Understanding Self-Employment Trajectories over the Life Course in the United States*

March 2025

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* The research reported herein was supported in part by grants from the Michigan Retirement and Disability Research Center (UM21-14) and the National Science Foundation Award FW-HTF-P 2128416. The opinions and conclusions expressed are solely those of the author(s) and do not represent the opinions or policy of NSF or any agency of the federal government. Neither the United States government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of the contents of this report. Reference herein to any specific commercial product, process or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply endorsement, recommendation or favoring by the United States government or any agency thereof. The authors would like to thank Sajiv Shah for excellent research assistance as well as Nathan Babcock, Yiran Fang, Teagan Frye, Akshitha Ginuga, Kyle Kolick, Mitchell Lukas, Isabella Mastella, Sophia Pladars, Lauren Thill, Gabrielle Usvyat, Chuqiao Wang, and Xinyi Wang for their efforts manually classifying work arrangements. They would also like to thank Susan Houseman, and Aysegul Sahin, as well as audiences at the CRIW Conference on The Changing Nature of Work for their helpful feedback.

1 Introduction

A substantial share of workers engage in self-employment, increasing with age. There are a myriad of reasons why workers might choose to engage in self-employment. Workers may be pushed into self-employment due to adversities or limited job opportunities in wage and salaried work, or pulled into it to pursue economic opportunities or more autonomy (Patrick et al., 2016; Halvorsen and Morrow-Howell, 2017; Fisher and Lewin, 2018). These dynamics can differ for older workers: Age discrimination at work may push older adults into self-employment due to difficulty in securing wage/salary jobs (Kibler et al., 2015; von Bonsdorff et al., 2017; Halvorsen and Morrow-Howell, 2017; Cherry 2019). Conversely, the desire for more flexible work or to create a bridge between one's career job and retirement in conjunction with age-based access to Social Security retirement benefits and Medicare may pull older workers into self-employment (Kautonen, 2008; Halvorsen and Morrow-Howell, 2017.

An ample literature has explored the determinants of transitions to self-employment. This literature has highlighted the role of nonpecunariary benefits, access to credit and wealth, earnings discovery, co-worker networks, and job loss (Hamilton 2000; Hurst and Lusardi 2004; Nanda and Sørensen 2010; Hurst and Pusley 2011; Fairlie and Krashinsky 2012; Adelino et al. 2015; Corradin and Popov 2015; Manso 2016; Dillon and Stanton 2017; Schmalz et al. 2017; Lim 2019; Babina 2020). Additional literature has focused specifically on the determinants of transitions to self-employment for older workers. Determinants identified include: wealth, liquidity, and access to credit, Social Security and pension eligibility, unemployment, job characteristics and personality traits, health status, portable health insurance, and gender and other demographic characteristics (Fuchs, 1982; Zissimopoulos and Karoly, 2007, 2009; Giandrea, et al., 2008; Zissimopoulos at al., 2009; Bruce et al., 2000; Boyle and Lahey, 2010; Fairlie et al., 2011; Kerr and Armstrong-Stassen, 2011; Angrisani et al., 2013; Cahill et al., 2013; Biehl et al., 2014; Heim, 2015; Lusardi et al., 2016; Ramnath et al., 2017).

While this literature considers self-employment broadly defined, self-employment consists of substantial heterogeneity including entrepreneurs, small business owners, consultants, contractors, platform gig workers, and side jobs, which all vary considerably in their barriers to entry, risks, work stresses, and compensation. It is important to distinguish how workers move between and across wage and salaried work and these different kinds of self-employment work arrangements as the motivations for and outcomes from pursuing different self-employment work arrangements can be starkly different.

This paper adds to this literature by considering how workers transition across different self-employment work arrangements over their lives. We use novel data on self-employment work arrangements in the 2003-2019 PSID and the 1994-2020 HRS to examine trajectories in self-employment work arrangements, identifying separately business ownership, informal self-employment, and formal self-employment. We first compare characteristics of work and workers and trends for younger workers in the PSID (ages 16-50) and older workers in the HRS (ages 51 and older) across these different work arrangements. We then use these data to identify: (1) how workers transition across different work arrangements across survey waves, (2) how transitions are associated with changes in earnings, (3) how workers transition across different work arrangements at retirement, and (4) patterns in cumulative exposure to different types of work arrangements.

Our findings show that relative to non-employment and wage and salaried employment, self-employment is associated with greater diversity in transitions both across self-employment work arrangements and out of self-employment for both younger and older workers. Examining earnings changes associated with these transitions shows heterogeneity by pre-transition income level and self-employment work arrangement. We generally find transitions associated with increases in earnings for the lowest earners and decreases in earnings for the highest earners. We further find that while the majority of employees and those not working pre-retirement transition to not working post-retirement, substantial shares of those engaged in self-employment pre-retirement continue to do so or to transition into wage and salaried employment post-retirement. Finally, we find that workers become increasingly exposed to self-employment over their working lives: at age 25, 8.9% of workers in our sample had ever engaged in any self-employment, which increases to 31.7% at age 65 including 12.9% ever engaging in business ownership on any job, 16.1% ever engaging in formal self-employment on any job, and 18.3% ever engaging in informal self-employment on any job. Taken together, these findings suggest substantial movement into self-employment over people's working lives and at retirement reflecting considerable variation in the types of self-employment they do.

2 Measuring Heterogeneity in Self-Employment

As discussed in the National Academies of Sciences, Engineering, and Medicine (2020) report on measuring alternative work arrangements, existing data sources on alternative work arrangements offer limited insight into the changing nature of work to inform appropriate policy. The limited utility of existing data sources reflects discrepancies that appear across administrative and survey data sources in identifying trends in self-employment broadly and in specific arrangements such as contingent work and gig employment (Abraham et al., 2018, 2021a; Allard and Polivka, 2018; Jackson et al., 2017; Katz and Krueger, 2019). This also reflects a dearth of data identifying heterogeneity in the nature of these work arrangements and how workers move across them over their lives. For example, an individual pursuing self-employment in the transportation sector could choose to innovate a new platform or technology, drive for an app-based ride-sharing service, advertise their own chauffeur services, drive on a contract basis for an established business, or manage their own or someone else's established business. The characteristics of these jobs - the barriers to entry, risks, work stresses, and compensation - are likely to vary considerably. However, in most existing data sources, we would be unable to meaningfully differentiate these jobs. Understanding heterogeneity in self-employment trajectories and their effects on wellbeing has become all the more important as new technologies such as electronic platforms have introduced new means of engaging in self-employment with potentially more far-reaching effects on the economy.

Some work has attempted to identify heterogeneity in self-employment using various approaches. For example, Abraham et al. (2021b; 2023) conducted a Gallup telephone survey module to identify independent contracting. Other work uses collected measures in existing surveys as proxies for identifying heterogeneity in self-employment across incorporated self-employment and unincorporated self-employment (Carr, 1996; Budig, 2006; Ozcan, 2011; Levine and Rubinstein, 2017), the self-employed with employees and the solo self-employed (Boeri et al., 2020), and more and less desirable categories of self-employment based on broad occupation codes, number of employees, and the presence of household business assets (Moulton and Scott, 2016). However, the extent to which such proxies reflect their intended measures is unclear. For example, Light and Munk (2018) use data from the 1979 NLSY to show that the majority of reported self-employment does not reflect business ownership: they find that 68 percent of self-employment is not identified as business ownership and 30 percent of incorporated self-employment is associated with neither business ownership nor reported business income.

The present study adds to the literature by exploring heterogeneity in self-employment work arrangements in novel data. To identify different self-employment work arrangements, we used machine learning methods and internal respondent narratives on industry and type of work and employer names to develop a novel data source identifying heterogeneity in self-employment work arrangements in two large-scale and long-running surveys: the Panel Study of Income Dynamics (PSID) and the Health and Retirement Study (HRS) (Abramowitz et al., 2023; Abramowitz and Kim, 2021). While many surveys use such narratives to produce codes classifying industry and occupation, to our knowledge, this is the first effort to use them to identify different types of self-employment.

