

Involuntary Part-Time Work and the Gig Economy: Push or Pull?

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Abstract

In recent decades, both involuntary part-time employment and informal work in the on-demand or “gig” economy have grown. Prior research suggests that these trends may be related, with growth in involuntary part-time work perhaps “pushing” individuals who want more hours and income into gig work. I examine this relationship using data on self-employment from the Current Population Survey supplemented by more detailed survey data on informal work from the Federal Reserve’s Survey of Household Economics and Decisionmaking. Regression results using both data sources suggest that self-employment and informal work as a primary source of income rise with the incidence of involuntary part-time work at the state level. This suggests a meaningful “push” element to the rise in gig work, as individuals seek full-time work hours in an environment of growing employer reliance on part-time work.

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I. Introduction

Over the past decade, popular attention and a growing body of research evidence has focused on the rise of informal or on-demand work in the so-called “gig economy.” Gig jobs as typically defined refer to short-term work on a contracted basis, with a particular focus on tasks facilitated via online platforms that match up suppliers and demanders of products and services (e.g., ridesharing services such as Lyft and Uber, TaskRabbit, etc.). Over this period, the supply of gig work has been enhanced by advances in computer and communications technologies that have reduced the complexity and cost of the gig matching process. The growing ease of gig work likely has prompted increasing numbers of individuals to seek out such work as a source of supplemental income. This may have been reinforced by the severe recession of 2007-09 and subsequent slow labor market recovery, which likely prompted some workers to rely on temporary work to bolster flagging family incomes.

A concurrent development has been the rise in involuntary part-time (IPT) work, which refers to individuals working part-time who prefer full-time hours but are unable to attain them. Recent research suggests that after rising to unusually high levels in the most recent recession, IPT work has declined but remains significantly above historical terms, likely due to structural or legislative changes that have caused employers to shift away from full-time jobs (Valletta, Bengali, and van der List 2020; Dillender, Heinrich, and Houseman 2019; Even and Macpherson 2019).

In this paper, I examine whether the trends of rising gig work and IPT employment are related. In particular, I investigate whether reliance on gig work may be a response to the rising structural constraints on available work hours implied by the rise in IPT work.

This investigation is complicated by the lack of consistent data on gig work over the past few decades. Standard data sources such as the Current Population Survey (CPS) appear to sharply understate the prevalence of gig work (Abraham, Haltiwanger, Sandusky, and Spletzer 2018). By contrast, specialized surveys and administrative data sources that enable a more complete rendering are not readily or consistently available over longer timeframes.

To help address these challenges, in this paper I supplement analyses based on standard CPS data on self-employment with analyses based on the more extensive and precise measurement of gig work provided by the Federal Reserve Board's Survey of Household Economics and Decisionmaking (SHED), used recently by Abraham and Houseman (2019). The CPS data enable panel analyses over a sustained timeframe, while the SHED data enable me to examine the estimated relationships using the more precise data on gig work for the years 2017-18.

I first provide a brief discussion of recent patterns in IPT and gig work, based on the CPS and SHED data, along with discussion of related research. I then report the results from separate sets of regressions using both data sources. The results reveal systematic relationships between gig work and the prevalence of IPT, with the incidence of self-employment, multiple job-holding, and gig work generally rising with IPT measured at the state level. I discuss the tentative implications of these findings in the Conclusion.

II. Patterns in Part-Time and Gig Work

A. CPS Data

I first provide a brief review of patterns in part-time employment (see Valletta et al. 2020 for more details). In the CPS, part-time work is defined as fewer than 35 hours per week. This

refers to hours at all jobs, so an individual who works multiple jobs and reaches at least 35 total hours in a week will not be identified as a part-time worker. The CPS survey distinguishes between two broad groups of persons who work part time. The first is those working part time for “noneconomic” reasons, or voluntarily (VPT). These are workers whose part-time status represents a labor supply decision (hence “noneconomic reasons” is a slight misnomer): they prefer a part-time job for personal reasons such as family obligations, school, or partial retirement.¹ Of the 15 to 20 percent of employed people who work part time, about three-fourths are in this category. The other category is those working part time for “economic” reasons, or involuntarily (IPT). This includes workers who report that they would like a full-time job but cannot find one due to constraints on the employer side of the labor market, such as a cutback in hours at their current job (“slack work”) or an inability to find full-time work (which are separately distinguished in the data).² As such, involuntary part-time work primarily reflects labor demand considerations. More precisely, the existence of involuntary part-time work indicates hours constraints on available jobs: the number of jobs in which only part-time hours are offered exceeds the number of employed individuals who prefer part-time over full-time schedules.

