

Is employment status compatible with the on-demand platform economy? Evidence from a natural experiment

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Abstract

This paper uses data from a natural experiment to address one of the most contentious issues in the on-demand platform economy—whether gig work is compatible with regular employment. We analyze a US-based package delivery platform that shifted a subset of its workers from independent contractors to employees, exploiting variation over time and across locations. We find three distinct patterns of working behavior on the platform which do not vary by type of employment classification—full-time, stable part-time, and intermittent part-time. We then examine the impact of employment status on workers’ scheduling flexibility, working hours, and the firm’s operational efficiency. We find that after the transition to employment, scheduling flexibility was retained and part-time drivers’ total working hours increased. We also find that the switch to employee status increased the firm’s operational efficiency. We conclude that employment status can be a feasible option for on-demand platform companies.

Keywords: Digital Platforms, Flexibility, Employment relationship, Technological Change, Labor Markets

JEL classification: P16 Political Economy, L21 Business Objectives of the Firm, J2 Demand and Supply of Labor

1. Introduction

Employment status has been at the crux of debates about the viability of the platform economy, yet such debates have been largely speculative. This paper presents a natural experiment to test common assumptions about the impact of employment status on gig workers and a platform firm.

Approaching platforms as malleable and chameleon-like, and capable of adapting to variable contexts (Vallas and Schor, 2020) our study focuses on a US-based package delivery platform, which we call BringYourPackage (BYP), that engaged workers under both standard employment and independent contractor regimes. Using operational data and interviews with key informants and drivers from BYP, we ask whether the shift to employment status reduced platform workers' flexibility and scheduling autonomy and whether it contributed to the firms' predictability and control over its labor supply. Our approach helps to fill an important void in the literature: there are few data-driven assessments of the merits of the arguments for or against treating workers as employees. Platforms have been unwilling to share their data with regulators or independent researchers (Kulwin, 2016), and examples of platforms that operate with standard employment relationships are rare. Cases that lend themselves to comparative analysis are even rarer (an exception from the worker side is Drakhoupil and Piasna 2021).

Employment status has captured significant attention within regulatory debates because workers' legal classification has implications for who bears the costs associated with platform work. The question has been litigated extensively. Judges have considered arguments from platform workers and their advocates who contend that because platforms exercise significant control over their workers, treating workers as independent contractors amounts to employment misclassification and denies workers protections and rights associated with employment. Platforms, meanwhile, have defended their classification of workers as independent contractors, in the legislative, judicial, and public arenas where these debates have played out, even as they have settled many of the legal challenges out of court (for examples, see Rogers, 2016, footnote 4).

Platforms are multi-faceted, relational power structures that are characterized by mutuality, autonomy, and domination (Schüßler et al., 2021). Amidst these contested power structures, debates about autonomy and domination in particular, are highly relevant to the question of platform

workers' employment status. On one side, platforms maintain that formal employment cannot be reconciled with firms' needs and drivers' desires, and that workers are, and should be, treated as self-employed independent contractors (for example: Khosrowshahi, 2020). Employment, they argue, will increase firm costs and curtail flexibility for drivers, and is incompatible with the "business model" of the platform firm. If they are forced to pay the extra costs associated with employment, firms like Uber have stated that they will either cease to operate or pass these costs on to customers, thereby reducing market size and available work. Additionally, they suggest that they will "consolidate working hours across fewer workers in order to manage costs that are fixed per employee" and likely introduce a 40-hour workweek for drivers (Stein, 2020). This would reduce workers' autonomy by limiting their ability to choose when and for how long to work – a cause for concern, as flexibility is key to attracting a platform workforce (Piasna and Drahokoupil, 2021; ILO, 2021; Berg et al., 2018). Such constraints on working time would make it difficult for workers to accommodate other jobs, education, disabilities, or family commitments (Berg et al., 2018), causing many to miss out on the part-time and flexible earning opportunities that platforms provide. Platform executives have cited this high level of flexibility as a mechanism for providing workers with workplace protections because workers can come and go as they please – and thus, ostensibly reject undesirable work (Johnston and Land-Kazlauskas, 2018).

Yet gig employers have failed to follow established labor laws, thereby eroding wages and working conditions. This has made it clear that workers, in turn, need the protections offered by a standard employment relationship. Absent any guarantees about work quantity or compensation rates, workers' wages can fluctuate significantly. This places workers who are dependent on their platform income in precarious situations (Schor et al., 2020). Additionally, platform workers' working time schedules may not be as flexible as they are claimed to be (Dubal, 2017). Frequently workers' decisions about scheduling are driven by work availability, which occurs at times of high demand, and not by workers' individual desires or preferences; this is particularly true for full-time

workers, or those who are economically dependent on their platform earnings (Dunn, 2020). Also, as independent contractors, platform workers are poorly integrated into social protection schemes. For example, within the United States, full-time platform workers do not receive employer-provided healthcare, a benefit required by the Affordable Care Act for full-time employees. Additionally, few are covered by unemployment protections (Covid-19 Pandemic Unemployment Assistance is a notable exception), workers' compensation, or other social welfare schemes, meaning that when the availability of work declines, their vulnerability is heightened. Where workers do contribute to social protection schemes, such as social security, their contribution rates are double that of employees who share costs equally with their employers. These features can leave workers under heightened levels of platform control and signal that they are suffering from domination, a condition that employment status, in providing workers with rights and protections, is intended to mitigate (Rogers, 2016).

Though vibrant, these debates have not sufficiently recognized two important features of the platform economy: the malleability of platform firms and firms' needs for flexibility. In the first instance, platform companies have already proven themselves capable of accommodating variable regulatory features, including social dialogue mechanisms, data transparency and transport regulations (Soderqvist, 2017; Schor et al., 2020; Pernika and Johnston, 2021; Weber et al., 2021). Platforms have been shown to adapt to local regulatory conditions covering a variety of employment laws (Thelen, 2018; Soderqvist, 2017). Yet most firms remain opposed to transitioning workers to employment despite the fact that employment, as a legal classification, has also proven to be adaptable, dynamic, and capable of accommodating a range of working time behaviors (Bosch, 2004; Fudge, 2017). Second, debates have largely focused on the needs and experiences of workers. In doing so, they have mostly ignored the novel aspects of the platform business model and the fact that platform firms, particularly those offering on-demand services, also require flexibility in order to accommodate uncertain demand. Platforms may thus be vested in retaining an

organizational system that accommodates flexible labor deployment irrespective of employment status. These features lead us to suspect that despite platforms' negative public statements they may be both capable of and interested in retaining considerable dimensions of autonomy and flexibility to meet market demand.

