typology—control over work schedule, instability of hours, and schedule notice. Their summary considers evidence from five surveys: the Work Schedules Supplement to the CPS, conducted in 2004; the National Longitudinal Survey of Youth 1997 Cohort for the years 2015–2016; the General Social Survey Flexible Work Module, 2016; the Contingent Worker Supplement to the CPS, 2017; and the Survey of Household Economics and Decisionmaking, 2017. The specific characteristics of work schedules measured vary considerably across these surveys.

The CWS, for example, queries only about on-call work. Two questions are used in the CWS to identify on-call workers. In the initial question, respondents are asked if they are an on-call worker, which is defined as someone who is called to work only when needed. Respondents who identify as on-call workers are asked a follow-up question, which clarifies that some on-call workers have regularly scheduled hours but are on-call for additional hours, while some do not, only working when needed. The latter arrangement has been labeled a zero-hours contract in the European literature. In 2017, 1.9 percent of wage and salary workers in the CWS identified as on-call workers in response to the first question, while only 0.8 percent of wage and salary workers were classified as on-call according to the narrow definition used in the CWS in which workers had no regularly scheduled hours.⁵⁵

Using a more expansive definition of on-call work that includes individuals who receive short notice of their work schedule but who may have an implicit or explicit guarantee of hours, Fugiel and Lambert show that the incidence of on-call work, based on data from other surveys, is much higher than that found in the CWS. The percent of employees whose employers determine their

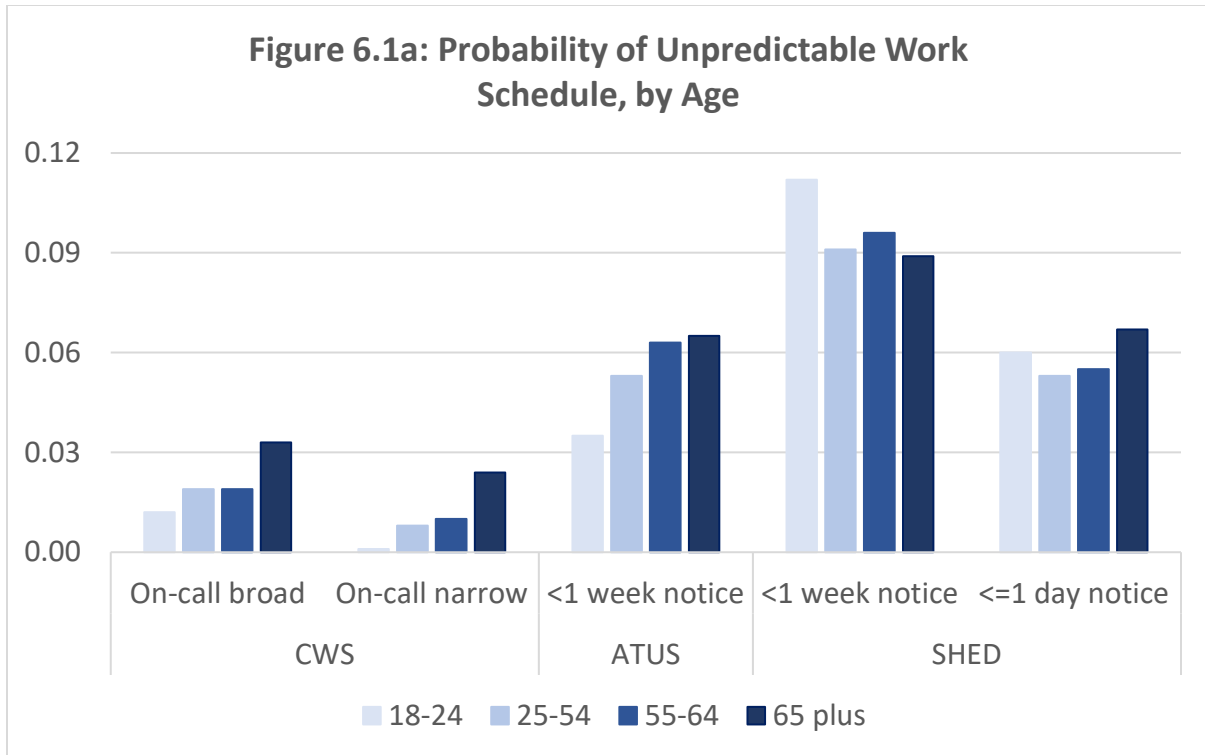
⁵⁵ The following is the wording of the two questions used to identify on-call workers in the CWS:

- 1) [Some people are in a pool of workers who are ONLY called to work as needed, although they can be scheduled to work for several days or weeks in a row, for example substitute teachers, and construction workers supplied by a union hiring hall. These people are sometimes referred to as ON-CALL workers.] (Were/Was) (you/NAME) an ON-CALL worker (on (your/his/her) main job/blank) last week?
- 2) Some ON-CALL workers have regularly scheduled hours, but IN ADDITION must work when called (for example, doctors, nurses, and managers). Other ON-CALL workers work ONLY when called (for example, substitute teachers). Which type of ON-CALL worker (are/is) (you/NAME)?