Figure 1, which uses public-release BLS series, shows that the prevalence of VPT employment has been largely stable over the past few decades, including during the Great Recession and its aftermath. By contrast, the incidence of IPT employment rose substantially during the Great Recession and fell slowly in subsequent years. In recent years, the level of IPT

¹ As indicated in the monthly BLS employment reports, noneconomic reasons include “childcare problems, family or personal obligations, school or training, retirement or Social Security limits on earnings, and other reasons.”

² More precisely, economic reasons include “slack work or unfavorable business conditions, inability to find full-time work, or seasonal declines in demand.”

has remained high compared with past periods of low unemployment. Specifically, the analyses in Valletta et al. (2020) suggest that relative to historical norms, the incidence of IPT was about 40-50 percent higher than expected in 2016. They attributed sustained high incidence of IPT to ongoing structural changes in the U.S. labor market, primarily a slow employment shift toward industries that rely heavily on part-time workers.³

Concurrent with the growth in IPT work has been an apparent rise in work hours in jobs that do not involve a formal employer-employee relationship, in particular through the provision of services in the on-demand or gig economy. Katz and Krueger (2019a) examined administrative data from tax filings and found that the incidence of such work rose substantially between 2005 and 2015. However, their subsequent work suggested that the rise in alternative work arrangements was more modest, consistent with the comparison between the findings of the 2005 and recent 2017 release of the BLS's Contingent Worker Supplement (Katz and Krueger 2019b). Other work suggests that gig work is quite common but accounts for only a small share of total income (e.g., Board of Governors 2018, Mishel 2018).

As discussed in Abraham, Haltiwanger, Sandusky, and Spletzer (2018), gig work should primarily be reflected in the incidence of unincorporated self-employment in public-use data sources such as the CPS. However, as they and other authors emphasize, the trend in reported self-employment in the CPS has been downward over the past few decade.

The downward trend in reported self-employment can be seen in Figure 2, which displays the incidence of unincorporated self-employment calculated directly from CPS microdata. To

³ Dillender et al. (2019) and Even and Macpherson (2019) attribute the elevated level of IPT in recent years to the effects of the federal Affordable Care Act's (ACA) employer mandate. Because the mandate does not apply to individuals working fewer than 30 hours per week, the ACA creates an incentive for employers to create more part-time positions. Their interpretation of elevated IPT work has the same implications as Valletta et al. in the present context: either explanation posits an increase in IPT reflecting persistent structural factors that reduce the availability of full-time work and may push some individuals into gig work.

avoid undercounting of self-employment via secondary jobs, hence perhaps missing much of the activity occurring in the gig economy, the line represents the fraction of the civilian nonfarm workforce that reports unincorporated self-employment on *either their primary or secondary job*. Despite the broad measure of self-employment used, the trend in self-employment has been decidedly downward. However, the series has leveled off and perhaps started increasing a bit toward the end of the timeframe (through 2018), perhaps reflecting greater reliance on routine gig work.

The downward trend in the CPS self-employment series runs counter to the broad perception that gig work has risen over the past decade. It also runs counters to the rising incidence of self-employment measured from tax data (Jackson, Looney, and Ramnath 2017; Abraham et al. 2018). As we will see in section III, however, there are systematic relationships between self-employment and IPT that are consistent with the gig/IPT relationship estimated from data with more precise measurement of gig work. These CPS findings help inform the interpretation of gig work measured from other surveys.

B. SHED Data

I use the SHED data for more precise measurement of gig work (see Board of Governors 2018 and Abraham and Houseman 2019 for more details on this survey). In 2017 and 2018, the SHED was administered to about 11 to 12 thousand individuals (age 18+) nationwide. Respondents were asked whether they engaged in a wide variety of different types of “occasional work activities or side jobs” during the survey month. In addition, part-time employees were asked whether they prefer full-time work, providing a measure of IPT in the survey.⁴

⁴ The SHED measure of IPT is somewhat broader than the CPS measure, because unlike in the CPS SHED respondents are not asked whether they are available for full-time work.

Based on the detailed information available in the SHED data, I define four different categories of informal or gig work (similar to Abraham and Houseman 2019), listed in descending order of scope:

- (1) Any informal work: temporary contract work and sales activity (acquired on or offline)
- (2) Gig work: Any informal work excluding sales activity
- (3) Online gig work: gig work excluding personal services (child care, dog walking, etc.)
- (4) Rideshare only: Lyft and Uber provision.

Importantly, SHED respondents were also asked whether informal or gig work constitutes a primary or secondary source income; this distinction is important in our regression analyses in the next section.