In prior work, we used these data to consider how the prevalence and nature of different self-employment work arrangements has changed over time, how individuals transition across different types of self-employment, and the work and worker characteristics associated with different types of self-employment (Abramowitz & Joung, 2024; Abramowitz, 2021). We found substantial distinctions in the work and demographic characteristics associated with different self-employment work arrangements. Our findings showed divergent trends in self-employment work arrangements that would otherwise be masked. We also documented that our classification captures meaningfully different types of work and workers. Building on this prior work, the current study aims to use the classification of self-employment work arrangements to understand how workers transition across these roles over their working lives and at retirement.

3 Data and Methods

This analysis uses the 2003-2019 PSID and the 2002-2018 HRS. The PSID is used to consider self-employment for workers of all ages while the HRS is used to focus on outcomes for older workers during and after their transition to retirement. Both surveys are valuable for this analysis as they are nationally-representative and longitudinal, fielded every two years, and include questions on a breadth of topics including employment, income, and physical and mental health. In addition, both surveys have high response rates. Over 2003-2019, wave-to-wave response rates on the main PSID ranged from 92.8% to 97.4% (University of Michigan Institute for Social Research, 2023), with an overall response rate of 91% as of 2017 (Johnson et al., 2018). Over 2002-2018, panel response rates on the core HRS ranged from 74.4% to 89.1%, with new cohort response rates of 52.7% to 75.3% HRS Staff (2023).

3.1 Panel Study of Income Dynamics

The PSID is a longitudinal dataset that began in 1968 with a sample of approximately 5,000 U.S. households; it was updated annually through 1997 and bi-annually thereafter. As of 2017, it had grown to include over 10,000 families and 24,000 individuals. While the PSID collects some information on all household members, most measures are collected only for the reference person ("Head") and their spouse/long-term cohabitor. Relevant to our analyses, the PSID asks respondents to describe all of the work for money that the reference person and spouse have done since January 1 of the prior wave year. Respondents are subsequently asked whether the reference person and spouse are self-employed or employed by someone else on up to four jobs that they reported holding since the prior survey wave.[1] In addition to publicly-available PSID data, our analysis leverages our classification of work arrangements based on internal data collected on employer names and narrative descriptions of industry and occupation for each reported job. Among employed respondents and spouses, 99.9% provided current job narratives to the open-ended industry and type of work questions.

While the PSID asks about all jobs held over the two years prior to the interview, we limit our primary analysis to main jobs held at the time of the interview. We focus on main jobs held at the time of interview to frame our analysis at a given point in time and to be comparable to the HRS.[2]

We restrict our base PSID sample to respondent-waves linked to any job narrative between 2003-2019, among respondents age 16-50 who are classified at least once as a reference person or spouse, and for which we can assign employment status. This sample includes 74,315 respondent-waves linked to 65,269 current job narratives. Of this sample, 15,419 respondent-waves are categorized as non-employed, 52,516 respondent-waves are categorized as wage and salaried, and the remaining 6,377 respondent-waves are categorized in some form of self-employment.

3.2 The Health and Retirement Study

The HRS is a longitudinal survey of a representative sample of approximately 20,000 Americans over age 50 and their spouses, updated every two years with new cohorts added every six. Similar to the PSID, in addition to publicly-available HRS data, our analysis leverages our classification of work arrangements based on internal data collected on narrative descriptions of industry and occupation to classify self-employment work arrangements into a useful framework. The HRS collects this information for the

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[1] Respondents are generally the reference person or the spouse. In a small number of cases, when the reference person or the spouse is unavailable, another family unit member will complete the interview.
[2] To identify currently-held main jobs, we rely on internal PSID coding of jobs as "current main jobs." To identify currently-held secondary jobs, we rely on both internal PSID coding of jobs as "other" as well as publicly-available information on the timing of job spells. By construction, individuals can hold multiple secondary jobs. For 0.5% of job narratives, we cannot distinguish whether the job is currently or previously held, and we exclude these from our main analysis.

respondent's and the spouse's current main jobs held at the time of the survey. 99.0% of self-employment job reports have associated industry and occupation narratives.

For our HRS sample, we have 159,875 respondent-waves. Of these, 101,769 are nonemployed, 45,411 report wage and salaried employment on the current main job and 12,695 report self-employment on the current main job.

3.3 Classification of Work Arrangements

The project makes use of Abramowitz et al.'s (2023) classification of work arrangements for the 2003-2019 waves of the PSID and Abramowitz and Kim's (2021) classification of work arrangements for the 2002-2018 waves of the HRS, whereby employer names (PSID only) and narrative responses (PSID and HRS) to the open-ended industry and type of work questions were each coded as one of five work arrangements (platform-mediated gig work, informal self-employment, formal self-employment, business owners, wage and salaried employees) and a small number assigned no label due to insufficient information.[3] "Platform-mediated gig work" includes work for app- or Internet-based platforms where workers are assigned their work and paid through the platform (e.g., Doordash, Uber, Lyft). "Informal self-employment" includes work done independently for non-business entities (e.g., cleaning, handyman) as well as itinerant forms of work (e.g., freelancer, babysitting, day laborer). "Formal self-employment" includes self-employment worked for another business entity or dictated by a formal contract with clients, such as self-employment under an "umbrella" company (e.g., real estate agents, financial planners at an advisory company), consultants, independent contractors, or subcontractors. "Business ownership" includes explicit reports of (1) owning or running a business or family farm, (2) being a partner in a firm or business, (3) being self-employed and managing their own or a family member's business or supervising employees, or (4) having business assets and listing a formal name for the business. Finally, "wage and salaried employment" includes employees and employed supervisors including short-term employment and work at a temp agency.

We used machine learning to automate the classification. Two reviewers classified the same subset of 30% the data according to the described schema, with disagreements adjudicated by a third reviewer, to be used to train a machine learning model to classify of the remainder of the data. Reviewers also classified records for which the model did not confidently predict a classification, following the same procedure as for producing the training data. Appendix 1 provides more details on the classification approach.

For this paper's analyses, we aggregate platform-mediated gig work into the informal self-employment category to make inferences based on sufficient sample size. While platform-mediated gig workers are considered independent contractors for tax purposes, we aggregate platform-mediated gig work into the informal self-employment category because

[3] For the PSID classification, all job reports, including those that respondents identified as wage and salaried employment, were included in the classification process. For the HRS classification, only job reports that respondents identified as self-employment were included in the classification process.

we observe that the characteristics of platform-mediated gig workers are most similar to workers engaged in informal self-employment.

3.4 Methods

Using this classification, we first compare characteristics of work and workers and trends for younger workers in the PSID (ages 16-50) and older workers in the HRS (ages 51 and older) across these different work arrangements. We then use these data to identify: (1) patterns in cumulative exposure to different types of work arrangements, (2) how workers transition across different work arrangements across survey waves, (3) how transitions are associated with changes in earnings, and (4) how workers transition across different work arrangements at retirement.

For comparisons across surveys, we focus on examining respondents age 50 and younger in the PSID and age 51 and older in the HRS. We deflate all measures of dollar amounts to 2019 dollars using the CPI-U. Finally, we weight all PSID analyses using the PSID's cross-sectional individual weights and all HRS analyses using the HRS's cross-sectional individual weights.

For our transitions analyses, we residualize our estimates controlling for age, and educational attainment, as well as dummy variables for gender, white/non-white status, marital status and home ownership, and year fixed-effects. For our PSID estimates, we also include controls for state-level unemployment rates.[4]

4 Results

4.1 Work and Worker Characteristics by Self-Employment Work Arrangements in the PSID and HRS

To first understand how the characteristics of workers in different work arrangements vary across our two surveys, Table 1 presents demographic, work, and labor market characteristics and measures of wellbeing across work arrangements on main jobs for workers age 50 and younger in the PSID and for workers age 51 and older in the HRS.

Examining demographic characteristics in Table 1a, we see that in both the PSID and HRS, the informally self-employed are less educated than workers in all other work arrangements. In the PSID, we see more women in informal self-employment, with formal self-employment and business ownership dominated by men. In contrast, in the HRS, we see informal self-employment is also dominated by men. In both the PSID and HRS, we see that the informally self-employed are more racially diverse than other self-employment work arrangements, with more Black informal self-employment representation in the PSID and more Hispanic informal self-employment representation in the HRS.