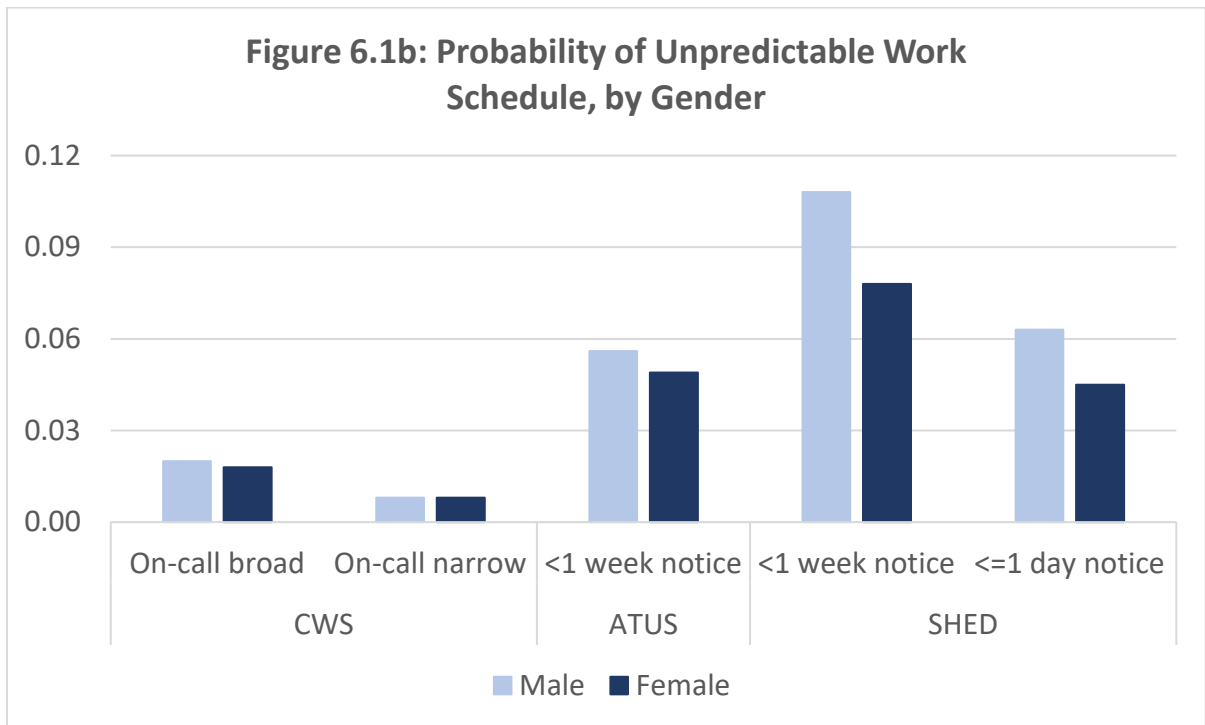
work schedules and who receive a week or less notice of their schedule is 10.4 percent in the NLSY97 in 2015–16 and 14.9 percent in both the 2016 GSS and 2017 SHED. The percent who receive a day or less notice of their work schedule is 6.4 percent and 5.1 percent in the GSS and SHED, respectively. Extreme hours volatility, defined as weekly hours that vary 50 percent or more over the last month is also relatively common, with 8.0 percent of employees reporting such fluctuations in the NLSY97 and 10.1 percent in the GSS (Fugiel and Lambert 2019). According to data from the NLSY97, among employees who lack control over their schedules, the percent who receive one week or less notice of their schedule is more than double among those who work evening or night shifts (15 percent) compared to those who work daytime shifts (7 percent) (Fugiel and Lambert 2019).⁵⁶

Drawing on data from the 2017 CWS, data from the 2017 American Time Use Survey module on Job Flexibilities and Work Schedules, and pooled data from the 2018 and 2019 SHED, we examine the characteristics of workers with unpredictable schedules. Data from all three surveys provide information on work schedules for the worker’s main job. We use a variety of measures of the incidence of unpredictable schedules: broad and narrow measures of on-call work from the CWS, receiving less than one week’s notice of their schedule based on data from the ATUS and SHED, and receiving a day or less notice based on data from the SHED. For wage and salary workers, Figures 6.1a–6.1d display the conditional probability of having the indicated work schedule by age, gender, race/ethnicity, and education. As was done for the reported probabilities of being an independent contractor, platform worker, or contract worker, we derive these estimated probabilities from linear probability models that also control for other factors. For these models, we control for occupation, industry, geographic region, part-time status, and (for the SHED only) year.

