

NBER WORKING PAPER SERIES

AN ANALYSIS OF THE LABOR MARKET FOR UBER'S DRIVER-PARTNERS
IN THE UNITED STATES

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Working Paper 22843
<http://www.nber.org/papers/w22843>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
November 2016

Jonathan Hall was an employee and shareholder of Uber Technologies before, during, and after the writing of this paper. Krueger acknowledges working as a consultant to Uber in December 2014 and January 2015 when the initial draft of this paper was written. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

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An Analysis of the Labor Market for Uber's Driver-Partners in the United States
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NBER Working Paper No. 22843
November 2016
JEL No. J01

ABSTRACT

Uber, the ride-sharing company launched in 2010, has grown at an exponential rate. This paper provides the first comprehensive analysis of the labor market for Uber's driver-partners, based on both survey and administrative data. Drivers who partner with Uber appear to be attracted to the platform largely because of the flexibility it offers, the level of compensation, and the fact that earnings per hour do not vary much with the number of hours worked. Uber's driver-partners are more similar in terms of their age and education to the general workforce than to taxi drivers and chauffeurs. Most of Uber's driver-partners had full- or part-time employment prior to joining Uber, and many continued in those positions after starting to drive with the Uber platform, which makes the flexibility to set their own hours all the more valuable. Uber's driver-partners also often cited the desire to smooth fluctuations in their income as a reason for partnering with Uber.

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Introduction

Over the last few years, there has been much speculation as to whether the so-called "on-demand economy" will positively or negatively impact the future of work, but little evidence exists to support either position. In this paper, we study the characteristics, labor supply and earnings of workers who provide car rides using the Uber platform. Drivers who partner with Uber (Uber refers to them as "driver-partners") provide transportation services to customers requesting rides via Uber's app on their smartphones or other devices. Uber is a quintessential on-demand economy company, responsible for perhaps two-thirds of all activity in the platform-based labor market according to Harris and Krueger (2015). This study provides the first detailed analysis of a representative, national sample of Uber driver-partners. We draw on anonymized administrative data from Uber on the driving histories, schedules, and earnings of drivers using the Uber platform from 2012-14, a survey of 601 driver-partners conducted in December 2014 and a survey of 632 driver-partners conducted in November 2015. In addition, as a point of comparison, we report data on the characteristics of a representative sample of taxi drivers and chauffeurs, and of all workers, based on several government surveys.

Uber has grown exponentially since it was first launched in the U.S. Once applicants qualify to partner with Uber, they are free to choose to spend as much or as little time as they like offering their services to passengers in any given month.¹ Whether to access the app on any given day, and when, are entirely up to the drivers' discretion. This flexibility is appealing to driver-partners, but it creates a complication for counting the number of active driver-partners since, at any time, drivers can choose to pursue other work opportunities or spend time taking care of non-work obligations, not utilize the Uber platform for a period of time, and then possibly return to using the Uber platform in later months. To address this issue, the figure reports the number of driver-partners who provided at least four trips to passengers in the month indicated (which we refer to as "active partners"). From a base of near zero in mid-2012, more than 460,000 driver-partners actively partnered with Uber at the end of 2015 in the United States. The number of active Uber driver-partners approximately doubled every six months from the middle of 2012 to the end of 2015. At this growth rate, every American would be an Uber driver within five years – which implies that the growth rate will inevitably slow down.

¹ Although requirements vary by city, before they can utilize the Uber platform, a potential driver typically must: (1) pass a background check and a review of his/her driving record; (2) submit documentation of insurance, registration, and a valid driver's license; (3) successfully complete a city-knowledge test; and (4) drive a car that meets a quality inspection and is less than a certain number of years old.

One theme that emerges from the following analysis is that a tremendous amount of sorting takes place in the on-demand economy, and, by dint of their backgrounds, family circumstances, and other pursuits, Uber's driver-partners are well matched to the type of work they are doing. Notably, Uber's driver-partners are attracted to the flexible schedules that driving on the Uber platform affords. The hours that driver-partners spend using the Uber platform can, and do, vary considerably from day to day and week to week, depending on workers' desires in light of market conditions. In addition, most driver-partners do not appear to turn to Uber out of desperation or because they face an absence of other opportunities in the job market—only eight percent were unemployed just before they started working on the Uber platform—but rather because the nature of the work, the flexibility, and the compensation appeals to them compared with other available options. Even as the national unemployment rate fell to 5 percent, the number of active Uber drivers continued to rise.

These findings likely relate to a broader, more generalized demand by many individuals for workplace policies that favor flexible work schedules, family-oriented leave policies, and telecommuting arrangements, over the standard nine-to-five work schedule, in order to support a more family-friendly lifestyle. Historically, independent contractors have reported in surveys that they prefer their working arrangements to traditional employment relationships, and this tendency appears to be continuing in the on-demand economy. Demand for work opportunities that offer flexible schedules is partly driven by the aging of the workforce and the increase in secondary earners, and it will likely increase as a result of ongoing demographic trends. Flexible work opportunities like Uber can also help workers smooth fluctuations in other sources of income (Farrell and Greig, 2016a). In addition, if changes to the health care system help reduce job lock—by making health insurance more readily available and accessible to individuals—more people are likely to become entrepreneurs and take advantage of the flexibility and income-generating potential made possible by the on-demand economy. For these reasons as well, it is critical to understand how the on-demand economy is affecting work opportunities.