Examining work and wellbeing characteristics in Table 1b further shows informal self-employment is associated with having lower labor earnings and fewer weekly hours worked

[4] Updated analyses will include identical controls for the HRS using restricted-access HRS state identifiers. Results are qualitatively similar with and without the inclusion of these controls.

relative to all other types of work in both the PSID and HRS. In the PSID, we also see informal self-employment is associated with having lower wages relative to all other types of work, while in the HRS, the informally self-employed have higher wages than the wage and salary employed. In both the PSID and HRS, the informally self-employed are less likely to report being in good health. In the PSID, the informally self-employed are less likely to report being psychologically distressed, but in the HRS, they are more likely to report being depressed. In the PSID, business owners are most likely to report having positive household business assets, followed by the formally self-employed, then the informally self-employed, and then wage and salary employees. Patterns are similar in the HRS except that the informally self-employed have higher rates of having household business assets than the formally self-employed. In the PSID, we see substantially lower rates of home ownership among the informally self-employed followed by the wage and salaried employed, while in the HRS, we see the lowest rates among the wage and salaried employed followed by the informally self-employed. In both the PSID and HRS, we see the highest rates of home ownership among business owners.

Next in Table 1b, we further examine differences in measures of abstract, manual, and routine tasks across work arrangements, following the approach of Autor and Dorn (2013). Following Hurst, Rubinstein, and Shimizu (2024), we convert these into z-score measures, such that our measures reflect unweighted standard deviation differences in task content for a given occupation relative to all other occupations. We find that our classification captures substantial differences in the composition of tasks across work arrangements. In the PSID, we see that informally self-employed workers engage in occupations with the lowest levels of abstract task intensity and the highest levels of manual task intensity while business owners engage in occupations with the highest levels of abstract task intensity and the lowest levels of routine task intensity. We see similar patterns in the HRS except that we see the lowest levels of abstract task intensity among wage and salary employees.

4.2 Trends in Self-Employment Work Arrangements in the PSID and HRS

We next examine how the shares of workers in self-employment have changed over time and compare our estimates to those from other sources. In Panel A of Figure 1, we present the share of self-employed workers among the employed, as reported in the PSID, the HRS, and the Current Population Survey Annual Social and Economic Supplement (CPS-ASEC).

We show two different estimates of the self-employment share among the employed using the PSID. First, in the solid black line, we present the share of self-employed workers among the employed using self-reported self-employment status from the public PSID. In the solid gray line, we assign workers' self-employment status using our classification and designate respondents with any current job narrative as employed. Overall, among those with a current job narrative, we find that our classification-based measure and the PSID's self-reports of primary self-employment match in 97.8% of cases. The classification-based definition shows a larger self-employment share, while maintaining a less pronounced downward trend from 12.5% in 2003 to 10.3% in 2019 compared to 12.2% to 9.6% over the same period based on self-reported self-employment status from the public PSID. These estimates suggest that our measures of self-employment broadly capture similar trends as those measured by respondent self-reports, providing supporting evidence that our approach is broadly capturing a meaningful and common-sense notion of self-employment.

Comparing across data sources, Panel A of Figure 1 shows a larger self-employment share in the HRS than the PSID, and a larger self-employment share in the PSID identifies a than the CPS-ASEC. Our larger HRS estimates reflect that older workers are more likely to engage in self-employment, but show similar downward trends as the PSID falling from 24.4% in 2002 to 20.3% in 2018. The higher rates of self-employment in the PSID compared to the CPS ASEC align with related work identifying undercounting of self-employment in the CPS-ASEC (Abraham et al. 2021a). Similar to the PSID, the CPS ASEC data exhibit a downward trend, from 8.2% in 2002 to 7.4% in 2019.

In Panel B of Figure 1, we benchmark our estimates of the share of workers reporting any current self-employment, including estimates from self-reported self-employment status from the public PSID plotted in the solid black line and from the classification-based definition plotted in the solid gray line, to the share of the "tax workforce" that filed a Form 1099 or Schedule C or SE in a given tax year using data from Garin et al. (2023), plotted in the dashed gray line. Estimates from the tax data provide an upper bound on the level and trend of any self-employment against which we can compare our measures of self-employment. First, the tax data capture self-employment over an entire tax year, whereas our measures only capture self-employment at the time of the survey. Second, workers face financial incentives to strategically report self-employment earnings in tax filings—a consideration which is absent from the PSID. As expected, the PSID reflects lower rates in self-employment relative to the tax data. Moreover, whereas the administrative tax data show an upward trend, our estimates suggest a downward trend. These diverging trends aligns with recent work by Garin et al. (2022) suggesting that rising self-employment in administrative tax data may largely reflect changes in strategic reporting rather than actual changes in labor market behavior.

The estimates in Panels A and B of Figure 1 show overall trends in self-employment, but they mask potential heterogeneity in trends across different self-employment work arrangements. To understand such trends, Figure 2 presents trends by work arrangement for the PSID in Panel A and for the HRS in Panel B.

Figure 2 shows that informal self-employment is generally the most common form of self-employment over our time period in both the PSID and HRS. In the PSID, in Panel A, we see little change in informal self-employment, from 4.3% in 2003 to 4.5% in 2019, with much of this rise occurring after 2009. This is not driven by trends in platform gig work—excluding platform gig workers, we find the share of informal self-employment to be 4.2% in 2019. In contrast, we see a decline in formal self-employment from 4.2% in 2003 to 2.6% in 2019, with much of this decline occurring after 2009. For business ownership, we see an increase following the Great Recession that has subsequently returned to pre-recession levels.

For the HRS, in Panel B, we see a fall in informal self-employment, from 13.8% in 2002 to 9.2% in 2018, with only small contributions (representing 0.2 percentage points in 2018) from platform gig work. In contrast, we see generally steady rates of formal self-employment, changing from 6.6% in 2002 to 5.8% in 2018. As in the PSID, for business ownership, we see an increase following the Great Recession that has subsequently returned to pre-recession levels.

4.3 Wave-to Wave Transitions in Work Arrangements in the PSID and HRS

While these trends reflect point-in-time estimates of the share of workers engaged in self-employment, we want to understand how workers transition across work arrangements from one survey wave to the next. To explore this question, Table 2 presents residualized transition matrices across our four work arrangements and non-employment for the PSID in Panel A and the HRS in Panel B.[5] In each panel, the work arrangement in the prior survey wave is represented in rows while the survey wave work arrangement is represented in columns, and each cell shows the weighted percentage of respondents having that combination of prior and current work arrangements.

Table 2 shows that across all work arrangements, both PSID and HRS respondents are most likely to persist in the work status that they had in the prior survey wave. However, relative to non-employment and wage and salaried employment, self-employment is associated with greater diversity in transitions both across self-employment work arrangements and out of self-employment. In the PSID, we see that 53.1% of the nonemployed and 88.5% of wage and salaried employees in the previous wave stay in their respective roles, corresponding to 91.0% and 76.8%, respectively, in the HRS. The greater persistence in nonemployment in the HRS and wage and salaried employment in the PSID likely reflects retirement among HRS respondents. On the other hand, we see that self-employed workers are not nearly as likely to remain in their roles across survey waves. In the PSID, only 43.0% of informally self-employed workers and 36.4% of formally self-employed workers stay in their roles across waves, corresponding to 53.8% and 56.9%, respectively, in the HRS. Business owners are also less likely to persist in their roles than wage and salaried employees, but in the PSID, they are more likely to remain in their roles than any other type of self-employment, with 60.1% of business owners remaining in their roles across survey waves. In the HRS, they are less likely to remain in their roles than any other type of self-employment, with 52.5% of business owners remaining in their roles across survey waves. In addition, in the PSID, we see that relative to all other work arrangements, the informally self-employed are more likely to enter non-employment: of those informally self-employed in the previous wave, 15.2% became nonemployed in the current survey wave, more than double the probability of any other self-employment work arrangement. In the HRS, we see more transitions to nonemployment across all work arrangements, consistent with transitions to retirement.