In 2019, a California law (AB5) classified nearly all gig workers into employees. More than six months in advance of the law becoming effective, BYP proactively transitioned their California workers into employees, thereby offering a natural experiment for researchers. BYP workers elsewhere in the country remained independent contractors. Drawing on operational and interview data from the firm, we analyze the impacts of reclassifying California workers into employees.

While many scholars have distinguished between full-time and casual platform workers, our paper contributes to a more fine-grained characterization of platform worker engagement by identifying three groups of drivers with distinct working time behaviors: full-time workers, stable part-time drivers, and intermittent part-time drivers (see also: Robinson, 2017 and Dunn, 2020 for similarly disaggregated workforces). Then we analyze how these three groups were affected with respect to three outcome variables: scheduling flexibility, working time, and the firm's operational efficiency. First, we anticipate that the firm will retain some degree of scheduling flexibility to accommodate unpredictable levels of demand for services. Second, because employment status creates new fixed, per person costs, we anticipate that the firm will prefer that their employees work longer hours than in the independent contractor condition. We therefore anticipate that average hours per worker will rise. Finally, we predict that a shift to employment status will give the firm more predictability and control of labor. This will allow it to become more efficient by reducing the labor buffer that it requires to cover its on-demand service requests. In the case of BYP we find that working time did increase, but only for part-time workers. The firm retained a diverse workforce with variable schedules, and maintained the same scheduling system following the shift to employment. Thus the

firm remained flexible in its labor deployment strategy. Finally, we find that following the shift to employment, the firm became more efficient in its use of labor resources by better matching its scheduled workforce with its labor needs. We did not have access to firm cost or revenue data, so are only able to draw very general conclusions about the profit implications of this transition. While the shift did increase costs, they were likely partially offset by higher efficiency and longer hours of work. The impact on profits is unknown, however in the platform sector profitability is not the only indicator of firm success – even the largest on-demand platforms have not yet established consistent profits (Horan, 2017). In sum, our findings suggest that employment status is not necessarily incompatible with a successful platform firm, including one whose on-demand business requires high levels of flexibility in its operations.

The paper is structured as followed. We begin by outlining arguments about three key themes in scholarship on the gig economy: scheduling flexibility, working time, and operational efficiency. Our literature review is followed by a section describing the company, and description of our data and methods. We then present our hypotheses and report our findings.

2. Flexibility, working time, efficiency, and employment status in the platform economy

The debate about the impact of employment status in platform economy is situated within a broader theoretical discussion of what platforms are and what they do. Early reviews of the platform economy were primarily concerned with the activities that took place on platforms, and attempted to typify them based on whether they facilitated the transfer of goods or services (Farrell and Greig, 2017). Scholars interested in work and employment focused predominately on the proliferation of labor platforms that intermediated the exchange of money for services, and presented various typologies that distinguished between work that is conducted online or in person, or on the skill or type of work that hosted by the platform (De Stefano, 2016; Eurofound, 2018). More recently,

scholars have addressed the function and characterization of platforms. Contributions have focused on platforms' varied business models (Srnicsek, 2017), their organizational features and capacities (Gandini, 2019), their outsized roles in markets and economies (Rahman and Thelen, 2019; Zuboff, 2019; Kenney and Zysman, 2020), and the difficulty of characterizing or classifying them due to their malleable, dynamic, chimeric and heterogeneous features (Vallas and Schor, 2020; Schüßler et al., 2021). Schüßler et al. (2021) suggest that this heterogeneity can be accommodated by conceptualizing platforms as a multi-faceted, relational power structure. This structure, they contend, is characterized by three factors: mutuality – which indicates sharing and reciprocity and echoes of the early days of the platform economy; autonomy – which references the freedom and independence that attract many to this types of work; and domination – the control wielded by platform managers. Employment status has direct implications for how autonomy, and domination, in particular, come into being and how power is distributed between workers and platform firms. Among other features, the employment relationship confers greater power to the firm to control the parameters associated with flexibility and working time.

Flexibility is a central feature for workers and firms in the platform economy (Wood et al., 2018; Rani and Furrer, 2020; Anwar and Graham, 2020) because both workers and firms operate in an “on-demand” world. For workers, we broadly understand labor flexibility to include choice about (or control over) when and how much they work. Given the heterogeneity of workers' working time preferences (Dunn, 2020), flexible platforms can be characterized by high levels of working time variation. They differ from conventional firms in their willingness to allow very low and sporadic levels of working time. Flexible platforms are thus able to accommodate a range of workers, from those who work full-time to those who work on a very limited basis. These factors affect workforce availability for the firm, and job quality for workers who have readily indicated that flexibility is an important feature for them (Pesole et al., 2018, Kilhoffer et al., 2019). The benefits that flexibility

confers to the firm and to workers, we hypothesize, is why platforms will retain flexible scheduling practices following the shift to employment.

From the platform side, firms require flexibility to ensure the success of their operations because most of these companies are offering on-demand services. Indeed, the “on-demand” nature of their service gives rise to high levels of uncertainty in demand. Variations in customer demand are particularly acute on platforms offering just-in-time services such as passenger transport and same day package delivery, as consumer requests are often made with short notice and with an expectation that they are completed within a limited time period (Arslan et al., 2019). An inability to accommodate customer requests on time can lead to poor performance and cause customers to lose faith in the platform’s capacity to provide the desired service. For business to business platforms (B2B), or business to consumer (B2C) platforms like BVP, the cost of failure can be particularly high because many accounts are large, and their loss represents a significant fraction of the company’s revenue.

Flexible labor strategies have helped platform firms deal with the uncertainties of demand. Two approaches to labor flexibility have become important in shaping work relations within the platform economy. The first, numerical flexibility¹, is a strategy that allows firms to adjust the size of their workforce to meet demand (Kalleberg, 2001; Preenen et al., 2017). Within traditional firms, numerical flexibility is frequently operationalized through the use of temporary and contingent workers. A wide body of literature has documented how this strategy contributes to poor and precarious working conditions including an extensification of work, unpredictable scheduling, and a difficulty balancing work and life commitments are rife in jobs characterized by temporary or zero-hour contracts to be prevalent (Wajcman, 2015; Wood, 2018; Smith and McBride, 2021). These types of labor arrangements are seen as precursors of the platform economy (Huws et al., 2018; Wood, 2020). Platforms—particularly those offering on-demand services such as transport and

delivery—also require high levels of temporal flexibility, a second strategy which allow them to engage workers at particular times to meet time-sensitive, and frequently variable, customer demands (Wood, 2020). Temporal strategies have cost-saving potential as firms can engage workers on an as-needed basis and compensate them only for their time on the job (Reilly, 1998; Wood, 2020).