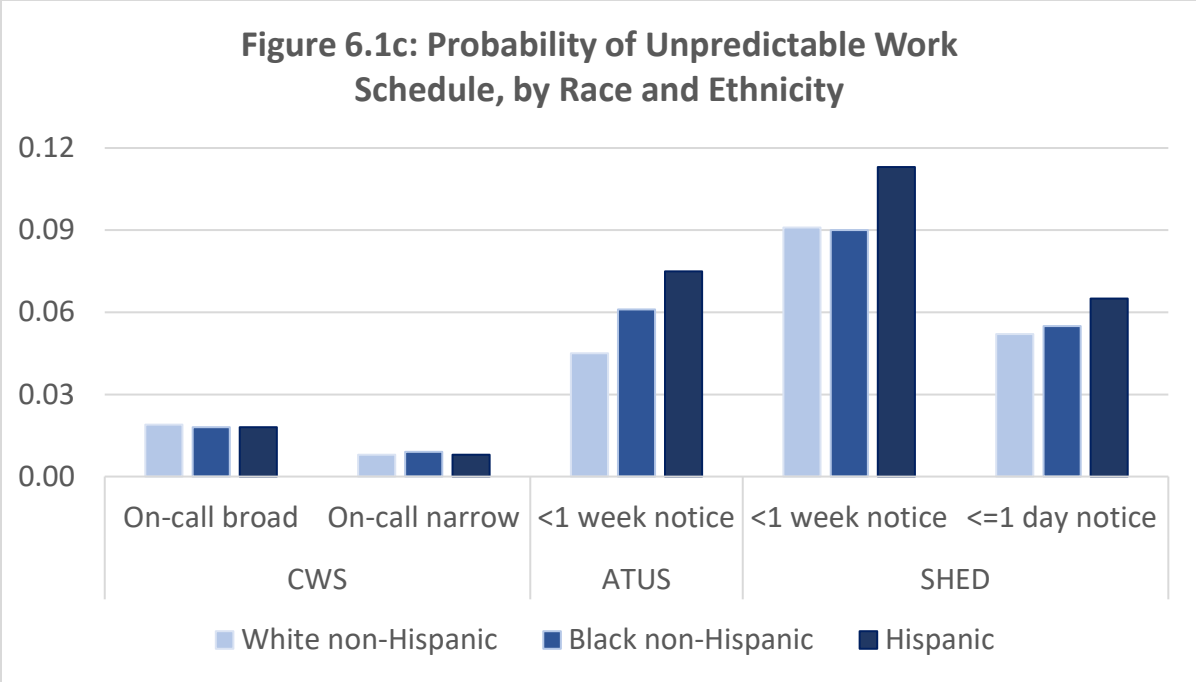
⁵⁶As of 2015-2016, members of the NLSY97 panel were in their mid-30s. Data from the other cited surveys refer to the adult population age 18 and older.



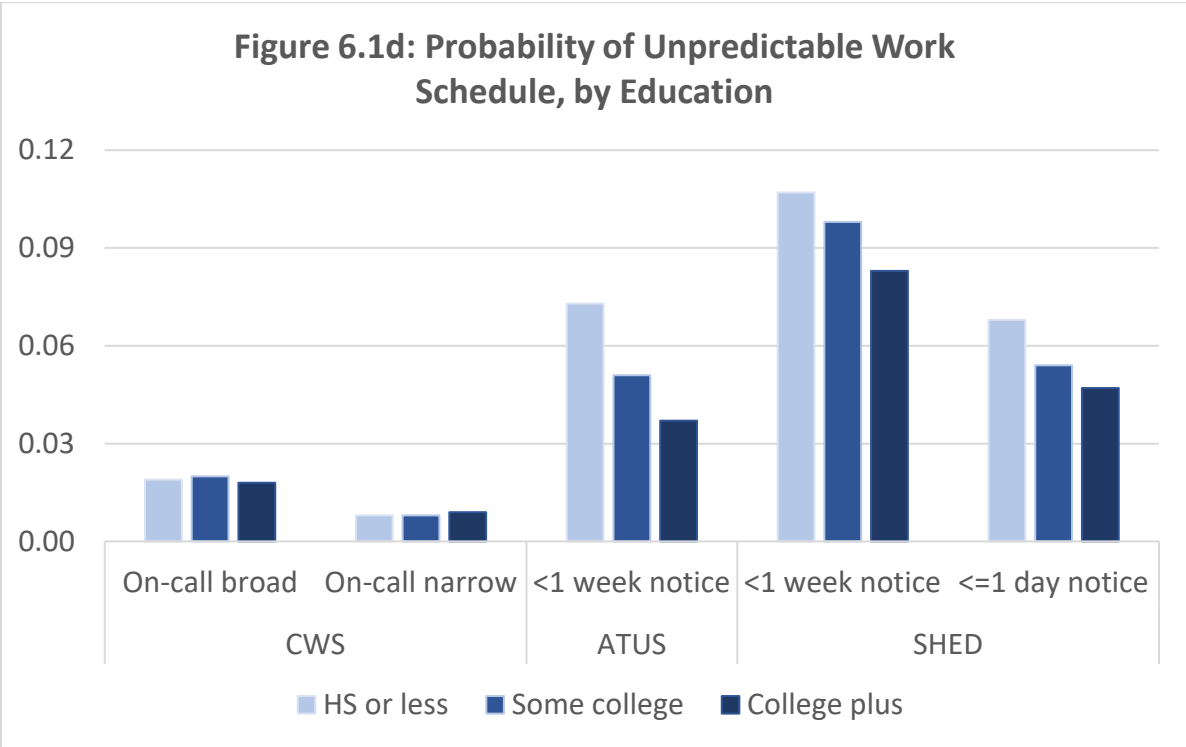
SOURCE: Authors' analysis of 2017 CWS, 2017 ATUS, and 2017 and 2018 SHED data.
 NOTE: See Figure 6.1d.



SOURCE: Authors' analysis of 2017 CWS, 2017 ATUS, and 2017 and 2018 SHED data.
 NOTE: See Figure 6.1d.



SOURCE: Authors' analysis of 2017 CWS, 2017 ATUS, and 2017 and 2018 SHED data.
 NOTE: See Figure 6.1d.



SOURCE: Authors' analysis of 2017 CWS, 2017 ATUS, and 2017 and 2018 SHED data.
 NOTE: Figures show conditional probability of being an on-call worker or having the indicated work schedule notice based on coefficient estimates from weighted linear probability regressions. All models include dummies for age group, gender, race/ethnicity, education, occupation, industry, geographic

region, part-time status, and (for the SHED) year. Probabilities calculated with the Stata margin command using the default average probabilities of outcome setting. Probabilities on a scale from zero to one shown on vertical axis. N=41,714 for CWS, N=9,964 for ATUS, and N=10,731 for SHED.