4.4 Effects of Wave to Wave Transitions on Earnings

Having identified patterns in transitions across survey waves, we next consider how these transitions affect earnings. To examine this question, we apply the approach of Husak et al. (2022) who analyze the effects of self-employment transitions on earnings in DC tax data by examining transitions for different income bins. For our analysis, we examine transitions between wage and salaried employment and self-employment for three labor income bins:

[5] Non-residualized estimates show qualitatively similar patterns.

$30,000 or less, $30,000 to $60,000, and $60,000 or more. We define these bins based on labor income reported in the pre-transition wave.

Results in Table 3 show similar patterns to those of Husak et al. (2022). First, in both the HRS and PSID, we find that workers who transition from wage and salaried employment into self-employment show declines in reported earnings, except for the lowest income wage and salaried workers. In the PSID, low-income workers experience a 51% rise in earnings after transitioning into self-employment, whereas middle- and high-income workers experience 3.9% and 2.3% declines, respectively. In the HRS, low-income workers experience a 36.9% rise in earnings after transitioning into self-employment, whereas middle- and high-income workers experience 18% and 29.7% declines, respectively. Second, in the PSID, like Husak et al. (2022), we find that all but the highest earning self-employed workers experience a rise in earnings after transitioning into wage and salaried employment. Low- and middle-income workers experience 68.8% and 12.1% increases in earnings, whereas high-income workers experience a 24.2% decline. However, we do not see these earnings dynamics for in the HRS: only the lowest income self-employed workers experience a rise in earnings following their transition into wage and salaried employment.

We further examine effects on earnings separately for each of our self-employment work arrangements. In the PSID, for workers who transition from wage and salaried employment into self-employment, the decline in earnings observed for middle-income workers is largely driven by transitions into informal self-employment. In particular, those transitioning into formal self-employment and business ownership experience 5.7% and 12.1% increases in earnings, respectively, whereas those transitioning into informal self-employment experience a 25.4% decline in earnings. In the HRS, we see less heterogeneity by work arrangement: similar to the overall pattern, across work arrangements, low-income workers see earnings increases after transitioning out of wage and salaried employment, whereas middle- and high-income workers see declines.

In the PSID, for workers transitioning out of informal and formal self-employment, earnings dynamics are similar to those transitioning out of self-employment overall: low- and middle-income workers experience increases in earnings whereas high-income workers experience a decline in earnings. However, for workers transitioning out of business ownership, we find that only low-income business owners experience an increase in earnings after transitioning into wage and salaried employment. In particular, they experience a 61.5% rise in earnings, whereas middle- and high-income business owners see 16.6% and 20.3% declines in earnings.

In the HRS, we see a starkly different pattern. Workers transitioning out of formal self-employment and business ownership experience an increase in earnings upon entering wage and salaried employment, except for the highest-income workers. However, only the lowest-income older workers transitioning out of informal self-employment experience a rise in their earnings of 55.5%, whereas middle- and high-income workers observe declines of 59.2% and 1.9%.

4.5 Transitions to Retirement in the HRS

To understand how transitions to retirement reflect changes in self-employment work arrangements, Table 4 presents a residualized transition matrix across our four work arrangements and non-employment for respondents who appear in the HRS both pre- and post-retirement. Work arrangements are identified as the modal arrangement in each of the pre- and post-retirement periods. We define retirement status using responses to the HRS survey question that asks respondents whether they consider themselves to be retired. We note that the HRS includes another source of information on retirement status based on labor force status, and this variable classifies reporting any employment as working. We use the prior subjective definition to include as retired respondents who report working but also consider themselves to be retired from their career jobs. We define the post-retirement period as the wave the respondent first says that they are at least partially retired and all subsequent waves; we define the pre-retirement period as all prior waves. The pre-retirement arrangements are represented in rows while the post-retirement arrangements are represented in columns, and each cell shows the weighted percentage of respondents having that combination of prior and current work arrangements.

Table 4 shows that the majority of employees and those not working pre-retirement transition to not working post-retirement. In contrast, substantial shares of those engaged in self-employment pre-retirement continue to do so post-retirement: 33.2% of the informally self-employed, 32.1% of the formally self-employed, and 26.5% of business owners, which compare to 23.8% of wage and salaried employees. We also see transitions across work arrangements, with 8.2% to 9.2% of the self-employed pre-retirement transitioning to wage and salaried employment post-retirement. We also see a notable share, 18.1%, of business owners pre-retirement transitioning to informal self-employment post-retirement. These findings suggest salient differences in retirement transitions associated with different pre-retirement work arrangements.

4.6 Cumulative Exposure to Self-Employment in the PSID

Having examined how workers transition across different work arrangements overall and at retirement, we are interested to understand the workers' cumulative exposure to different self-employment work arrangements over their working lives. To explore this question, we use the PSID to examine across the age distribution the share of respondents that ever reported working that had engaged in self-employment at any point prior during our sample period both on main jobs and on any job. It is important to note that these estimates are both left- and right-censored as our sample is limited to the period for which we have narratives, 2003-2019. For individual respondents, the estimates are potentially further censored based on when they enter or leave the survey. On average, we have 6.9 observations for each respondent.[6]

Our findings in Panel A of Figure 3 show that at age 25, 8.9% of workers in our sample had ever engaged in any self-employment, which increases to 31.7% at age 65. Focusing on

[6] These vary by age. For five-year age bins, we see the smallest average number of observations for 25-29-year-olds (4.6) and the largest average number of observations for 50-54-year-olds (7.4).

main jobs only, we see that at age 25, 6.8% of workers in our sample had ever engaged in any self-employment on their main job, which increases to 26.7% at age 65. These findings suggest considerable increased exposure to self-employment with age, with more pronounced increases occurring over ages 25-35 and 55-65.

Panel B of Figure 3 shows these patterns for our different self-employment work arrangements. At age 25, rates of self-employment on any (main) job range from 1.3% (1.2%) ever engaging in business ownership to 2.5% (1.9%) ever engaging in formal self-employment and to 5.6% (4.2%) ever engaging in informal self-employment. At age 65, we see substantial increases with rates of self-employment on any (main) job ranging from 12.9% (10.4%) ever engaging in business ownership to 16.1% (13.7%) ever engaging in formal self-employment and to 18.3% (13.9%) ever engaging in informal self-employment.

5 Discussion

This paper used novel data to examine the breadth of self-employment work arrangements to identify: (1) patterns in cumulative exposure to different types of work arrangements, (2) how workers transition across different work arrangements across survey waves, (3) how transitions are associated with changes in earnings, and (4) how workers transition across different work arrangements at retirement.

Our findings show that relative to non-employment and wage and salaried employment, self-employment is associated with greater diversity in transitions both across self-employment work arrangements and out of self-employment for both younger and older workers. Examining earnings changes associated with these transitions shows heterogeneity by pre-transition income level and self-employment work arrangement. We generally find transitions associated with increases in earnings for the lowest earners and decreases in earnings for the highest earners. We further find that while the majority of employees and those not working pre-retirement transition to not working post-retirement, substantial shares of those engaged in self-employment pre-retirement continue to do so or to transition into wage and salaried employment post-retirement. Finally, we find that workers become increasingly exposed to self-employment over their working lives: at age 25, 8.9% of workers in our sample had ever engaged in any self-employment, which increases to 31.7% at age 65 including 12.9% ever engaging in business ownership on any job, 16.1% ever engaging in formal self-employment on any job, and 18.3% ever engaging in informal self-employment on any job.

Our findings suggest salient differences in work and individual characteristics, trends, and transitions of the self-employed that would otherwise be masked in administrative data and other survey sources. Using our novel data, we are able to identify these self-employment work arrangements and find that they do reflect substantially different work dynamics.

It is important to note several limitations of the paper’s approach. The results are limited in that the classification can only be used to the extent the respondents provided sufficiently detailed narratives and there is some degree of subjectivity and error in reviewer coding of work arrangements. However, we have mitigated the latter by having every job record reviewed by at least two reviewers according to a standardized classification schema. Another limitation is that we focus our analysis on current main jobs as the HRS only asks about current main jobs. As the PSID does ask about all jobs held over the two years prior to the interview, future work using the PSID could examine all jobs held to develop a more nuanced understanding of how individuals hold and transition across multiple jobs over time.