Many platforms have operationalized numerical and temporal flexibility by promoting workers' self-management. By offering low barriers to entry, firms let workers manage themselves, for example, by logging off when there is insufficient work (Berg et al., 2018). However, if worker supply is not sufficient to meet customer demand, platforms may draw workers into the workplace using incentives, such as bonuses and surge pricing, to increase labor supply as needed. This strategy may be used to achieve numeric flexibility as the platform seeks to onboard new workers and expand the overall size of the workforce—or to achieve temporal flexibility, by encouraging workers who are already signed up on the platform to log on during times of high demand. Other platforms achieve temporal flexibility through the use of advanced scheduling. With operations akin to zero-hour contracts in standard employment relationships (see Adams et al., 2018), platforms may encourage workers to sign up for shifts, but cancel them if demand is lower than previously anticipated. These practices have, at times, been accompanied by platform discourses that conflate flexibility with self-employment, although such claims have no legal underpinning (De Stefano et al., 2021).

Although platforms have methods to try to adjust their labor supply, relying on a flexible workforce to meet uncertain customer demands also results in uncertainty vis-à-vis the labor supply.

Uncertainty in labor supply may be attributed to variations in worker performance. Another source of uncertainty is related to workers' diverse motivations for engaging in platform work (Rosenblat and Hwang, 2016; Gleim et al., 2019), which may cause them to respond differently to firms'

attempts to realize numeric or temporal flexibility. The reservation wage for platform workers to accept a job can vary according to workers' labor market positions (Chen et al., 2019). For example, workers who are highly dependent on platform income may be willing to accept a different amount than part-time or casual workers who have another main occupation and income source (Schor, 2017; Schor et al., 2020). Workers motivated by non-pecuniary benefits may be willing to work for less because they see platform work primarily as an avenue to help others or as a social outlet, rather than an income stream (Milkman et al., 2020; Cansoy et al., 2021). To reduce failures, platforms may also use labor supply buffers (discussed below alongside the concept of efficiency), or more punitive measures, such as requiring or attempting to coerce workers who are logged onto the platform to accept a predetermined proportion of jobs that are offered to them (Scheiber, 2017).

Despite the risks that flexible work arrangements can present to workers, there is considerable evidence that many workers are attracted to platform work because it yields flexibility (Pesole et al., 2018; Lehdonvirta, 2018; Piasna and Drahokoupil, 2019; Drahokoupil and Piasna, 2019; Kilhoffer et al., 2019; Piasna and Drahokoupil, 2021)². This is true for both full- and part-time workers. Platforms that feature low barriers to entry, like those offering delivery and passenger transport services, may be particularly well-suited to part time workers who 'dabble' in the gig economy—many of whom demand high levels of flexibility (Dunn, 2020). Many workers engage in platform work on a part-time basis and schedule their platform availability around their other employment, such as students who must work around their classes (Piasna and Drahokoupil, 2021).

The emergence of on-demand platform work has implications not only for scheduling flexibility but also for how many hours people work. In the standard economic model, workers choose their hours based on the wages and benefits offered by firms. But considerable empirical evidence suggests that the “market in hours” assumed by this perspective is frequently absent (Altonji and Paxson, 1988). Hours and wages are “tied” offers, and once workers accept jobs they often lose the ability to

choose their hours. Schor (1992) argued that employers have a number of strong incentives to raise hours above what workers might choose on their own. One reason is that many benefits and costs of employment are either determined on a per person basis or are capped after a certain number of hours. A second reason is that, *ceteris paribus*, longer hours raise the cost of job loss, or the value of the job to the worker in comparison to their next best alternative (Bowles 1985; Schor 1992). Higher cost of job loss is associated with higher work intensity (Schor 1988), more disciplined workers and a lower likelihood of resistance (Bowles and Schor 1987). From this perspective, the platform economy represents a significant divergence from conventional arrangements due to workers' ability to choose their hours of work and the schedule they will follow.

Schor et al (2020) argued that platform firms “retreat from controlling” hours and schedules, leaving the question of working time to the discretion of workers. This accords with the legal aspects of independent contractor status, and also with the particular appeal of this kind of work. Indeed, this ability to choose hours is one of the most widely-reported attractions of the platform economy. For example, average hours of platform work tend to be rather low on average, in comparison to the labor force as a whole (for data from ride-hail, see Parrott and Reich 2020). Therefore, a key question about the shift to employee status is whether there will be an effect on average working hours. If the models of tied wage and hours offers and cost of job loss are right, then working hours are likely to rise with the shift to employment as firms attempt to reduce the number of workers entitled to benefits, and to create more compliant earners working at a faster pace. This is one of the hypotheses we test below.

In addition to flexibility and working hours, this paper asks how employment status affects efficiency, or the optimal use of resources to satisfy demand. In the case of BYP, improved efficiency is achieved through decreasing the uncertainty of the system on the supply side. Systems with high levels of demand uncertainty require higher levels of supply buffer (or inventory) to

provide a given service level. Therefore reducing supply uncertainty improves efficiency and minimizes costs associated with stochastic service systems (Lee et al., 1993). The operations and systems engineering literature suggests that firms will use strategic resource buffers to ensure that they are able to meet unanticipated fluctuations in demand; in systems with higher uncertainty these buffers will be larger and more costly to maintain. In the case of BYP we are interested in the platform's ability to engage a numerically appropriate labor supply to match customer demand for deliveries.

On platforms, one way that buffers are observed is through a surplus availability of labor. In the early years of ride-hail, analysts argued that on-demand transport platforms were far more efficient than traditional taxi dispatch because the system could match supply and demand nearly instantaneously, eliminating "wild goose chases" of drivers searching to find passengers (Castillo et al., 2018). However, these systems also allow drivers to log on at any time, thereby creating the potential for an excess supply. Recent studies show this has resulted in ride-hail drivers spending a significant percentage of their time waiting for passengers which has reduced hourly earnings (Parrott and Reich 2020). On platforms where wages are comprised of a fixed hourly amount plus a piece rate payment, labor surpluses can result in reduced pay due to lower activity levels.