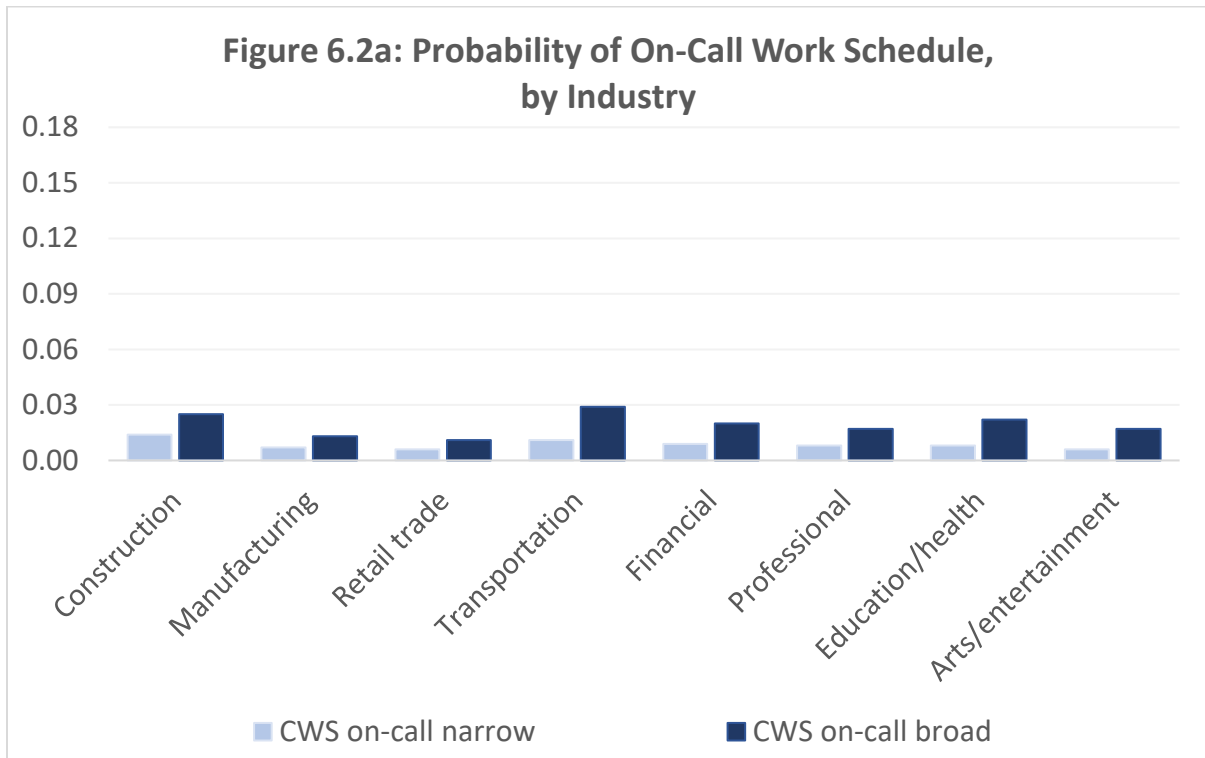
These figures confirm findings from other research that the prevalence of receiving less than a week's notice is considerably higher than the prevalence of on-call work as measured in the CWS. The prevalence of receiving less than one week's notice is also higher in the SHED than in the ATUS. In the 2018 and 2019 SHED, 9.3 percent of wage and salary workers reported receiving less than one week's notice of their schedule on their main job compared to 5.3 percent in the 2017 ATUS. As shown in Figures 6.1a–6.1d, the relationship between a worker's demographic characteristics and on-call work or short-notice of work schedule varies across the three data sets.⁵⁷ In both the CWS and ATUS, the relationship between age and both on-call work or short schedule notice is uniformly positive. Using the narrow measure of on-call work in the CWS, for example, and controlling for other demographic and job characteristics, the probability of working in an on-call arrangement is negligible (just 0.1 percent) among those age 18–24 and rises to 2.4 percent among those age 65 and older. In the ATUS, the conditional probability of receiving less than one week's notice is 3.5 percent for those 18–24 and 6.5 percent for those 65 and older. Differences between men and women in these data sets are not statistically significant (Figure 6.1b). In contrast, while the SHED data display no consistent or statistically significant differences by age in the probability that workers receive short notice of their schedules, they do show that men are significantly more likely than women to receive short notice of their work schedule.

Estimates from both the ATUS and SHED data show that Hispanics are significantly more likely than non-Hispanic Whites to receive less than a week's notice of their schedule (Figure 6.1c). The conditional probability for Hispanics of receiving less than one week's notice of their schedule is 7.5 percent in the ATUS and 11.3 percent in the SHED, compared to 4.5 percent and 9.1 percent for non-Hispanic Whites. The probability of receiving short notice also declines sharply with educational attainment in both the ATUS and SHED measures (Figure 6.1d). In the SHED, college-educated workers are significantly less likely than those with a high school degree or less to work in jobs with short notice of work schedules, and in the ATUS, both those with a college degree or some college are significantly less likely to have short notice of their work schedules compared to those with lower educational attainment. As measured in the CWS, there is little relationship between on-call work and gender, race/ethnicity, or educational attainment.