We also acknowledge several limitations for interpreting the estimates from these transition analyses. First, our classification approach may inflate the appearance of transitions, particularly between self-employment work arrangements, as respondents may describe the same job differently in different survey waves even though they have not changed their job activities. Despite this limitation, we believe our estimates are instructive about patterns of transitions with our point estimates representing upper bounds. We also acknowledge that our transition analyses do not include transitions associated with waves when respondents did not respond to the survey. However, we find that self-employment transitions for respondents in the waves before and after they are missing show similar patterns to those for respondents that were not missing, suggesting that such respondents do not bias our estimates.

The results of this study provide greater insight into the nature of self-employment work arrangements and permit future work more thoroughly considering the causes and implications of differences in these work arrangements. This work lays the groundwork for future research examining individuals' work trajectories leading to these roles, movement between different work arrangements, and how these are associated with different levels of economic, physical, and psychological wellbeing over the life course. For researchers and policymakers, our results emphasize the importance of capturing the heterogeneity within self-employment to understand its changing nature and future trajectory.

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Tables

Table 1a: Demographic Characteristics by Work Arrangement

	Overall		Informal SE		Formal SE		Business Owner		Wage and Salary Employment	
	PSID Age < 50	HRS Age ≥ 51	PSID Age < 50	HRS Age ≥ 51	PSID Age < 50	HRS Age ≥ 51	PSID Age < 50	HRS Age ≥ 51	PSID Age < 50	HRS Age ≥ 51
Age	36.9	65.9	38.5	62.7	39.3	62.4	40.2	61.8	37.5	59.7
	(0.08)	(0.03)	(0.30)	(0.11)	(0.33)	(0.14)	(0.36)	(0.16)	(0.08)	(0.03)
Education	13.7	13.1	12.9	13.2	14.2	15.2	14.3	14.2	14.0	13.8
	(0.07)	(0.01)	(0.15)	(0.04)	(0.13)	(0.05)	(0.15)	(0.06)	(0.06)	(0.02)
% Male	48.9	45.9	45.5	57.4	65.0	68.3	72.4	70.3	50.9	49.4
	(0.39)	(0.16)	(2.50)	(0.74)	(2.52)	(0.98)	(2.33)	(1.16)	(0.42)	(0.31)
% White, Non-Hispanic	71.2	78.0	62.7	80.3	78.4	87.0	84.2	85.8	72.0	77.5
	(1.96)	(0.12)	(2.79)	(0.53)	(2.78)	(0.61)	(2.35)	(0.78)	(1.90)	(0.22)
% Black, Non-Hispanic	11.6	9.8	11.0	6.4	7.8	5.5	4.7	4.0	11.2	9.9
	(1.41)	(0.07)	(1.49)	(0.26)	(1.44)	(0.36)	(1.09)	(0.33)	(1.33)	(0.13)
% Hispanic	12.4	8.6	22.4	10.0	10.7	4.1	6.8	4.2	12.4	8.4
	(1.06)	(0.08)	(2.18)	(0.41)	(2.09)	(0.35)	(1.34)	(0.39)	(1.11)	(0.14)
Observations	58,893	58,106	2,739	6,951	1,738	3,476	1,900	2,268	52,516	45,411
Weighted Share	100%	100%	4.5%	10.9%	3.3%	6.4%	3.9%	4.2%	88.2%	78.5%

[a] *Source*: Internal 2003-2019 PSID and 2002-2018 HRS narrative data on industry and occupation (PSID and HRS) and employer names (PSID only) classified into work arrangement types. Characteristics come from the public PSID and HRS merged to the narrative data classified into work arrangement types.

[b] We report summary statistics by current main job type. Reported observations represent true counts of observations in our data. Estimates use cross-sectional PSID and HRS weights.

Table 1b: Work and Wellbeing Characteristics by Work Arrangement

	Overall		Informal SE		Formal SE		Business Owner		Wage and Salary Employment	
	PSID Age < 50	HRS Age ≥ 51	PSID Age < 50	HRS Age ≥ 51	PSID Age < 50	HRS Age ≥ 51	PSID Age < 50	HRS Age ≥ 51	PSID Age < 50	HRS Age ≥ 51
Labor Income (000's) - Prior Year	54.2	62.1	28.5	42.6	70.9	96.4	81.2	111.1	56.6	64.4
	(0.84)	(0.51)	(1.48)	(2.58)	(4.22)	(6.24)	(4.79)	(12.64)	(0.72)	(0.51)
Weekly Hours - Prior Year	35.0	16.3	29.2	30.4	39.1	34.5	46.0	40.2	39.3	37.8
	(0.24)	(0.07)	(0.92)	(0.31)	(0.93)	(0.42)	(0.98)	(0.50)	(0.14)	(0.08)
Hourly Wages - Prior Year	27.1	50.7	18.0	58.6	34.9	131.7	35.6	367.6	27.6	30.9
	(0.41)	(9.00)	(0.68)	(6.90)	(1.97)	(19.35)	(2.08)	(260.68)	(0.37)	(0.76)
% Reporting Good Health	89.6	42.4	85.0	52.3	93.6	66.1	94.5	59.2	92.0	53.3
	(0.71)	(0.16)	(1.07)	(0.76)	(0.93)	(0.99)	(0.95)	(1.27)	(0.29)	(0.30)
% Not Psychologically Distressed	96.8	87.3	95.1	9.7	93.6	6.2	94.5	5.8	92.0	8.3
	(0.40)	(0.11)	(0.59)	(0.47)	(0.47)	(0.54)	(0.74)	(0.63)	(0.17)	(0.17)
% Positive Business Assets	9.7	10.2	20.8	34.6	40.1	31.4	71.6	66.0	6.2	7.5
	(0.20)	(0.10)	(1.38)	(0.71)	(2.76)	(0.99)	(2.40)	(1.21)	(0.43)	(0.16)
% Homeownership Rate	59.9	79.4	48.4	84.8	70.6	90.5	77.4	93.4	61.8	82.7
	(0.80)	(0.13)	(2.28)	(0.54)	(2.36)	(0.62)	(2.58)	(0.59)	(0.94)	(0.23)
Z-Score Abstract	0.1	0.1	-0.3	0.1	0.2	1.04	0.8	0.84	0.1	0.04
	(0.02)	(0.01)	(0.03)	(0.01)	(0.05)	(0.03)	(0.05)	(0.03)	(0.02)	(0.01)
Z-Score Routine	0.01	0.0	-0.2	-0.1	-0.1	-0.41	-0.3	-0.37	0.04	0.1
	(0.01)	(0.01)	(0.03)	(0.01)	(0.04)	(0.03)	(0.04)	(0.02)	(0.01)	(0.01)
Z-Score Manual	-0.02	-0.0	0.2	0.03	0.04	-0.33	-0.1	-0.21	-0.04	-0.03
	(0.01)	(0.01)	(0.04)	(0.01)	(0.06)	(0.03)	(0.05)	(0.02)	(0.01)	(0.01)
Observations	58,893	58,106	2,739	6,951	1,738	3,476	1,900	2,268	52,516	45,411
Weighted Share	100%	100%	4.5%	10.9%	3.3%	6.4%	3.9%	4.2%	88.2%	78.5%

[a] *Source*: Internal 2003-2019 PSID and 2002-2018 HRS narrative data on industry and occupation (PSID and HRS) and employer names (PSID only) classified into work arrangement types. Characteristics come from the public PSID and HRS merged to the narrative data classified into work arrangement types.

[b] We report summary statistics by current main job type. Reported observations represent true counts of observations in our data. Estimates use cross-sectional PSID and HRS weights. We report the % not psychologically distressed in the PSID and the % not depressed in the HRS.