Waiting time that is unpaid or compensated at a reduced rate is just one of many economic risks borne by independent contractor drivers. Temporal strategies that pay workers only for the time during which they are completing a job means that, for example, if a worker falls ill, no cost is borne by the firm. In systems that require a large labor buffer and have unstable demand and where workers are self-employed, platforms can offload unpaid waiting time and onto the worker, resulting in poor efficiency from the worker's point of view. Additional risks include the absence of minimum wage guarantees (see Forde et al., 2017; Joyce et al., 2019), employer-provided health

insurance (in the case of full-time employees), protected leave policies, collective rights, and employer contributions to social protection schemes.

3. The company

BringYourPackage, the platform at the center of this case study, was founded in California in 2012 and operated until May of 2020, when it was acquired. The company facilitated last-mile deliveries between retailers and consumers. Consumers, shopping on partnering retailers' websites, could, at the time of checkout select the platform as the method of delivery. Information about the delivery, including the pick-up and drop-off locations, as well as any limitations related to delivery time, were transferred directly to the platform company (Duman, forthcoming). For most of its existence, BYP relied on a fleet of independently contracted drivers to complete deliveries.

The company's dependence on independent contractors, however, changed in light of California's Law AB5, which turned gig workers into employees. When AB5 was being legislated, though before it passed and came into force, BYP voluntarily shifted its California workforce from an independent contractors to employees. The company retained some of its California workers, but not all. A large number of drivers who were registered with BYP were deactivated in July 2020 when the shift happened. Drivers elsewhere in the United States remained independent contractors

BYP relied on advance scheduling for work distribution, a practice that continued after the transition to employment in California. Shift sign-ups took place on a pre-determined day of the week and shifts were made available on a first-come first-served basis. Drivers who scheduled their shifts as soon as they were made available could choose from a wide selection; conversely, those who attempted to sign up for shifts at a later time faced reduced availability of work hours or work days, and were sometimes unable to secure shifts. Workers were able to sign up for one shift per

day, and shifts varied in length. A typical delivery route combined multiple package deliveries. Deliveries were performed by one driver only and no packages transferred between drivers.

The company made shifts available to workers according to the company's anticipated demand for deliveries. Under the independent contractor model, in instances where there were too many workers who had been scheduled for that day's number of packages, workers were compensated for half the time they had been scheduled for and were sent home early, providing them with a minimum payment guarantee. Although we did not specifically ask about payment structure on the platform, during our interviews, many workers freely volunteered that they enjoyed the guaranteed earnings that the company provided them. Drivers who wished to sign up for additional hours when none were available could be added to a waitlist. In instances where consumer demand exceeded what was forecasted or unforeseen events resulted in a shortfall of drivers, the company would contact drivers from the waitlist to increase its delivery capacity (Duman, forthcoming).

Additionally, drivers' shifts could also be extended once they were on the job if work was available and drivers wished to prolong their working time; in these cases, the number of scheduled hours in the system would increase to reflect the full amount of scheduled time. Drivers' "worked hours," or the actual amount of time that a driver worked for the platform, were measured separately from their scheduled hours. Although employment status changed for California-based drivers in 2020, BYP's scheduling system did not change. Work availability was limited to times when stores were open (given the last-mile nature of the platform's service), and shift length was determined according to company policy. Finally, in all cities where BYP operated, the platform compensated delivery workers using an hourly rate plus payment for mileage.

Our 2020 data overlaps with the start of the pandemic and Covid 2020 stay-at-home orders. The pandemic resulted in an unprecedented growth in e-commerce and a rapid proliferation of last-mile

delivery services. There was an increase in the number of packages delivered by BYP during the early months of the pandemic.

4. Data and methods

This paper is based on operational data and interviews with key informants and drivers from BYP, a delivery platform that was founded in California. Our operational data, provided by the platform, provides us with information on the delivery routes driven by platform workers in seven U.S. cities. These include three California cities: San Jose, Santa Monica, and San Francisco, and four cities located elsewhere in the United States: Boston, Chicago, Atlanta, and Houston. The data range is from January to April for the years 2018, 2019 and 2020. Organized by delivery route, the dataset includes the city and date of each route, the unique identification number associated with the driver who performed the work, the number of worked hours per delivery shift, the scheduled hours for each delivery shift, the number of packages delivered, and the number of paid hours a driver completed, as well as each drivers' platform tenure. For proprietary reasons, the company did not provide us with data related to delivery costs or workers' compensation. We are, however, able to draw some general conclusions about costs—particularly those associated with paid and unpaid time—from the route data provided and interviews that we conducted. We obtained this data through the personal connections to the company. One of the authors of this paper had previously helped develop routing algorithms for the firm.

These data offer two points of comparison for evaluating the impact of the shift from self-employment to employment—across cities and across time. First, we are able to compare California 2020 data, in which drivers were treated as employees with 2020 driver data with drivers in the four non-California cities. Given the impact that the Covid pandemic had on the growth of last-mile delivery operations nationally (Charm et al., 2020; Page and Stephens, 2020), this provides us with

an important baseline comparison by allowing us to better differentiate between changes that were unique to California and those that impacted the entire company due to the vast increase in same-day delivery services due to stay-at-home orders. Second, by comparing California 2020 data with that of previous years, we are able to observe within-California changes that we attribute to the introduction of employment status to the firm. We base our analysis on active drivers on the platform who have completed at least four trips within a four month period; this activity threshold is a variation on thresholds used in previous research (see Hall and Krueger, 2016; Stephany et al., 2020).

In total, our dataset includes 1085 workers on the platform in seven cities. Overall, the workforce averages 2820 hours per week and delivering 4376 packages per week. Over this three year period, individual drivers work, on average, approximately 5.89 hours per week and deliver an average of 9.14 packages (see Figure 1). Our sample includes a higher number of California drivers in 2018 and 2019 than elsewhere in the country. In 2020 the total number of drivers in California is comparable to the number of drivers located in other parts of the country. Among our entire sample, driver tenure, which we measure by the number of routes, or working days, they have completed varies between 4 and 295.