The various data sources all show that unpredictable work schedules are disproportionately found in certain industries (Figures 6.2a–6.2c). On-call work is especially prevalent in construction and transportation, according to CWS data, and short notice of work schedules is particularly common in construction, transportation, and manufacturing in the SHED and ATUS data. Interestingly, although the retail sector has been the subject of several studies on

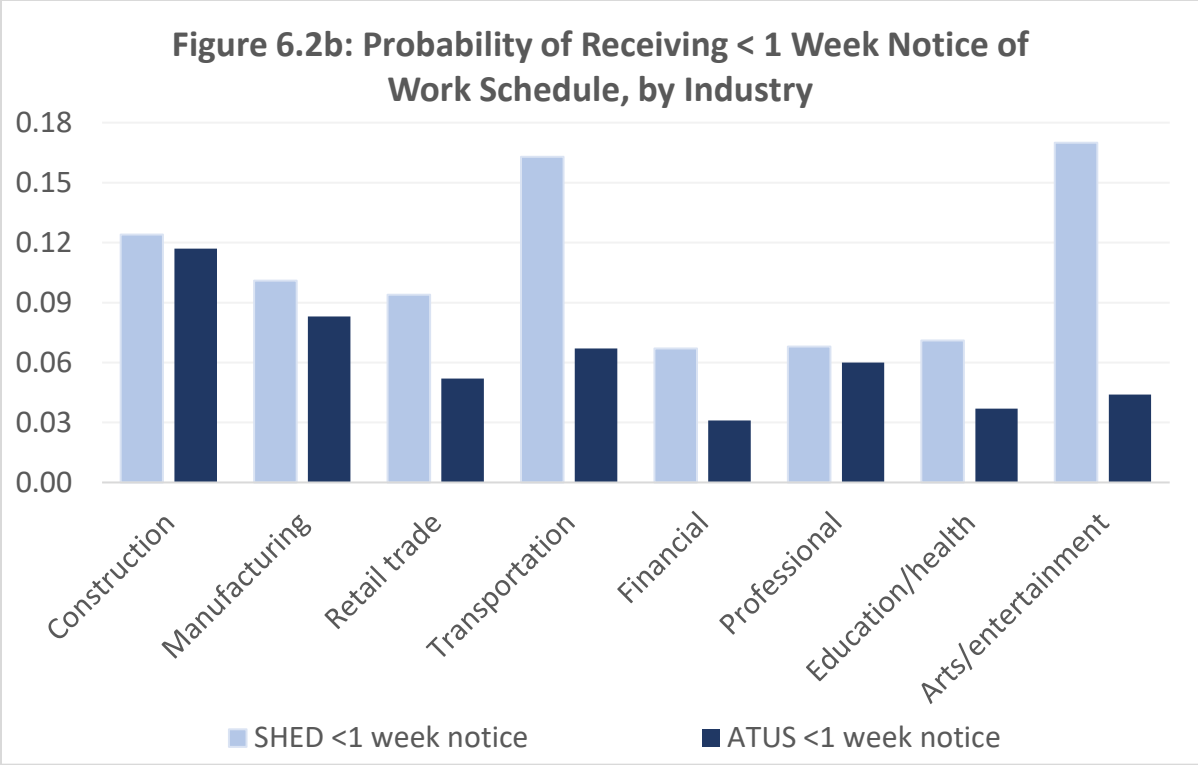
⁵⁷ Once again, unless otherwise stated, all cross-demographic-group differences in probabilities discussed in the text are statistically significant at the 5 percent level or better.

unpredictable work schedules, according to data from the SHED and ATUS, the conditional probability of receiving less than a week’s notice of one’s work schedule is no higher than average in retail trade.