Figure 3 displays the incidence of the four categories of informal work in the 2017 and 2018 SHED surveys. Informal work in general is quite common, with nearly 30 percent of respondents indicating that they had engaged in it during the survey month. The incidence drops substantially when the definitions are narrowed, to just under 20 percent when sales activity is excluded, just under 10 percent when activity is restricted to online work, and to only a few percentage points when restricted to rideshare provision. Comparison of panels B and C shows, as expected based on other work, that informal paid activity is much more important as a source of secondary rather primary income. The graph shows little change in the broad incidence of informal work between 2017 and 2018, with the largest proportional increase evident for online activity. This latter result is consistent with the continued improvement and diffusion of online platforms that support gig work.

III. Regression Analysis

A. CPS Self-employment and IPT

I first use the CPS data to explore the possible interactions between IPT and informal gig economy jobs. As discussed in Section II, individuals working in such jobs are most likely identified as unincorporated self-employed workers (Abraham et al. 2017). The declining employment share of this group suggests that the CPS is not capturing growth in the gig economy, likely because gig earnings are a secondary rather than a primary source of income.

Despite these measurement challenges, self-employment may be a useful proxy for uncovering the underlying determinants of informal work. Some of the research described above suggests that survey respondents are most likely to identify gig work as a job when it constitutes a substantial share of income, much like responses to the CPS measure of self-employment.

As a first visual cut at the relationship between IPT and self-employment (main job), Figure 4 displays a scatter plot of the two outcomes, measured as a fraction of civilian employment at the state level (calculated from CPS microdata). The figure highlights selected large states (in red) and western states, as concrete illustrations of the underlying relationship. Self-employment on the main job generally increases with the IPT rate, with a statistically meaningful upward trend line displayed in the chart.

Table 1 presents regression results that pin down this relationship further. The first four columns show regression results for the two years that span my CPS sample frame, 2003 and 2018; the latter regression corresponds to the scatter plot shown in Figure 4. The regressions show a consistent, large positive relationship between IPT work and self-employment at the state level. This relationship is robust to inclusion of the unemployment rate as a broad measure of state labor market conditions, and is in fact strengthened somewhat by it. The results for those

two years are broadly representative of the results for intervening years as well, although the relationship becomes statistically imprecise during 2005-08 and 2015-17 (not shown).

The final four columns of Table 1 list pooled regression results for the entire sample frame of 2003-18, using random effects and fixed-effects specifications. The size of the IPT coefficient is reduced substantially relative to the 2003 and 2018 results but remains highly statistically significant and robust to the inclusion of the unemployment rate. The fixed-effects results present a strong test of the IPT/self-employment relationship, by accounting for unobserved state effects that may affect both outcomes; the estimated coefficient represents the marginal impact of changes in the explanatory variables over time within states.

Table 2 further explores the relationship between IPT and self-employment. The regressions reported rely on the CPS microdata that underlie the results in Table 1, focusing on a wider set of outcomes and relying on a conventional set of individual covariates (see the table notes for the list). The table reports logit regression results for the determinants of unincorporated self-employment in workers' primary job, multiple job holding, and unincorporated self-employment in a secondary job (for the sub-sample of multiple job holders). The coefficients are reported as marginal effects on the probability of observing each of the three indicated outcomes (analyzed separately).

The results in Table 2 show that increases in the IPT fraction in a state are associated with significantly higher rates of unincorporated self-employment on primary and secondary jobs, and higher rates of multiple job holding. By contrast, state unemployment rates have no meaningful impact on these outcomes, and the year effects show the downward drift over time that was evident in Figure 1. Despite the challenges of identifying gig work in the CPS, these results suggest that to the extent that self-employment and broader gig work are correlated at the

state level, rising gig work in other data sources may partly be a response to the growing number of jobs that offer only part-time schedules.

B. SHED Informal Employment and IPT

The relationship between IPT and gig work can be explored in more detail and with more precision using the SHED data. Abraham and Houseman (2019) find that individuals who self-report as IPT in the SHED are more likely than others individuals to report informal work. I broaden this line of inquiry by examining whether the general prevalence of IPT jobs (measured at the state level), which represents employer-imposed hours constraints, pushes individuals into the informal sector as an alternative income source; this follows the market-based approach of Valletta et al. (2020) in regard to the rising incidence of IPT.

Table 3 presents SHED regression results that parallel the CPS results in Table 1, using the alternative measures of informal work displayed in Figure 3 and the SHED measure of IPT. The analysis is conducted at the state level, with individual values collapsed to form state averages (weighted by the individual weights provided in the SHED data).