Table 2: Wave-to-Wave Transitions across Work Arrangements

Panel A: PSID

Prior Wave	*W&S Employment*	*Informal SE*	*Formal SE*	*Business Ownership*	*Not Working*
	Current Wave				
W&S Employment	88.5%	1.6%	1.2%	1.3%	7.4%
Informal SE	26.3%	43.0%	7.7%	7.8%	15.2%
Formal SE	29.7%	10.8%	36.4%	16.2%	6.8%
Business Ownership	16.1%	7.3%	10.4%	60.1%	6.0%
Not Working	38.0%	4.8%	1.8%	2.2%	53.1%

Panel B: HRS

Prior Wave	*W&S Employment*	*Informal SE*	*Formal SE*	*Business Ownership*	*Not Working*
	Current Wave				
W&S Employment	76.8%	0.9%	0.4%	0.1%	21.8%
Informal SE	5.8%	53.8%	7.1%	8.4%	24.9%
Formal SE	5.4%	11.5%	56.9%	9.2%	17.0%
Business Ownership	2.7%	18.9%	10.7%	52.5%	15.3%
Not Working	6.6%	1.4%	0.6%	0.4%	91.0%

[a] *Source*: Internal 2003-2019 PSID and 2002-2018 HRS narrative data on industry and occupation (PSID and HRS) and employer names (PSID only) classified into work arrangement types. Additional information on work status comes from the public PSID and HRS merged to the narrative data classified into work arrangement types.

[b] Panels A and B report the share of respondents transitioning to a given current main job type conditional on their main job type in the prior survey wave for the PSID and HRS samples, respectively. Both panels report estimates controlling for age bins (age < 25, age 25-34, age 35-44, age 45-54, age 55-64, age 65+), gender, white/nonwhite status, education (less than high school, high school, some college, BA+), marital status, home ownership, and year fixed-effects. We also include state-level unemployment rates for PSID estimates. Estimates use cross-sectional PSID and HRS weights.

[c] Abbreviations: W&S, wage and salaried; SE, self-employment.

Table 3: Changes in Earnings Associated with Wave-to-Wave Transitions across Work Arrangements

Panel A: PSID % Changes in Earnings

	Earnings in Prior Wave		
	≤$30K	*$30K - $60K*	*>$60K*
Switched Wage to SE	51.0	-3.9	-2.3
Switched Wage to Informal	47.4	-25.4	-8.4
Switched Wage to Formal	51.6	5.7	-2.6
Switched Wage to Owners	60.0	12.1	2.0
Switched SE to Wage	68.8	12.1	-24.2
Switched Informal to Wage	44.8	17.9	-32.6
Switched Formal to Wage	144.0	29.4	-20.3
Switched Owner to Wage	61.5	-16.6	-20.3

Panel B: HRS % Changes in Earnings

	Earnings in Prior Wave		
	≤$30K	*$30K - $60K*	*>$60K*
Switched Wage to SE	36.9	-18.0	-29.7
Switched Wage to Informal	22.4	-27.2	-37.6
Switched Wage to Formal	48.8	-2.6	-25.1
Switched Wage to Owners	77.1	-22.7	-30.0
Switched SE to Wage	32.7	-12.6	-9.8
Switched Informal to Wage	55.5	-59.2	-1.9
Switched Formal to Wage	9.9	39.2	-12.6
Switched Owner to Wage	52.7	34.8	-47.7

[a] *Source*: Internal 2003-2019 PSID and 2002-2018 HRS narrative data on industry and occupation (PSID and HRS) and employer names (PSID only) classified into work arrangement types. Additional information on work status comes from the public PSID and HRS merged to the narrative data classified into work arrangement types.

[b] Panels A and B report the percent change in earnings for respondents transitioning to a given current main job type conditional on their main job type in the prior survey wave for the PSID and HRS samples, respectively. We report estimates separately for individuals who earned $30,000 or less, between $30,001 and $60,000, and $60,001 or more in the prior survey wave. Both panels report estimates controlling for age bins (age < 25, age 25-34, age 35-44, age 45-54, age 55-64, age 65+), gender, white/nonwhite status, education (less than high school, high school, some college, BA+), marital status, home ownership, and year fixed-effects. We also include state-level unemployment rates for PSID estimates. Estimates use cross-sectional PSID and HRS weights.

[c] Abbreviations: W&S, wage and salaried; SE, self-employment.

Table 4: Retirement Transitions across Work Arrangements

Pre-Retirement	Post-Retirement: *W&S Employment*	*Informal SE*	*Formal SE*	*Business Ownership*	*Not Working*
W&S Employment	23.8%	2.9%	1.4%	0.6%	71.4%
Informal SE	9.2%	33.2%	5.6%	9.1%	42.8%
Formal SE	8.2%	8.1%	32.1%	4.4%	47.2%
Business Ownership	8.9%	18.1%	3.8%	26.5%	42.7%
Not Working	6.3%	2.6%	0.9%	0.6%	89.6%

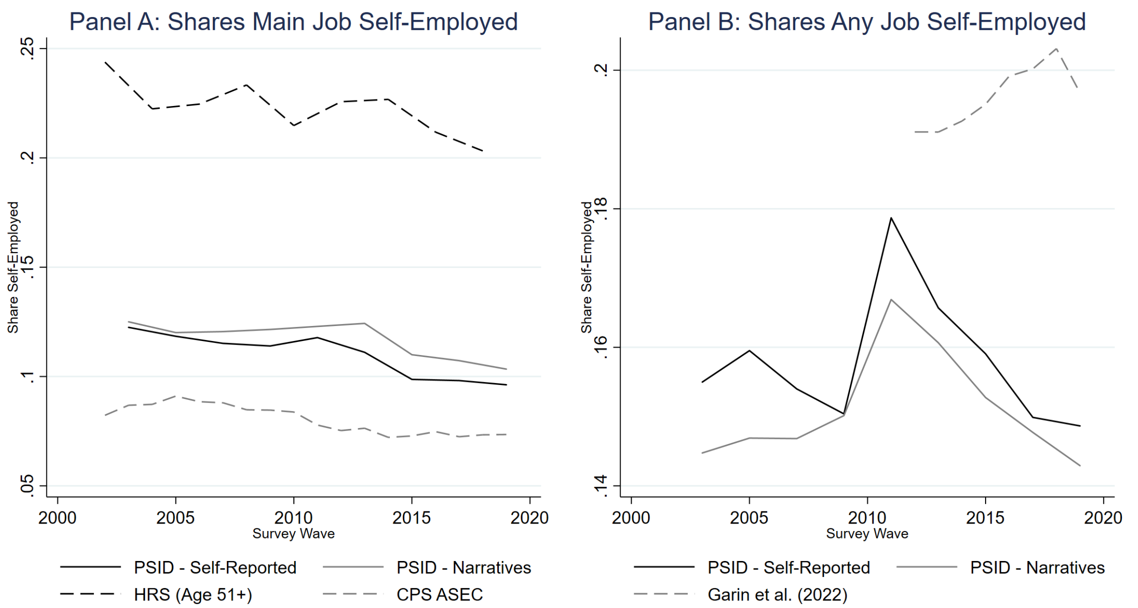
[a] *Source*: Internal 2002-2018 HRS narrative data on industry and occupation classified into work arrangement types. Additional information on work status comes from the public HRS merged to the narrative data classified into work arrangement types.

[b] We report the share of respondents with a given modal current main job type post-retirement conditional on their modal main job type pre-retirement for our HRS sample. We report estimates controlling for age bins (age < 25, age 25-34, age 35-44, age 45-54, age 55-64, age 65+), gender, white/nonwhite status, education (less than high school, high school, some college, BA+), marital status, home ownership, and year fixed-effects. Estimates use cross-sectional HRS weights.

[c] Abbreviations: W&S, wage and salaried; SE, self-employment.