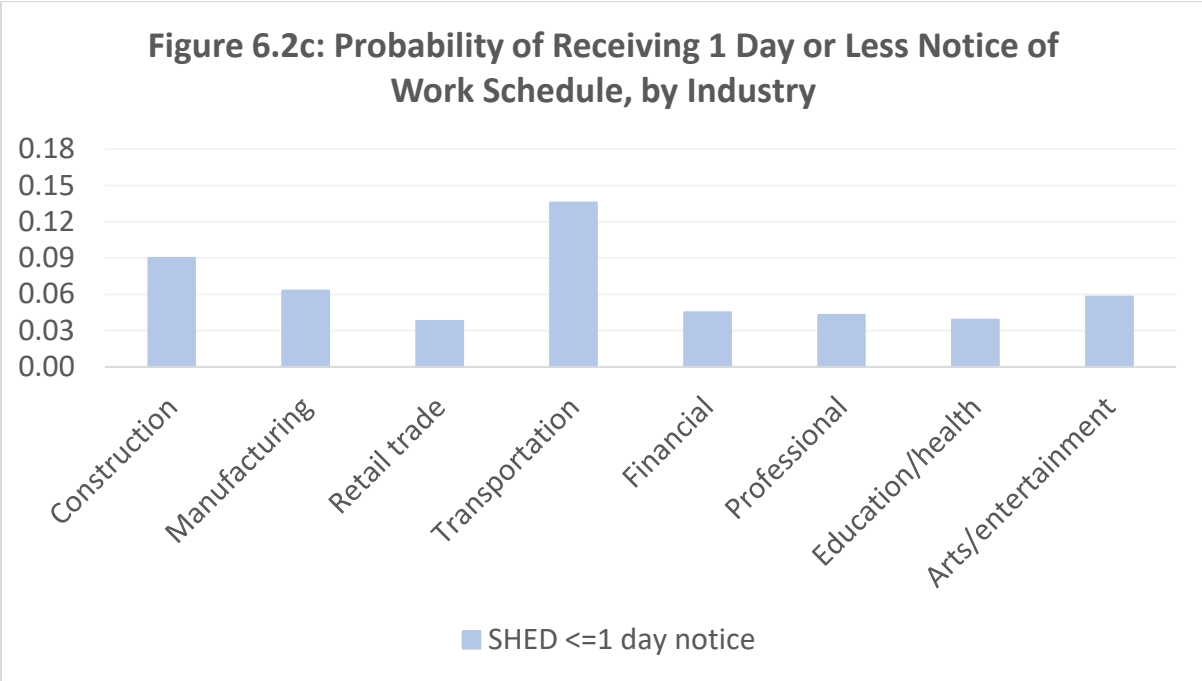


SOURCE: Authors’ analysis of 2017 CWS, 2017 ATUS, and 2018 and 2019 SHED data.

NOTE: See Figure 6.2c.



SOURCE: Authors' analysis of 2017 CWS, 2017 ATUS, and 2018 and 2019 SHED data.
 NOTE: See Figure 6.2c.



SOURCE: Authors' analysis of 2017 CWS, 2017 ATUS, and 2018 and 2019 SHED data.
 NOTE: Figures show conditional probability of being an on-call worker or having the indicated work schedule notice for selected industries from weighted linear probability regressions. All models include dummies for age group, gender, race/ethnicity, education, occupation, industry, geographic region, part-

time status, and (for the SHED) year. Probabilities calculated with the Stata margin command using the default average probabilities of outcome setting. Probabilities on a scale from zero to one shown on vertical axis. N=41,714 for CWS, N=9,964 for ATUS, and N=10,731 for SHED.

Consequences of Variable and Unpredictable Hours for Workers and Businesses

While businesses may adopt on-demand scheduling practices to lower labor costs and improve their bottom line, these practices may reduce the stability of workers' earnings and, by shifting risk onto workers, increase the stress they experience. Variable and unpredictable schedules also may lead to work-life conflict and health problems. For example, unpredictable schedules may make it hard for workers to schedule classes if they are in college, arrange child care if they have families, or work a second job. Schedules that vary from week to week or even day to day can interfere with sleep, as occurs with so-called clopenings—a term coined to describe the situation in which a worker is scheduled back-to-back closing and opening shifts that are separated by 8 hours or less in time (Schneider and Harknett 2019). Not surprisingly, several studies have documented that unpredictable schedules and unstable work hours are associated with a variety of adverse outcomes for workers. Some research also finds that such scheduling practices are associated with lower worker productivity.

Henly and Lambert (2014) collaborated with a women's retail apparel firm, which largely offered low-wage jobs and primarily employed women. The researchers had access to the firm's data on work schedules for 21 outlets, which they used to develop various measures of unpredictable work schedules. They supplemented the work schedule data with data from an employee survey that, among other things, captured measures of work-life conflict, time conflict, and perceived stress. Work schedule unpredictability was associated with higher levels of conflict and stress.

Schneider and Harknett (2019) used Facebook ads to recruit employees of 80 large retail and food services chains to participate in a survey that collected information on schedule instability, wages, and health and well-being outcomes (specifically, psychological measures of distress and sleep). In regressions that included firm fixed effects, the researchers found that low wages, unstable schedules, and unpredictable schedules all are associated with adverse worker health and well-being outcomes, but that a larger share of the association was mediated by volatile and unpredictable work schedules than by low wages. Their analysis of this low-wage population suggests that the implementation of policies designed to reduce the volatility and unpredictability of work schedules would lead to greater improvement in worker health and well-being than would an increase in the federal minimum wage in the range enacted by cities, counties, and states over the 2015 to 2018 period.

Given the negative effects that unpredictable schedules and volatile hours have on worker well-being, economic theory predicts that, if labor markets are competitive, workers who experience these conditions should receive a compensating differential in their wages. Fugiel (2020) uses data from the NLSY97 and a fixed effects model to examine the consequences of unstable and unpredictable schedules on pay, job retention, and what the author terms beneficial flexibility—

the ability of workers to vary their work hours to accommodate personal needs. Contrary to the predictions from economic theory of what should happen in competitive markets, Fugiel finds no evidence that workers in jobs with less predictable or stable schedules enjoy higher pay or the flexibility to vary their work hours for personal reasons. He also finds that job retention suffers when employers give workers little advance notice of their work schedules or vary work schedules greatly from week to week.

Fugiel's work suggests that employers face a trade-off when using on-demand work. On the one hand, employers better match the hours they pay workers to their business needs, potentially lowering labor costs. On the other hand, these practices shift economic insecurity onto workers and may increase turnover, which raises hiring and training costs and potentially lowers workplace morale and productivity. In an experiment with the large retail chain the Gap, Williams et al. (2018, 2019) find direct evidence of the adverse effects that schedule instability and unpredictability can have on productivity. The study design involved randomly varying the work scheduling practices across Gap retail stores. During the study period, Gap made changes to its scheduling protocols in all retail outlets to give workers at least two weeks advance notice of their weekly schedules and to eliminate on-call shifts that could be canceled at the last minute. In the treatment stores, several additional interventions were rolled out—an app that allows workers to swap schedules, a reduction in the number of start and end times that individual workers work, the introduction of schedule protocols that provide workers with more consistent days and times from week to week, and an increase in staffing when analysis showed that the store was understaffed.