Table 3 shows a significant relationship between IPT and informal work, but only for the broad measures of informal and gig work—including activities not arranged online—and only as a primary source of income. These results are once again robust to the inclusion of the unemployment rate as a control variable. Notably, this result does not extend to online gig work or ridesharing: those categories do not respond to IPT.

Overall, the regression results for the SHED data on informal and gig work show an interesting alignment with the CPS data on self-employment: self-employment and informal jobs as a primary source of income are more prevalent in states that have a high incidence of IPT,

suggesting that some individuals are “pushed” out of wage and salary employment and into self or informal employment, perhaps because they cannot find a primary full-time job.

IV. Discussion and Tentative Conclusions

Despite the challenges tracking informal work in readily available data sources, the preliminary analyses presented in this paper using CPS and SHED point to consistent relationships between involuntary part-time work and employment outside of conventional employer-employee relationships. Informal or gig work may enhance hours flexibility for workers engaging in it, but it may also be a response to limited hours available in conventional wage-and-salary positions. I find evidence for the latter interpretation, with individuals living in states with high rates of involuntary part-time employment “pushed” into gig work as a primary source of income. This “push” finding is broadly consistent with the results of Jackson (2019), who finds an increase in gig work following unemployment spells. However, my “push” finding is restricted to broad informal and gig work and does not apply to narrower online-only categories, suggesting that online work primarily reflects desired hours flexibility rather than hours constraints. Subsequent versions of my paper will explore this relationship in more detail, with stronger regression designs and more direct measurement of the “push” and “pull” dimensions of the relationship between part-time and gig work.

My findings also reveal a specific overlap or consistency between self-employment measured in the CPS and the informal employment as a primary source of income in the SHED data. This overlap is implied by the consistent regression relationship between IPT and self-employment in the CPS and IPT and informal work as a primary source of income in the SHED data. Given the wording of the CPS self-employment question, which focuses on primary jobs,

this overlap is not surprising, but it helps establish the promise and limitations of the CPS self-employment data in investigations of the growth of informal work.

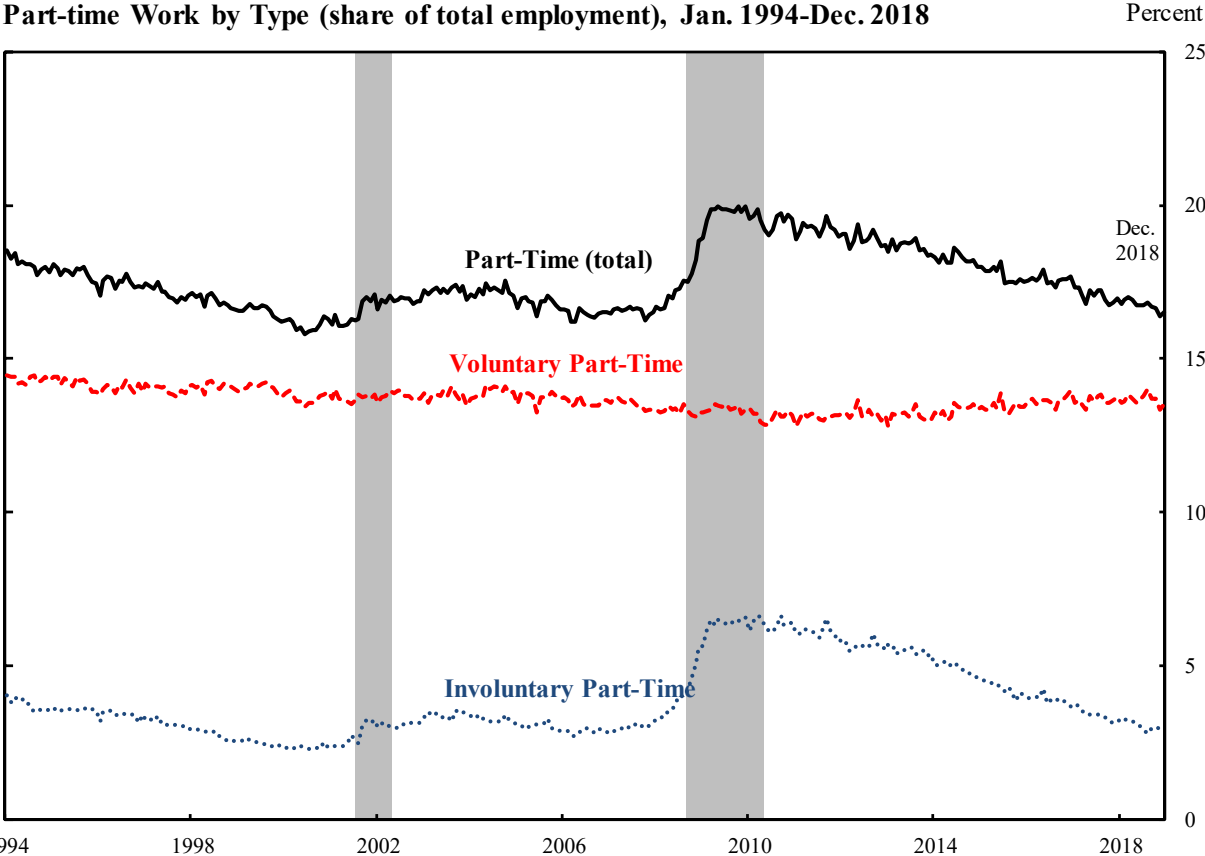
Given the inclusion of the Great Recession of 2007-09 in my CPS sample frame, my finding that some individuals are pushed into informal work may partly reflect recession effects that caused more rationing of full-time jobs. This interpretation is consistent with recent findings that informal or gig work may have ebbed somewhat as the labor market recovery gained steam in the wake of the recession (Katz and Krueger 2019b). However, my results show that the basic relationship between elevated IPT and gig work at the state level persists and may have even strengthened at the end of my sample period, indicating that longer-term structural influences likely have contributed to the “push” component of gig work.