Figures

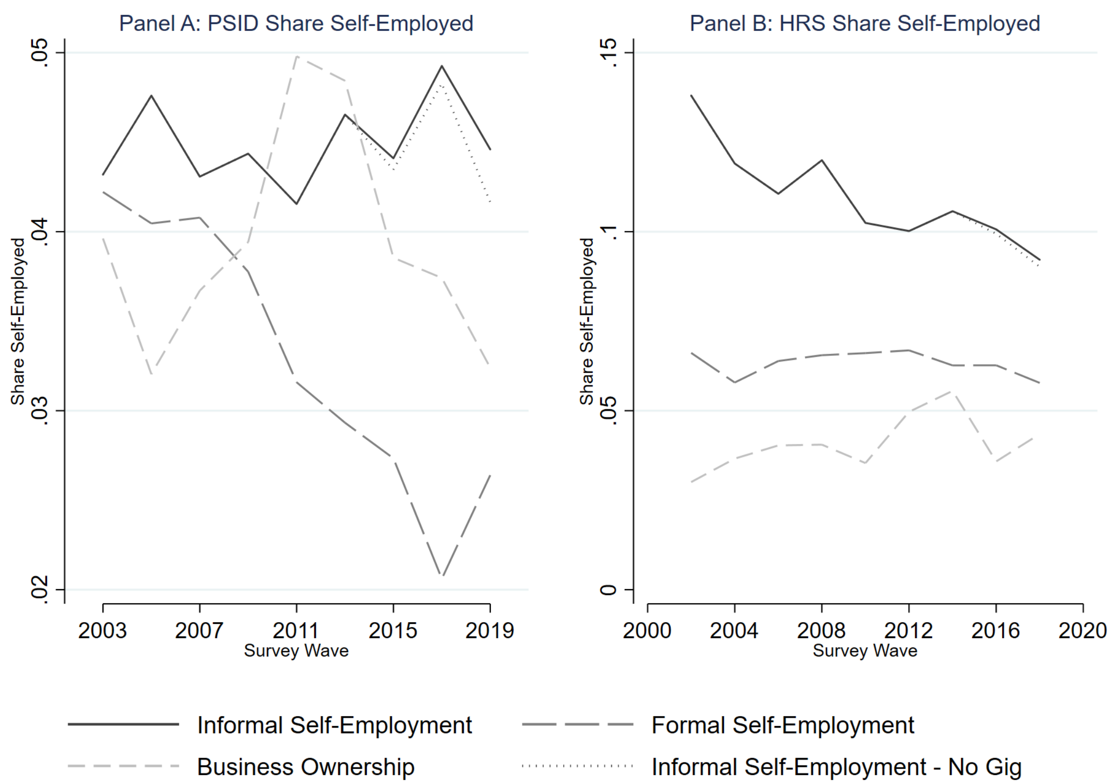
Figure 1: Share of Workers who are Self-Employed on Current Job by Survey Wave



[a] *Source*: Internal 2003-2019 PSID and 2002-2018 HRS narrative data on industry and occupation (PSID and HRS) and employer names (PSID only) classified into work arrangement types and public PSID and HRS data over corresponding years.

[b] We report self-employment shares among employed workers. PSID and HRS estimates are weighted using cross-sectional weights. CPS-ASEC estimates are weighted using ASEC weights. Tax data estimates come from Garin et al. (2023). The solid black line reports estimates using self-reported self-employment status from the public PSID, whereas the solid gray line reports estimates based on our work arrangements classification.

Figure 2: Share of Workers who are Self-Employed by Survey Wave and Work Arrangement



[a] *Source*: Internal 2003-2019 PSID and 2002-2018 HRS narrative data on industry and occupation (PSID and HRS) and employer names (PSID only) classified into work arrangement types and public PSID and HRS data over corresponding years.

[b] We report employment shares by current main job by work arrangements. Estimates use cross-sectional PSID and HRS weights.

Figure 3: Share of Workers Ever Self-Employed by Age

[a] *Source*: Internal 2003-2019 PSID narrative data on industry and occupation and employer names classified into work arrangement types merged to public PSID data.

[b] We report, at a given age, the share of respondents who were ever observed to be self-employed of those who were ever observed to had ever worked for respondents ages 25-65. In Panel A, we report these shares for both those who report being self-employed as their main job or any job. In Panel B, we separately examine these shares by type of self-employment. Our estimates are by construction lower-bounds, since we only observe a respondent's self-employment during the time they are in the PSID. Estimates use cross-sectional PSID weights.

Appendix

Appendix 1: Classification Approach in Detail

In addition to publicly-available PSID and HRS data, the analysis leverages internal data collected on employer names (PSID only) and narrative descriptions of industry and occupation (PSID and HRS) and to classify work arrangements into a useful framework (Abramowitz et al., 2023). The narratives include answers to the following open-ended questions: “What kind of business or industry is that [job] in?” and “In your work for [your employer] what is your occupation?” and tend to be 3-4 sentences long. Interviewers are instructed to record occupation and industry answers verbatim and are provided guidelines to ascertain complete information on the respondent’s job and job duties/activities. They are directed to probe for clear, complete answers and specifics of what the respondent does on the job and the business or industry type in order to be able to distinguish among unskilled workers, semi-skilled workers, and skilled workers, as well as among white-collar occupations (PSID, 2017; HRS, n.d.).

The classification uses the employer names and narrative responses to the open-ended industry and type of work questions to code each job as one of five work arrangements (platform-mediated gig work, informal self-employment, formal self-employment, business owners, wage and salaried employees), with a small number assigned no label due to insufficient information. For the PSID classification, all job reports, including those that respondents identified as wage and salaried employment, were included in the classification process. For the HRS classification, only job reports that respondents identified as self-employment were included in the classification process. The classification schema is presented in the table that follows.

Classification Schema

Work Arrangement	**Job Characteristics**
Platform gig work	Identifies platform name (including platforms identified by Harris and Krueger (2015) or on Wikipedia at the time of the classification) or gives other indication of working on a platform
Business owner or president, or owner of family farm	Says they own or run a business OR mentions business assets AND lists business name
Self-employed, informal (non-contract) basis	Working in roles such as a babysitter, caregiver, cleaner, handyman, doing odd/spare jobs, day laborer, maker, performer, seasonal work, multi-level marketing, sales, freelancer
Self-employed, formal (independent contractor) basis	Working in roles such as an independent contractor, subcontractor, consultant, working for an “umbrella” company (e.g., real estate agent at real estate company, financial planner at advisor company)
Employee	Does not report any of the above roles and reports working for someone else for pay

For the PSID classification, the approach first distinguishes between wage and salaried work arrangements and self-employment work arrangements. While the approach incorporates information from self-reports of employment status and self-employment status on a given job, in cases where the narrative information and self-reported employment status or employment status conflict, the approach reclassifies work arrangements to align with the narrative information. Overall, among those with a current main job narrative, we find that our classification-based measure and the PSID's self-reports of primary self-employment match in 96.5% of cases. In particular, 1.0% of wage and salaried self-reports were re-classified as self-employment, and 6.0% of self-employment self-reports were re-classified as wage and salaried employment.

Among the self-employed, in both the PSID and HRS, the classification further distinguishes business ownership (requiring investment and managerial responsibilities), working independently but typically for a business entity (providing greater structure to the employment relationship), and working independently but typically for an individual or on an electronic platform, or having itinerant work (offering less structure to the employment relationship). The distinction between informal self-employment arrangements like freelancing and formal self-employment arrangements like independent contracting reflects a freelancer's relationship with a client being briefer and less formalized than an independent contractor. Whereas independent contractors are likely to have a contract with a client as part of an on-going relationship, a freelancer either interacted with their client only once or their successive interactions are independent and the interaction was not dictated by a contract. While the classification was not defined by occupation, reports of job activities (e.g., "cleaning" and "handyman") were used to the extent that they suggest the likely nature of the relationship (in terms of brevity and formality) between worker and client. For example, a journalist would be considered a freelancer and classified in informal self-employment if it seemed that they submitted articles to papers at-will, but would be considered an independent contractor and classified in formal self-employment if they provided information to suggest that they had some agreement with the paper to submit articles regularly.