A baseline survey of Gap workers found high levels of sleep- and stress-related problems. For example, 47 percent of workers reported that their work schedule interfered with their sleep. The survey also uncovered high levels of reported work-life conflicts for fathers and mothers and high levels of food insecurity. The study found that interventions to increase schedule stability benefitted workers primarily by reducing reported disruptions to their sleep (Williams et al. 2019). Perhaps most notably, the study also found that the interventions significantly increased worker productivity as measured by retail store sales per worker hour (Williams et al. 2018). The researchers conclude that, although the shift to more stable schedules might entail up-front costs for companies, such as investment in new software, businesses and workers alike potentially benefit over the longer term.

Public Policy Initiatives

In response to widespread evidence of their adverse impacts, particularly on low-wage workers, labor groups and advocacy organizations have fought for laws that restrict employers' use of certain scheduling practices. Since 2014, eight states and the District of Columbia have instituted requirements that those who show up for work and then are sent home due to lack of work must be given some compensation. Several cities and one state (Oregon) have passed laws that more extensively regulate work scheduling practices. Although the new regulations vary across jurisdictions, they typically require that employers provide a good faith estimate of the number

and timing of hours the employee will usually work; a minimum of 14 days advance notice of schedules; compensation for changes to the schedule that are employer driven (not, for example, because another employee is absent); a minimum amount of time between shifts (to discourage schedules with clopenings); and the right to request a schedule adjustment without employer retaliation. Reflecting concern over the widespread use of part-time work and inadequate hours and earnings in retail and other service industries, these laws also may stipulate that existing employees have access to additional hours before new or temporary workers are hired (National Women’s Law Center 2017; Fugiel and Lambert 2019).

VII. CONCLUSION

The Contingent Worker Supplement to the Current Population Survey has provided valuable information on several types of alternative work arrangements over the 1995 to 2017 period. Our review of evidence on these categories of alternative work arrangements from other household surveys, employer surveys, and administrative data show how these data can reinforce and complement the information from the CWS. In some cases, however, the information from other sources is inconsistent with that in the CWS or provides a broader measure of the arrangement, thus raising questions about the accuracy or adequacy of some measures in the CWS. In closing, we provide a synopsis of our findings for each of the alternative work arrangements covered in the study and lessons for improving measurement of these arrangements.

Independent Contractors

Independent contractors constitute the largest alternative work arrangement measured in the CWS. The CWS measure of independent contracting is consistent with estimates of unincorporated self-employment in the CPS monthly survey, the CPS Annual Social and Economic Supplement (ASEC), and the American Communities Survey (ACS), in that all of these measures show no increase or a slight decline in the share of workers in independent contractor arrangements over time. Data from other household surveys and from administrative tax records, however, suggest that the CWS estimates, as well as those based on CPS and ACS data, may substantially understate the incidence of independent contracting. Furthermore, studies using measures based on administrative tax records point to about a 2-percentage point rise in the share of workers in independent contractor arrangements since 2000. Though a portion of this growth may be attributable to EITC-related reporting effects, even taking that into account, the trends in tax data are inconsistent with results based on measures from the government household surveys.

A growing body of research points to several reasons for the understatement of independent contracting in government household surveys. First, some who only have income from independent contractor arrangements fail to report these as jobs, leading to an understatement of

the level of employment in the household survey (Abraham and Amaya 2019; Bracha and Burke 2018, 2021; Katz and Krueger 2019b; Abraham et al. 2021; Abraham et al., forthcoming). Additionally, secondary work activities often are in independent contractor arrangements and are underreported in standard government household surveys (Abraham, Hershbein, and Houseman 2019; Abraham et al. 2021; Abraham et al., forthcoming). Finally, a substantial number of workers are miscoded as wage and salary workers when in fact they are self-employed as independent contractors (Abraham, Hershbein, and Houseman 2019, 2021; Abraham et al. 2021; Abraham et al., forthcoming). Analyses in Abraham et al. (forthcoming), which compare microdata from the CPS ASEC with respondents' tax returns, show that all three sources of discrepancy grew between 1996 and 2015.

Although our analyses using CWS data show that, holding observable characteristics constant, independent contractors earn higher average wages than those in standard employment arrangements, they do not have access to employer-provided benefits and are less likely than regular wage and salary workers to have health insurance or a retirement plan (Abraham and Houseman 2020). Moreover, independent contractors are heterogeneous. Analyses of data from the CWS, the Gallup Contract Work Module, and tax records show that 1) low-educated and minority workers report less satisfaction than others with independent contractor arrangements, 2) growth in independent contracting has been more pronounced among the less educated and among low earners, and 3) understatement of independent contractors in the CWS appears to be more concentrated among young and minority workers. Any mismeasurement of the size, growth, or demographic composition of the independent contractor group in the CWS is of concern as it potentially minimizes the seriousness of policy problems associated with independent contractor arrangements, particularly among disadvantaged populations.

Our review underscores the need to better measure self-employment and independent contractors in the CWS and main government household surveys.