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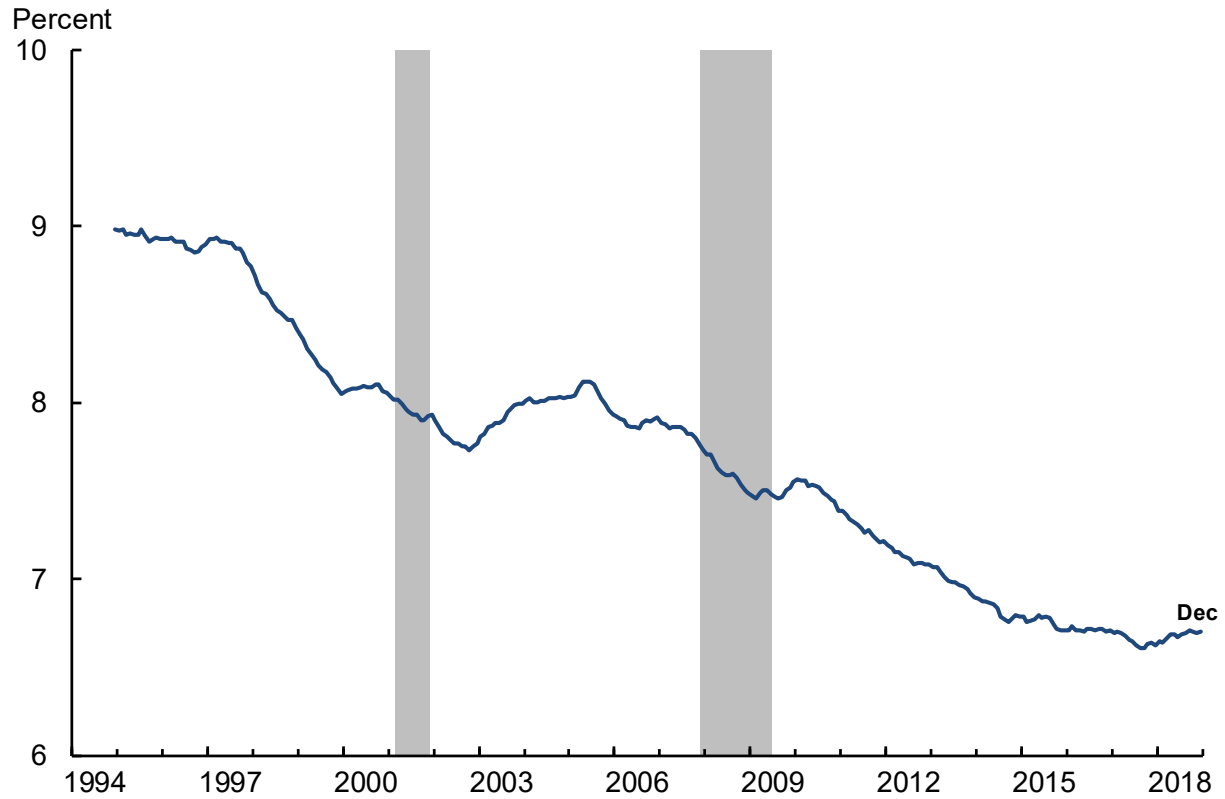
Figure 1: Part-Time Work in the CPS



Source: BLS (seasonally adjusted data). Part-time rates expressed as a share of total civilian employment. Gray areas are recessions.