We used a machine learning model to automate our classification approach. To produce the "truth" data for training the model, two reviewers classified the same subset of 30% of the data according to the described schema. For each job, reviewers were presented with the respondent's narrative descriptions of industry, occupation, and job title, the provided employer name/description, and information on the year, whether the job was the respondent's main job, and in the PSID only, if the respondent considered it to be self-employment. Reviewers were trained to consider all of this information to classify each job. For example, in the PSID, if the respondent classified themselves as self-employed but described what would otherwise be a standard wage and salaried employment role along with an employer's name, reviewers were advised to overrule the self-classification and classify the job as wage and salaried employment. Reviewers were trained to apply the schema to have categories higher in the schema take precedence over categories lower in the schema. For example, narratives identifying work on a platform are classified as platform-mediated gig work, as platform-mediated gig work is the first category in the schema. Reviewers classified each job report for a respondent independently of any other jobs reported by that respondent during the same wave or in other waves. We took this approach to consider cross-wave job reports independently so as to not impose consistency in work activities across survey waves in the presence of potentially meaningful distinctions. Records for which the two reviewers disagreed were adjudicated by a third reviewer. We do not see significant differences in narrative length across categories, consistent with the interviewer instructions (PSID, 2017; HRS, n.d.) to probe for clear complete answers and specifics of what the respondent does on the job and the business or industry type.

We then used machine learning to automate the classification. To classify the remainder of the data, for the HRS, we used a traditional machine learning model, and for the PSID, we used a BERT-based machine learning model. After training each model on the subset of classified data, we ran the model to compute the probability that each record belonged to each category and identify the predicted category based on the highest probability. We flagged any prediction with a probability below a confidence threshold of 95% in the PSID and 60% in the HRS. Two reviewers then classified these low-probability cases following the same procedure as for producing the training data. As in the first round, records for which the two reviewers disagreed were adjudicated by a third reviewer. This approach ensured that uncertain predictions, which are more likely to involve under-represented categories, received extra scrutiny to improve overall classification accuracy (Abramowitz et al., 2023).

Appendix Table 1a: Demographic Characteristics by Work Arrangement, Age 51+

	Overall		Informal SE		Formal SE		Business Owner		Wage and Salary Employment	
	PSID Age ≥ 51	HRS Age ≥ 51	PSID Age ≥ 51	HRS Age ≥ 51	PSID Age ≥ 51	HRS Age ≥ 51	PSID Age ≥ 51	HRS Age ≥ 51	PSID Age ≥ 51	HRS Age ≥ 51
Age	61.7	65.9	61.7	62.7	61.1	62.4	61.0	61.8	58.6	59.7
	(0.14)	(0.03)	(0.30)	(0.11)	(0.33)	(0.14)	(0.36)	(0.16)	(0.08)	(0.03)
Education	13.7	13.1	13.5	13.2	14.7	15.2	14.3	14.2	13.9	13.8
	(0.07)	(0.01)	(0.15)	(0.04)	(0.13)	(0.05)	(0.15)	(0.06)	(0.06)	(0.02)
% Male	49.5	45.9	49.0	57.4	65.6	68.3	77.1	70.4	49.7	49.4
	(0.57)	(0.16)	(2.50)	(0.74)	(2.52)	(0.98)	(2.33)	(1.17)	(0.42)	(0.31)
% White, Non-Hispanic	79.0	78.0	72.1	80.2	86.4	87.1	90.9	85.8	78.8	77.5
	(1.54)	(0.12)	(2.79)	(0.53)	(2.78)	(0.61)	(2.35)	(0.78)	(1.90)	(0.22)
% Black, Non-Hispanic	9.0	9.8	10.1	6.4	3.9	5.5	1.8	4.0	9.1	9.9
	(0.96)	(0.07)	(1.49)	(0.26)	(1.44)	(0.36)	(1.09)	(0.33)	(1.33)	(0.13)
% Hispanic	7.9	8.6	13.2	10.0	4.0	4.1	4.2	4.2	7.9	8.4
	(0.78)	(0.08)	(2.18)	(0.41)	(2.09)	(0.35)	(1.34)	(0.39)	(1.11)	(0.14)
Observations	58,893	58,106	2,739	6,951	1,738	3,476	1,900	2,268	52,516	45,411
Weighted Share	100%	100%	6.5%	10.9%	5.9%	6.4%	7.6%	4.2%	80.1%	78.5%

[a] *Source*: Internal 2003-2019 PSID and 2002-2018 HRS narrative data on industry and occupation (PSID and HRS) and employer names (PSID only) classified into work arrangement types. Characteristics come from the public PSID and HRS merged to the narrative data classified into work arrangement types.

[b] We report summary statistics by current main job type. Reported observations represent true counts of observations in our data. Estimates use cross-sectional PSID and HRS weights.

Appendix Table 1b: Work and Wellbeing Characteristics by Work Arrangement, Age 51+

	Overall		Informal SE		Formal SE		Business Owner		Wage and Salary Employment	
	PSID Age ≥ 51	HRS Age ≥ 51	PSID Age ≥ 51	HRS Age ≥ 51	PSID Age ≥ 51	HRS Age ≥ 51	PSID Age ≥ 51	HRS Age ≥ 51	PSID Age ≥ 51	HRS Age ≥ 51
Labor Income (000's) - Prior Year	61.0	62.1	27.3	42.6	82.47	96.4	115.0	111.1	63.2	64.4
	(1.33)	(0.51)	(1.48)	(2.58)	(4.22)	(6.24)	(4.79)	(12.64)	(0.72)	(0.51)
Weekly Hours - Prior Year	25.1	16.3	26.6	30.4	32.1	34.5	40.9	40.2	38.3	37.8
	(0.28)	(0.07)	(0.92)	(0.31)	(0.93)	(0.42)	(0.98)	(0.50)	(0.14)	(0.08)
Hourly Wages - Prior Year	34.1	50.7	22.8	58.6	51.3	131.7	53.1	367.6	32.6	30.9
	(0.75)	(9.00)	(0.68)	(6.90)	(1.97)	(19.35)	(2.08)	(260.68)	(0.37)	(0.76)
% Reporting Good Health	80.6	42.4	80.1	52.3	88.9	66.1	89.2	59.2	87.3	53.3
	(0.68)	(0.16)	(1.07)	(0.76)	(0.93)	(0.99)	(0.95)	(1.27)	(0.29)	(0.30)
% Not Psychologically Distressed	97.5	87.3	96.9	9.7	88.9	6.2	89.2	5.8	87.3	8.3
	(0.72)	(0.11)	(0.59)	(0.47)	(0.47)	(0.54)	(0.74)	(0.63)	(0.17)	(0.17)
% Positive Business Assets	12.5	10.2	22.6	34.6	34.5	31.4	71.5	66.0	8.2	7.5
	(0.25)	(0.10)	(1.38)	(0.71)	(2.76)	(0.99)	(2.40)	(1.21)	(0.43)	(0.16)
% Homeownership Rate	81.4	79.4	78.6	84.8	85.0	90.5	90.0	93.4	82.8	82.7
	(0.94)	(0.13)	(2.28)	(0.54)	(2.36)	(0.62)	(2.58)	(0.59)	(0.94)	(0.23)
Z-Score Abstract	0.1		-0.3	0.1	0.4	1.0	0.9	0.8	0.1	0.04
	(0.02)		(0.03)	(0.01)	(0.05)	(0.03)	(0.05)	(0.03)	(0.02)	(0.01)
Z-Score Routine	0.00		-0.1	-0.1	-0.1	-0.4	-0.3	-0.4	0.04	0.1
	(0.02)		(0.03)	(0.01)	(0.04)	(0.03)	(0.04)	(0.02)	(0.01)	(0.01)
Z-Score Manual	-0.03		0.3	0.03	-0.2	-0.3	0.02	-0.2	-0.1	-0.03
	(0.02)		(0.04)	(0.01)	(0.06)	(0.03)	(0.05)	(0.02)	(0.01)	(0.01)
Observations	58,893	58,106	2,739	6,951	1,738	3,476	1,900	2,268	52,516	45,411
Weighted Share	100%	100%	6.5%	10.9%	5.9%	6.4%	7.6%	4.2%	80.1%	78.5%

[a] *Source*: Internal 2003-2019 PSID and 2002-2018 HRS narrative data on industry and occupation (PSID and HRS) and employer names (PSID only) classified into work arrangement types. Characteristics come from the public PSID and HRS merged to the narrative data classified into work arrangement types.

[b] We report summary statistics by current main job type. Reported observations represent true counts of observations in our data. Estimates use cross-sectional PSID and HRS weights. We report the % not psychologically distressed in the PSID and the % not depressed in the HRS.