[Insert Figure 1]

In addition to our route data, the paper draws on interviews and communications with key informants who worked for the platform. In total we interviewed five key informants. Most interviews were conducted over the phone, or, when they preferred, via written email exchange. Individuals were selected on the basis that they were knowledgeable about the organization and operations of BYP, and the purpose of these interviews was to obtain contextual, insider knowledge about the company's perspective and experience (Lokot, 2021) as it shifted its California driver

workforce from independent contractor status to an employee model. Three were employed as ‘Dispatch Coordinators’³, the remaining two were employed in mid or upper level management positions. Key informants were identified via snowballing, beginning with a personal contact that we had at the firm.

We also interviewed 20 delivery drivers who worked for the platform. Our interviewees were identified via a Facebook page that was independently administered by drivers who had worked for the platform prior to its being acquired. The page had approximately 150 members nationally. We contacted the page administrators and after being granted access to the page, created a post on the page inviting drivers to participate in a paid semi-structured interview about their experiences of working for the company. In total 25 workers responded to our post and 20 were interviewed. Drivers’ contributions were principally used to shed light on the company’s work dispatching processes and app functionality, and the impact that these features had on the work process. Among the 20 drivers none were engaged as California employees.

5. The workforce

Workers can be characterized by their level of engagement on the platform. Our preliminary review of the data identified three groups of workers: full-time, stable, and intermittent delivery drivers. Full-time drivers are defined as those working at least 130 hours per month. We chose this definition as it is the threshold used by the Affordable Care Act (ACA) and Internal Revenue Service⁴ and employees who meet or exceed this volume of work must be provided with health insurance. Stable workers are part-time workers who work at least one day per month. Finally, intermittent workers are also part-time workers. While they also meet the threshold of working four days in a four month period, their workdays may cluster. For example, they may work only during select months, or even fulfill this threshold during a specific week.

The majority of work in the delivery system was completed by stable workers (see Figure 2). Full-time drivers account for a small percentage of total drivers in the system. We found this pattern to be true for all cities in our sample, though full-time drivers in California completed a larger proportion of total platform work relative to other regions.

[Insert Figure 2]

This trend is consistent with working time distribution on other platforms, which find that most workers engage in platform work on a part-time basis (see, for example, Hall and Krueger, 2016; Bracha and Burke, 2021). While this lends to a large number of workers within the system, researchers have found that full-time workers on platforms such as Uber perform a disproportionate amount of the work; they make up only 7 percent of the workforce but account for 18 percent of the total house driven (Berg and Johnston, 2019). On BYP full-time workers similarly perform a disproportionate amount of the tasks completed. Although full-time drivers on BYP account for only 2.7 percent of the workforce, they deliver 11.1 percent of all of the platform's packages.

Increases in both demand for package delivery and labor supply is clearly visible in our data.

Although these increases are most acute in 2020, there was an overall increase in the amount of work on the platform, as well as the number of drivers between 2018 and 2020.

6. The impact of employment status on flexibility, working time, and efficiency: hypotheses

We developed three hypotheses about how employment status will impact flexibility, working time, and efficiency on BYP. With respect to flexibility, we expect that:

(H1) The shift to employment status will not necessarily result in reduced flexibility for drivers

For working time, we anticipate that:

(H2) Average weekly working hours per person will increase as the platform attempts to consolidate costs associated with employment

As employment risks and costs are redistributed more equally between workers and the firm, we hypothesize that:

(H3) Under employment models, the platform will have a more efficient deployment of labor

Our hypotheses related to flexibility and working time share some common motivations. In particular, we believe that BYP will attempt to consolidate the additional costs associated with hiring workers as employees by encouraging at least some employees to work longer hours, and in turn, will prefer workers employed in a full-time or stable capacity. At the same time, we believe that the firm will retain some intermittent drivers to satisfy uncertain demand.

In California, the site of our natural experiment, some employment related costs are fixed; others are proportional to the amount of income an employee earns until the employee reaches a specific income threshold. For example, employer contributions for unemployment insurance and for the state's employment training tax are assessed on the employee's first \$7,000 of income, after which, no additional contributions are remitted. Contributions to federal taxes, such as Social Security or Medicaid are assessed as a percentage of employee income until the worker reaches \$120,000 (Employment Development Department, 2020). Health insurance, on the other hand, is a requirement for anyone who surpasses the full-time threshold of 130 hours per month. For fixed costs and costs that are tied to an income or hourly threshold, once the company has reached the threshold, each additional hour of time that is worked by an employee incurs no additional non-wage costs. At BYP interviewees reported hourly wages in the range of \$18 per hour, implying a driver would never exceed the Social Security or Medicaid contribution threshold. However, caps for company contributions to state unemployment or training programs could feasibly be met. In these cases, once an employee has earned \$7,000 in a calendar year, each additional hour worked by

that specific worker becomes comparatively cheaper than an hour worked by an individual who has yet to meet this threshold.

The possibility of consolidating employment costs leads us to hypothesize that on average, working time will increase for drivers. We measure drivers' mean weekly worked hours, or the time that a worker spends on the clock, and scheduled hours, the amount of time that a worker is scheduled to work at BYP.

In addition to overall increases in hours, we expect that the distribution of total working time within the system will shift, and that fewer hours will be worked by intermittent workers, and more by stable and full-timers. This could reduce the opportunities for individuals to work in a very part-time, low-hour capacity – a characteristic opportunity that is commonly attributed to the flexible working arrangements that labor platforms provide. We test this hypothesis by comparing the percentage of total time worked by each of the three driver groups.

As firms move towards a more full-time workforce, we also anticipate that the variance in working time will decrease. Working time variance is an indicator of flexibility, as it provides a measurement of the distribution of working time. High variance indicates that the platform is accommodating a wide distribution of high-hour workers and low-hour workers; low variance, meanwhile, suggests that working time among workers is more concentrated around the average and thus, that the system is incorporating drivers with similar driving behaviors. We anticipate that there will be less variation in working hours among the workforce following the shift to employment status because the firm will prefer full-time and stable drivers and will reduce its dependence on low-hour workers – particularly those captured in our intermittent driver category. Low-hour drivers are likely to contribute to relatively higher levels of variance in working time among independent contractors.

Yet uncertainty remains a central tenet and challenge for on-demand business models. For this reason, we anticipate that the firm will nonetheless continue to draw on intermittent drivers as an

important source of labor, even if it does so less frequently, following the shift to employment. Our engagement with the literature leads us to believe that the intermittent drivers will be used to address demand uncertainty in the system. Moments of uncertainty can be clearly captured in our dataset during times of heightened customer demand; high demand is made visible by via the total number packages delivered and by high levels of total working time for all workers in the system. Thus, we also test our hypothesis by comparing the proportion of work in the system completed by each of the three groups over time. Here we anticipate that during high-volume periods the company will engage all three groups of drivers even if those drivers come at an additional cost.