Figure 2: Self-employment in the CPS

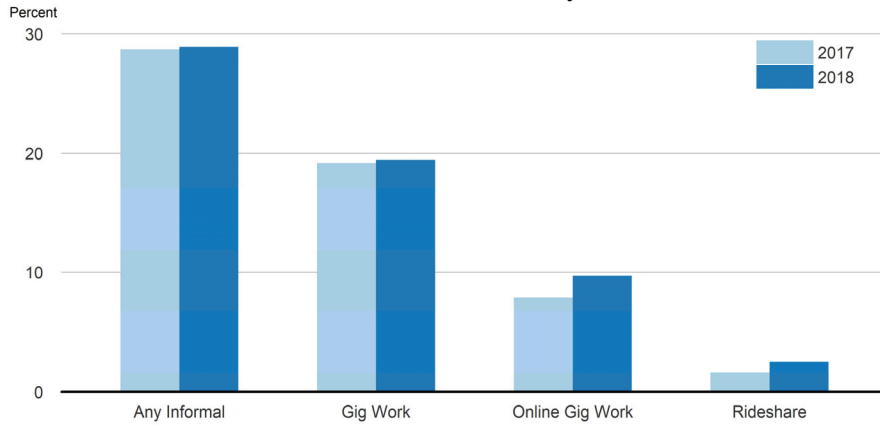
Self-employed (primary or secondary job)



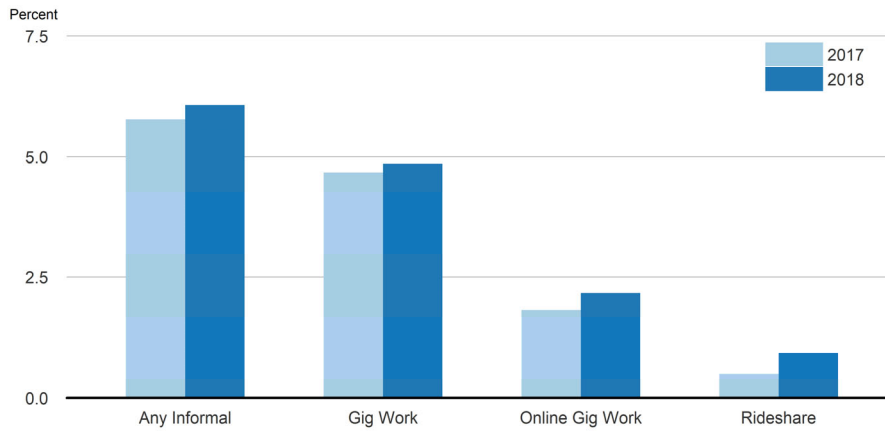
Note: Author's calculations from CPS microdata, share of nonfarm civilian employment age 16+ (weighted). Line shows the fraction of individuals who are self-employed (unincorporated) in their primary or secondary job (non-farm). Gray areas denote recession.

Figure 3: Incidence of Informal/Gig Activity, SHED Data

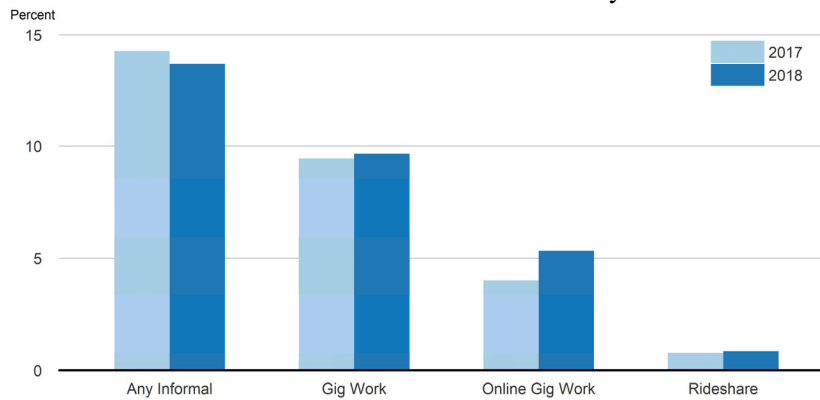
Panel A: Informal for Any Job



Panel B: Informal Work as Main Job



Panel C: Informal Work as Secondary Job



Note: Definitions are as follows.