Informal and Platform Work

The rise of work mediated through online platforms or mobile apps, which help connect workers with clients and mediate the payments, has received tremendous attention in the media and among policymakers and researchers in recent years. Individuals obtaining work through mobile apps such as Uber and Lyft perform the work in person; those finding work through platforms such as Upwork and Mechanical Turk perform the work entirely online. In both situations, platform workers rarely are classified as employees and so represent a subset of independent contractors.

Questions on platform work, however, have proven difficult for respondents in the CWS and other household surveys to answer, in part because respondents may not distinguish between instances when they use apps in their job or find clients through online advertising from instances where work is mediated by the platform. Future platform work questions in household surveys will require more careful testing to ensure more accurate measurement of the incidence and trends in this rapidly evolving form of work (NASEM 2020). Despite these issues, estimates

of platform work derived from household surveys are broadly consistent with those from private financial administrative data and tax records and suggest that although relatively few people currently engage in platform work, the number has grown quickly in recent years.

While platform work is often referred to as “gig” work in media and academic reports to reflect the short-term, informal nature of these jobs, other types of informal work arrangements also have been labeled gig work and, available evidence suggests, are far more common. Consistent with data from other surveys, data from the 2018 and 2019 Survey of Household Economic Decisionmaking indicate that about a third of all adults age 18 and over had held some type of informal work arrangement or side job in the prior month. As with the broader category of independent contractors, platform workers and those engaged in other types of informal work are diverse. For instance, household surveys find that platform work and other types of informal work are more common among minorities but also are more common among the college educated.

While platform and other informal jobs tend to be short-term and generally are not the primary income source for households, research reviewed in this paper, which draws on a variety of data sources, finds that they often are an important income supplement during unemployment spells or other times when households experience a decline in income or an increase in expenses. As such, informal work arrangements appear to be an important vehicle for many to smooth income or to cover unusual expenses.

Platform and other informal work arrangements have been controversial because workers are treated as self-employed and consequently generally are not afforded protections under U.S. employment and labor laws, are not eligible for unemployment insurance or workers’ compensation, and cannot access fringe benefits such as health insurance that employers commonly provide their employees. Efforts in California to require platform companies to reclassify workers as employees, however, encountered strong resistance, including from many part-time platform workers who use such gigs to supplement their income. This experience highlights the heterogeneous composition of platform workers and the policy challenges in balancing their varied interests.

Business-to-Business Contracting

In lieu of hiring employees to perform tasks, businesses may hire workers as independent contractors. Alternatively, businesses may contract out work to other businesses whose workers provide services. The CWS captures this type of intermediated relationship in cases where the workers are hired through a temporary help agency and in other situations where the business contracts out its employees to a single customer to work at the customer’s worksite. The share of workers engaged in this type of arrangement is relatively small in the CWS (1.6 percent) as well as in the Gallup Contract Survey Module (2.0 percent), whose questions on contract work are similar to those in the CWS.

Our review of the large literature on business-to-business contracting, however, shows that the phenomenon, though difficult to measure, is far larger. The measurement challenge arises in part from the need to define the scope of what should be counted as contract work. In the limit, business-to-business contracting could include all materials and services intermediate purchases by businesses from other businesses and the workers needed to supply those intermediates. Most studies, however, have focused more narrowly on services purchases, on the set of services purchases that can be feasibly produced in-house, or on specific sectors that provide or purchase contract services. Within these various parameters, studies generally have focused on measuring changes over time in the amount of contracting. Several of the studies reviewed find that the contracting out of workers in low-skilled occupations leads to lower wages and benefits for these workers and may be associated with growth in earnings inequality. Some contract work situations also are associated with a high incidence of workplace injuries.

Our review points to an urgent need for better data on business-to-business contracting that include information on the contract companies, the organizations using the contract services, and the workers involved to provide a more complete understanding of the scope of contracting out and its implications for workers. Because of the difficulty workers are likely to have in accurately reporting the contractual arrangements of their employers, however, future data collections will need to rely on business surveys for much of the information (NASEM 2020).

Unpredictable Schedules

Unpredictable work schedules can be a substantial source of earnings risk. The CWS measured on-call work, which it defined narrowly to include just jobs in which the worker was called to work only when needed, as is the case, for example, with substitute teachers. In these situations, workers have no explicit or implicit guarantee of hours. The share of wage and salary workers in on-call jobs was just 0.8 percent in the 2017 CWS.

Other surveys, including the American Time Use Survey, the Survey of Household Economic Decisionmaking, and the National Longitudinal Survey of Youth 1997 have collected more extensive information on work schedules including whether workers exercise control over their schedules and the amount of notice they receive. These surveys show that, when broader measures are used, the incidence of on-call or unpredictable schedules is considerably larger than that found in the CWS. For example, the share of wage and salary workers receiving less than one week's notice of their schedule is 5.3 percent in the 2017–2018 ATUS and 9.3 percent in the SHED.

Data that use broader measures also show that unpredictable schedules are more prevalent in disadvantaged populations. Our analyses of data from the ATUS and SHED find that the incidence of unpredictable schedules is especially high among minorities and those with low educational attainment. Moreover, research has found that such schedule unpredictability is associated with adverse health and well-being outcomes. In recent years, concerns over such impacts on workers have prompted Oregon and several cities to regulate the length of schedule notice that employers must give workers (Fugiel and Lamber 2019).

Our review of other sources of data and the literature on work schedules points to the inadequacy of the on-call measure in the CWS for research and policy purposes. An expanded set of questions on work schedules in a future CWS, as recommended in a recent Committee on National Statistics report (NASEM 2020), would help fill this gap.

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