We also expect that the shift to employment status will not result in reduced flexibility because BYP retains, despite the shift, a high level of discretion in how it chooses to manage scheduling and working time. Neither employment laws nor company policies restrict working time flexibility in standard employment relationships. BYP used advanced scheduling throughout its tenure for both independent contractors and employees. In the case of the former, the platform permitted workers to sign up for their own shifts. Through this system, workers were able to exercise high levels of flexibility, indicating their own availability and preferences. If - in treating workers as employees - BYP changed its scheduling system and constrained workers' abilities to choose their own shifts this would also have negative impacts on workers' flexibility. To test this hypothesis, we also examine changes to BYP's scheduling system via the qualitative interviews with middle and upper-level management.

Our efficiency hypothesis is that under an employment model, the platform can achieve a more efficient deployment of labor. This hypothesis is motivated by the fact that employment relationships foster certainty in the system's operations and supply of labor; this, in turn will allow the platform to reduce its labor buffer. Also, because of the additional costs associated with employment, maintaining a larger labor buffer is more expensive for the firm. We expect that this will result in a lower minimum efficient buffer under the employment condition.

We test our efficiency hypothesis by examining the difference and ratio between scheduled time and working time. Scheduled time, or the time that a worker is scheduled to work for the platform, is always equal to or greater than worked time, the time that the worker is logged into the platform and is either providing deliveries or waiting to be dispatched. We expect the difference between scheduled and working time to decrease after the shift to employment status because employment relationships confer greater stability for the firm with respect to their labor management and planning. For example, employees can more reliably be expected report to work and to be on time; employed delivery drivers have fewer choices about what jobs to accept or reject because the company has greater decision-making latitude about the deployment of labor; and workers risk disciplinary actions if they do not comply with workplace processes and policies. While a firm's labor supply will always have some level of uncertainty (for example, workers may unexpectedly quit or may fall ill), these uncertainties are fewer under an employment regime than they are under an independent contractor model. We therefore expect a reduction in the difference between scheduled and working time.

For our working time and efficiency hypotheses, in addition to calculating descriptive figures (i.e. mean, median, and scheduled time over working time) for the three years for which we have data, we also conducted multi-variate linear regressions to assess the impact of employment status on these features, controlling for other determinants of hours and efficiency. Our models examine scheduled time, working time, and the ratio of scheduled/working time as dependent variables. In addition to employment status, we included six additional variables: lifetime routes, routes per city, city, California/Non-California, week, and year.

Lifetime routes is defined as the number of days a driver has worked during their tenure at BYP. This is a measurement of experience with the company which could impact a drivers' working time if tenured drivers tended to work more or tended to work larger or smaller proportion of their shift. Because the company did not start operations in all cities at the same time, the tenure of workers varies across cities.

Routes per city serves as proxy for demand within a particular market and was calculated on a weekly basis. Variation in demand is important to control for given that labor buffers are greatest during times of uncertainty and demand affects the level of working hours. Our decision to measure routes per city on a weekly basis replicates the company's own scheduling system, which was done at weekly intervals. The city variable controls for other environmental factors that are not captured within our dataset such as traffic and urban design.

The California/non-California variable controls for the state location. This differs from our measure of employment status which is limited to California drivers exclusively in the year 2020. Finally because demand varies seasonally, we also include a variable for the week of delivery. We also include a variable for the year. These help to control for seasonal variation and growth in the company over time.

7. Findings

We find that following the switch to employment, drivers were able to retain their working time flexibility, they experienced an increase in working time, and firm efficiency improved.

Our finding that the shift to employment permitted drivers to retain flexibility is based on two features: the company maintained the same scheduling systems following the shift to employment in California and the firm continued to rely on all three driver groups and displayed no clear preference for full-time or stable-workers at the expense of intermittent group. In our interviews and correspondence with platform managers we were told that neither before nor after the switch to employment did the platform require drivers to work a minimum number of hours. Also, the platform retained the same shift sign up policy before and after the transition, suggesting that employment did not impede, in any way, drivers' choice about when to work.

[Insert Table 1]

Table 1 presents our descriptive statistics comparing California and Non-California drivers. This includes the mean and standard deviation of working time across for each of the three driver groups.

Flexibility retention is also captured in trends in the variance of drivers' working time. Following the shift to employment and between the years of 2019 and 2020, we saw a wider distribution in California drivers' working time. Rather than relying more on full time drivers, the platform continued to use a high volume of intermittent drivers. Indeed, the use of intermittent drivers grew during 2020 during early Covid pandemic lockdowns. Intermittent drivers performed a larger proportion of work than they had in earlier years suggesting that this pool of workers is particularly important during the time of heightened demand. From these findings, we conclude that drivers with diverse driving patterns remain relevant and ready sources of labor for BYP.

Table 2 presents our regression findings for working time. Here we find that employment status does lead to increased working time for both intermittent and stable part time drivers. We find that for stable drivers and intermittent drivers 16.1% and 32.7% of the change in working time respectively can be attributed to the change in drivers' employment status. The absolute increase in average working time for these groups is 2.4 hours, and 1.8 hours per week, respectively.

[Insert Table 2]

We also note that other variables in our model, such as routes per city, significantly determine working time. The cities where drivers have the highest working hours include San Jose, Santa Monica, and San Francisco. Atlanta is the city where drivers work the fewest hours.

For full-time drivers, we see no increase in working time due to employment status. This can be explained by the fact that full-time drivers are already engaged on the platform at high levels and are therefore unlikely to experience an increase in their working hours. Indeed, were they to experience such an increase, this could conceivably come at additional cost to the firm as BYP would be required to compensate them at a rate of 150% for every hour worked over the 40 hour threshold provided for in California's wage and hour laws.

Table 3 contains our models for efficiency. We find that efficiency improves under the employment regime. The gap between worked and scheduled hours measured as a ratio (Table 3) and the absolute difference between scheduled and worked hours (not shown) declined.

[Insert Table 3]

We find employment status to be the single most important determinant of efficiency. When measured as a ratio (see Table 3), among stable drivers, the beta coefficient is .38 and we find that most of the variation in this measurement of efficiency can be explained by the change in employment status. For intermittent drivers, this figure is .57. For full time drivers, it is lower at .21. So, while the shift to employment improved efficiency for all driver groups, it had the largest impact on intermittent drivers.