Any Informal: Temp Contract Work and Sales Activity (Acquired On and Offline)

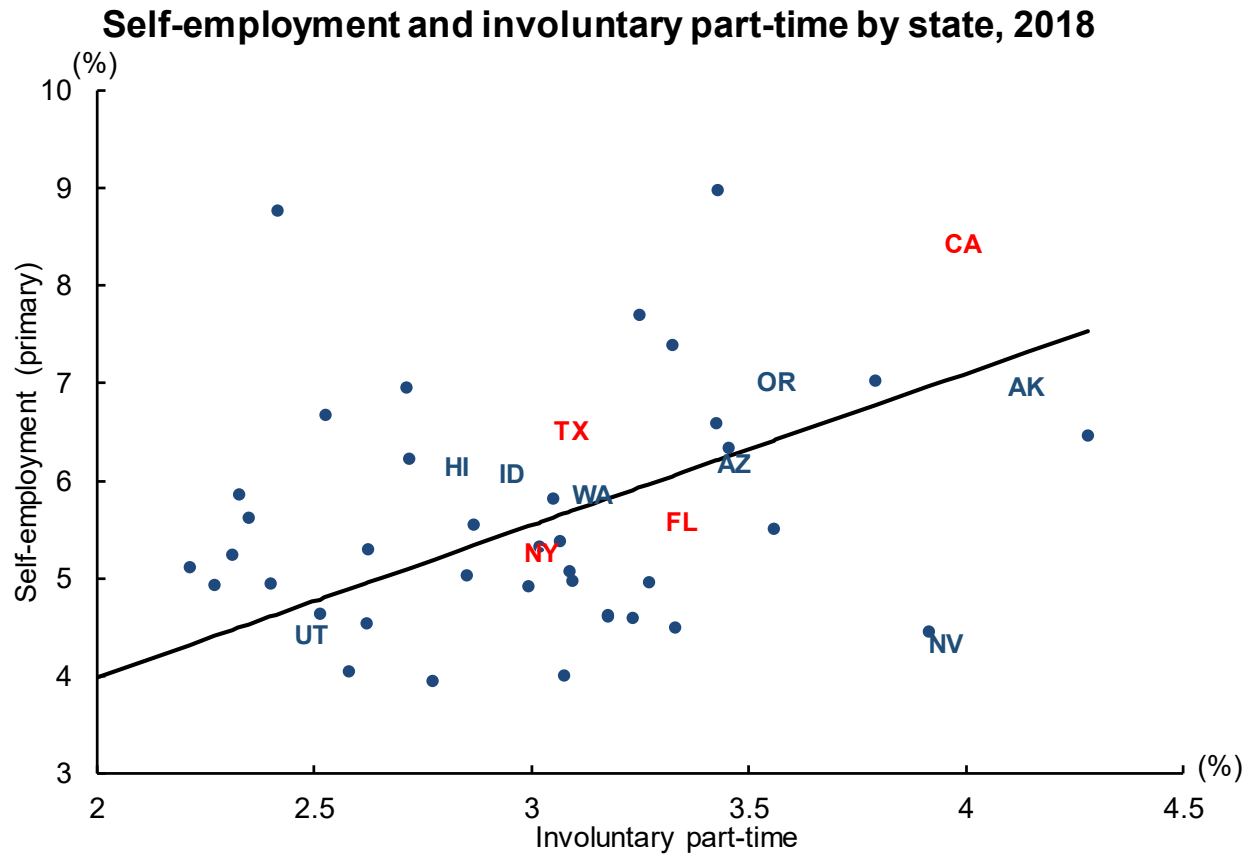
Gig Work: Any Informal excluding Sales Activity

Online Gig Work: Gig Work excluding Personal Services (Child Care, Dog Walking, etc.)

Rideshare: Lyft and Uber Work

Source: Survey of Household Economics and Decisionmaking. Sample is adults age 18 and older.

Figure 4: State-level Relationship, Self-employment and IPT



Note: Author's calculations from CPS microdata, shares of nonfarm civilian employment age 16+ (weighted). Selected large states highlighted in red, selected other western states labeled. Solid line depicts fitted relationship (weighted by state shares of national employment).

Table 1: Regressions of Self-Employment on IPT (CPS data, collapsed by state)

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<u>Individual Years</u>				<u>Pooled, 2003-2018</u>			
	<u>2003</u>		<u>2018</u>		<u>Random Effects</u>		<u>Fixed Effects</u>	
IPT	1.078*** (0.348)	1.300*** (0.323)	1.555** (0.638)	2.097*** (0.700)	0.209*** (0.041)	0.272*** (0.048)	0.122** (0.056)	0.163** (0.070)
Unemployment Rate		-0.259 (0.287)		-0.790** (0.333)		-0.073* (0.039)		-0.046 (0.043)
<u>Year effects (selected; 2003=0)</u>								
2015					-0.014*** (0.001)	-0.015*** (0.001)	-0.011*** (0.001)	-0.012*** (0.002)
2016					-0.013*** (0.001)	-0.014*** (0.001)	-0.011*** (0.001)	-0.012*** (0.001)
2017					-0.013*** (0.001)	-0.014*** (0.001)	-0.012*** (0.001)	-0.012*** (0.001)
2018					-0.012*** (0.001)	-0.013*** (0.001)	-0.011*** (0.001)	-0.011*** (0.001)
Adjusted R ²	0.262	0.262	0.327	0.394	0.166	0.207	0.151	0.181
N	51	51	51	51	816	816	816	816