That a larger portion of scheduled hours are being used as working time suggests that following the shift to employment, platforms were better able to forecast a numerically appropriate labor supply. When measured as the difference between scheduled and worked hours (not shown), our findings hold for stable and intermittent part-time workers. For full-time drivers, our findings are not significant.

8. Discussion and conclusion

Drawing on a case study on a platform we have called ‘Bring Your Package’, this paper provides one of the first studies to assess debates about the expected impacts of moving from an independent contractor to an employment model in the platform sector. In testing hypotheses on scheduling flexibility, working time, and firm efficiency, we find that BYP’s transition to an employment model is not accompanied by the risks that are commonly cited in debates.

We find that claims from platforms about the *necessary* or *inevitable* reduction in scheduling flexibility that would result from a shift to employment are unfounded. At BYP, following the shift, there continued to be high variation in driver behaviors and working time, with no major change in

the composition of driver groups and the continued use of full-time high hour workers, and stable and intermittent and low-hour workers. One reason is that after the shift to employment in California the company did not change its scheduling system or scheduling policies. This, in itself, is a significant finding that undermines the strong claims of loss of flexibility that have been made by platforms.

There are, of course, cost implications that result from the shift to an employment model. Because we did not have cost data, we are unable to assess the profit implications of the shift. The increased costs for BYP are mainly due to the benefits and contributions that the platform had to make to social protection schemes. Such costs are not insignificant and we were told anecdotally that they represented a significant increase in expenses for the firm. For example, more general estimates about the additional costs associated with employment estimate a 10 to 30 percent increase in payroll expenditures (Leberstein and Ruckelshaus, 2016). In addition to payroll costs, this switch was also accompanied by additional HR needs and requirement on the part of the company – a fact that emerged in our interviews and that also contribute to the cost of the transition. This is likely at the core of why platforms are unwilling to make the transition. However, our research suggests that there are multiple opportunities for platforms to reduce costs with a transition to employment. One way is by increasing work hours. A second is through improvements in firm efficiency. These cost reductions are particularly salient for a platform like BYP given that prior to the shift to employment, it guaranteed workers a minimum level of payment for their shift, even if there was no work available.

Despite the increased costs in California, BYP remained a successful and growing company following the transition of its workforce. Our interviews with key informants also suggested that the shift to employment was considered a success. Managers discussed their ability to gain increased control over drivers, and gave us the impression that the system worked well. The company was able to elicit more work effort from most of the drivers, an important effect during a period of high demand. There are at least two possible explanations for improved efficiency. The first is that the

shift to employment and the associated costs created incentives for a more efficient deployment of labor on the part of the company. The second is that the legal conditions of employment created some enhancements in managerial control which were raised in our interviews. However our operational data do not allow us to explore these explanations.

Improvements in efficiency may also convey benefits to drivers. They are better-able to plan their working time and to forecast their earnings, as they have greater confidence that they will work for the entirety of the shifts for which they signed up and were scheduled. In turn, this may help workers to better balance their work and life commitments. We find that improvements in efficiency that result from employment status are highest among intermittent drivers –the most casual group. This suggests that flexible and low hour workers stand to gain in a transition to employment – even if they may remain ineligible for cornerstone employment benefits provided to full-time workers, such as healthcare.

BYP does boast distinguishing features that may have made transitioning its workforce easier, or may have made the company more willing. These include the guaranteed pay provisions for workers and high hourly rates that were paid to BYP drivers. With these features already in place, the transition to an employment model may have been less extreme than it would be in ride-hail or food delivery. Additionally, BYP did not appear interested in becoming embroiled in legal battles about workers' rights and protections. While many platforms worked together and engaged in the expensive and extensive lobbying campaign to pass Proposition 22, the ballot initiative that reversed many of the anticipated benefits of AB5, BYP did not.

Whatever the motivations, the natural experiment provided by BYP's transition to employment leaves us with important findings that can inform ongoing debates about employment status in the platform economy. Employment provides workers with a host of protections and benefits including access to minimum wages, occupational health and safety provisions, protected leaves policies, healthcare for full-time workers, and collective rights. We find that employment is compatible with

flexibility and can encourage firms to move towards more efficient deployment of labor with benefits for the company and for the worker.

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Endnotes

¹ This is frequently contrasted with internal (e.g. functional) strategies, when firms reallocate existing labour power to meet output requirements

² Workers on some platforms have claimed to enjoy their flexible working time, yet simultaneously report having to work when jobs are available. For some, this casts doubt on the extent to which workers are meaningfully able to choose when they work.

³ To protect the anonymity of the respondents and the company, we have changed the name of their job title

⁴ See: <https://www.irs.gov/affordable-care-act/employers/identifying-full-time-employees>

Figure 1: Weekly working hours per driver

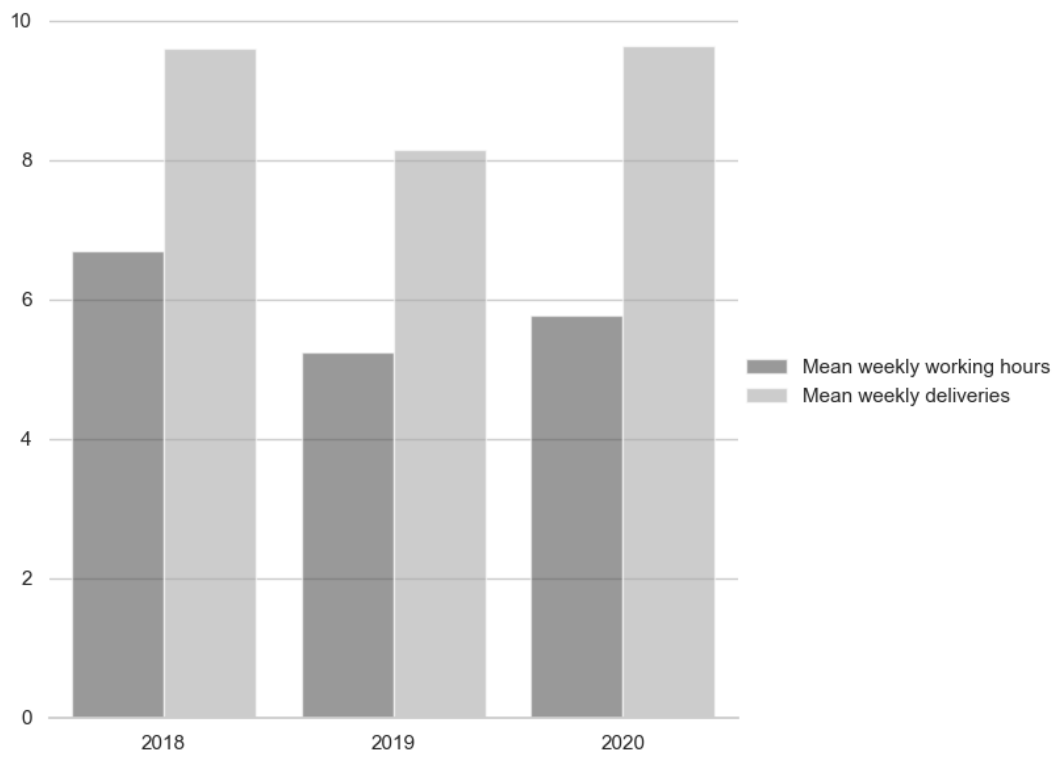


Figure 2: Distribution of working hours by worker group

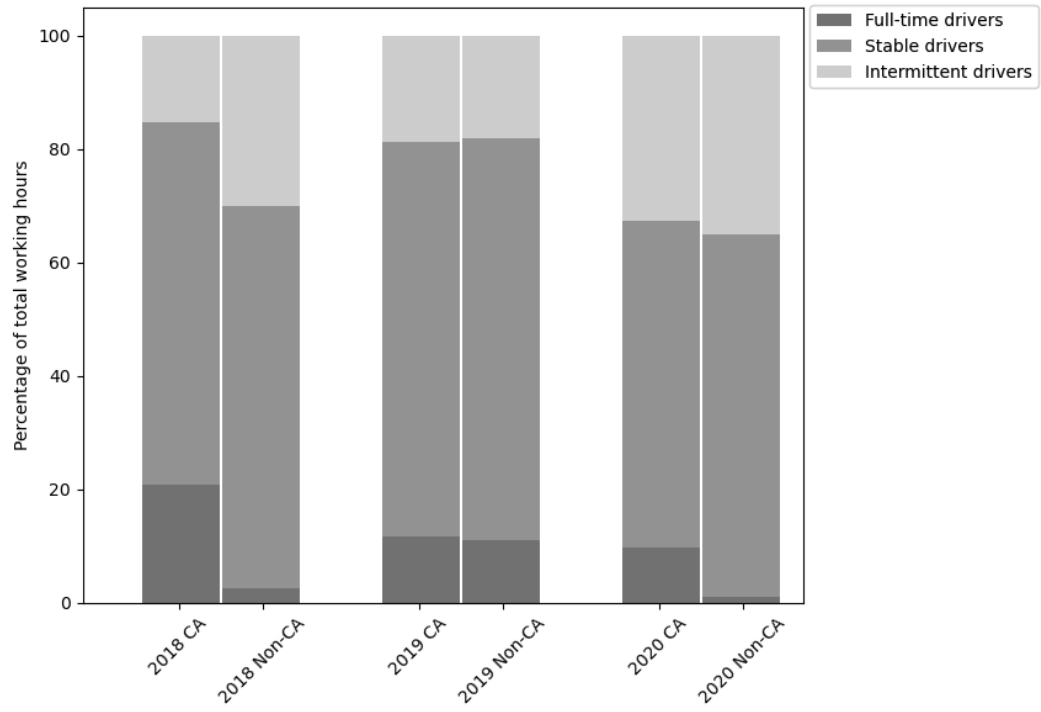


Table 1: Working hours per driver, per week

		California			Not California		
		Full-time	Stable	Intermittent	Full-time	Stable	Intermittent
2018	Mean	26.2	11.3	2.9	27.4	7.7	2.5
	SD	12.5	9.0	6.1	5.6	8.0	5.1
2019	Mean	27.1	9.2	2.2	26.8	7.4	1.7
	SD	10.8	8.7	4.8	12.1	7.9	3.8
2020	Mean	21.3	11.6	4.0	35.4	7.5	2.5
	SD	18.1	9.6	7.5	13.4	7.5	5.2

Table 2: Multiple Regression Models of Working Hours

	Full-time drivers		Stable drivers		Intermittent drivers	
	<i>Beta Coefficient</i>	<i>T-score</i>	<i>Beta Coefficient</i>	<i>T-score</i>	<i>Beta Coefficient</i>	<i>T-score</i>
Employment status	-0.04	-0.51	0.16	7.97***	0.33	9.92***
Drivers' lifetime routes	0.15	3.46***	0.30	28.59***	0.14	9.38***
Routes per city	0.25	3.56***	0.22	16.23***	0.18	9.83***
City California or Not California	0.10	0.87	-0.21	-9.40***	-0.15	-4.37***
Week	-0.24	-2.25*	0.21	10.26***	0.22	7.12***
Year	0.03	0.68	0.04	4.27***	0.08	5.36***
	0.10	1.05	-0.07	-3.46***	-0.18	-5.44***

T-score confidence intervals: * = 95%, ** = 99%, *** = 99.9% ;
 Employment = 1, Independent contractor = 0;
 CA = 1, Non-CA = 0;
 Adjusted R-Square: Full-time = .042, Stable = .153, Intermittent = .113

Table 3: Multiple Regression Models of Worked/Scheduled Hours

	Full-time drivers		Stable drivers		Intermittent drivers	
	<i>Beta Coefficient</i>	<i>T-score</i>	<i>Beta Coefficient</i>	<i>T-score</i>	<i>Beta Coefficient</i>	<i>T-score</i>
Employment status	0.21	2.66**	0.38	18.63***	0.57	18.32***
Drivers' lifetime routes	-0.06	-1.50	0.12	11.62***	0.03	2.01*
Routes per city	0.04	0.59	-0.15	-10.86***	-0.19	-10.95***
City	0.02	0.13	0.15	6.74***	0.10	3.24***
California or Not California	-0.02	-0.14	0.23	11.08***	0.32	10.98***
Week	-0.02	-0.39	0.01	1.12	0.02	1.58
Year	0.17	1.85	-0.17	-8.44***	-0.28	-9.19***

T-score confidence intervals: * = 95%, ** = 99%, *** = 99.9%;

Employment = 1, Independent contractor = 0;

CA = 1, Non-CA = 0;

Adjusted R-Square: Full-time = .108, Stable = .155, Intermittent = .216