*** p<0.01, ** p<0.05, * p<0.10

Note: Author's calculations from CPS microdata, collapsed by state (weighted). Robust standard errors in parentheses (clustered by state in pooled regressions). Regressions weighted by state shares of national civilian nonfarm employment.

**Table 2: Self-Employment and Multiple Job Holding,
Logit Regression Results, 2003-18**
(dependent variables as indicated; average marginal effects reported)

Dependent variable:	(1) Self-employed (primary job)	(2) Multiple job holder	(3) Self-employed on second job ¹
Explanatory Variables			
(by category)			
State variables			
IPT rate	0.187*** (0.046)	0.172*** (0.040)	0.048** (0.020)
Unemployment Rate (fraction)	-0.071 (0.083)	0.035 (0.066)	0.013 (0.040)
(Unemp Rate Squared)*10	0.002 (0.051)	-0.056 (0.039)	-0.020 (0.022)
Year effects (selected; 2003=0)			
2015	-0.015*** (0.001)	-0.009*** (0.001)	-0.005*** (0.001)
2016	-0.014*** (0.001)	-0.007*** (0.001)	-0.004*** (0.000)
2017	-0.015*** (0.001)	-0.007*** (0.001)	-0.004*** (0.001)
2018	-0.014*** (0.001)	-0.006*** (0.001)	-0.004*** (0.001)
Individual Controls²	Yes	Yes	Yes
State Dummies	Yes	Yes	Yes
Pseudo R ²	0.049	0.0239	0.0441
N	10714630	10714630	2695496

***p<0.01, **p<0.05, *p<0.10

¹ Available for multiple job holders, in CPS outgoing rotation groups (quarter sample) only.

² Individual controls include age (7 categories)*gender*marital status interactions, education level (5), race/ethnicity (5), veteran status.

Notes: Standard errors in parentheses (clustered by state). Sample includes nonagricultural wage and salary or self-employed (unincorporated) workers age 16 and over who worked positive hours in the survey week and whose hours data were not allocated.

**Table 3: Regressions of Informal Work on IPT (SHED data, collapsed by state)
(pooled, 2017-2018; N=102)**

Explanatory Variables	Dependent variable: Any Informal				Dependent variable: Gig			
	All	Main Source of Income		All	Main Source of Income			
IPT	0.316 (0.214)	0.297 (0.209)	0.390*** (0.127)	0.372*** (0.130)	0.333* (0.195)	0.306 (0.194)	0.262** (0.119)	0.259** (0.121)
Unemployment Rate		0.370 (0.844)		0.360 (0.337)		0.525 (0.732)		0.067 (0.343)
2018	0.001 (0.006)	0.003 (0.008)	0.001 (0.004)	0.003 (0.005)	0.001 (0.006)	0.004 (0.007)	0.001 (0.004)	0.001 (0.004)
Adjusted R ²	-0.004	-0.012	0.092	0.093	0.005	0.002	0.037	0.027

Explanatory Variables	Dependent variable: Gig Online				Dependent variable: Rideshare			
	All	Main Source of Income		All	Main Source of Income			
IPT	0.025 (0.182)	0.001 (0.176)	0.011 (0.077)	-0.001 (0.078)	-0.014 (0.081)	-0.030 (0.080)	-0.022 (0.048)	-0.020 (0.052)
Unemployment Rate		0.476 (0.553)		0.228 (0.220)		0.319 (0.238)		-0.044 (0.138)
2018	0.018*** (0.004)	0.020*** (0.005)	0.003 (0.002)	0.005 (0.003)	0.009*** (0.002)	0.011*** (0.003)	0.004*** (0.001)	0.004*** (0.001)
Adjusted R ²	0.094	0.095	0.002	0.004	0.096	0.107	0.072	0.064

*** p<0.01, ** p<0.05, * p<0.10

Note: Author's calculations from SHED microdata, collapsed by state (weighted). Robust standard errors in parentheses (clustered by state). Regressions weighted by state shares of national employment count in SHED survey.