This paper provides a step toward understanding the nature of work in the on-demand economy by reporting new evidence on hours of work, income, and the motivations and backgrounds of participants in one of its important segments, driver-partners using the Uber platform. The next section provides a brief overview of the literature on contingent and alternative work arrangements as context for the growth of Uber. The second section draws on the BSG data to describe the backgrounds and motivations of Uber driver-partners. The third section utilizes anonymized, aggregated administrative data to describe the driving histories, schedules, cross-city growth rates, and earnings of Uber driver-partners. The final section concludes and suggests directions for further research.

Literature Review

The size, growth, and nature of the contingent workforce in the United States has long been debated. This debate continues with the advent of the on-demand economy.² One of the problems with this debate, however, is that analysts have employed multiple definitions of contingent work, ranging from the self-employed to temporary workers to part-time workers to on-call workers. Contingent workers can be defined broadly or narrowly, and magnitudes and trends vary depending on the particular definition.³

The Bureau of Labor Statistics (BLS) included a supplemental module to collect information on various forms of contingent and alternative work arrangements in the Current Population Survey (CPS) in 1995, 2001, and 2005 that provides the most informative data available, although it is now somewhat out of date.⁴ The BLS Contingent Worker Survey (CWS) found that the contingent workforce, defined as workers “who do not expect their jobs to last or who reported that their jobs are temporary,” is relatively small, and did not grow between 1995 and 2005. In 1995, from 2.2 percent to 4.9 percent of the workforce was employed in a contingent position, depending on the definition, and in 2005 these figures ranged from 1.8 percent to 4.1 percent.⁵ These figures are clearly small, with no indication of an upward trend.

Claims that contingent workers represent a much larger share of the workforce generally count part-time workers as contingent workers, even though part-time workers typically are employed in traditional employment relationships. As the BLS reported, “the vast majority of part-time workers (91 percent) were not employed in contingent arrangements.”⁶ Nevertheless, data on part-time work do not point to an upward trend. As Bernhard (2014) notes, “After increasing during the 1970s, both the overall percent part-time and the percent involuntary part-time have been largely flat, with the exception of cyclical increases during recessions.” The share of workers in part-time positions (which BLS defines as usually working less than 35 hours a week) has shown little secular trend over the past three decades. In 1995, 17.8 percent of all workers reported that they usually worked part-time hours according to data from the CPS. That figure fell to 16.8 percent in 2005 and 16.5 percent in 2007, and then rose to 19.8 percent in 2009 during

² For example, in his critique of the “task rabbit” economy, Kuttner (2013) claims, “The move to insecure, irregular jobs represents the most profound economic change of the past four decades.”

³ See Polivka (1996) for a thoughtful discussion of the definition of contingent and alternative work arrangements.

⁴ The BLS plans to administer the contingent worker supplement again May 2017.

⁵ See Cohany (1996) and www.bls.gov/news.release/pdf/conemp.pdf for the BLS statistics on contingent and alternative work arrangements cited in this section.

⁶ See bls.gov/news.release/pdf/conemp.pdf.

the Great Recession but has since declined. In 2014, some 18.3 percent of workers were in part-time positions, hardly different from 20 years earlier.

Katz and Krueger (2016) extended the BLS's CWS by including a subset of the questions on alternative work arrangements on the Rand American Life Panel in fall 2015. They found that the share of workers in alternative work arrangements – defined to include freelancers, workers who were contracted out by one firm to work for another firm, temporary help agency workers, and on-call workers – increased from about 11 percent in 2005 to nearly 16 percent in 2015. It is important to note that the CWS and Rand data are limited to individuals' main job. Many workers who participate in the on-demand economy may do so as a secondary job.

Counting both main and secondary jobs, Katz and Krueger further found that only 0.5 percent of the workforce was involved in providing services directly to customers through an online intermediary. About twice as many workers said they provided services to customers through an offline intermediary, such as Avon, as through an online intermediary, such as Uber or Taskrabbit.

Other estimates also suggest that less than 1 percent of the U.S. workforce participated in the on-demand economy in 2015, although the on-demand workforce was growing very rapidly. For example, Farrell and Greig (2016a) estimate of 0.6 percent of the working-age population (or approximately 0.4 percent of the workforce) based on the frequency of bank deposits from 30 online work platforms. Farrell and Greig (2016b) further found that, though decelerating, the annual growth rate in the number of workers receiving income from these platforms each month exceeded 100 percent in the fall of 2015. Based on data from Google Trends, Harris and Krueger (2015) infer that Uber is by far the largest on-demand labor platform, which makes an understanding of the characteristics, labor supply behavior, and motivation of Uber's driver-partners all the more important.

BSG Survey of Uber's Driver-Partners

Uber contracted with the Benenson Survey Group (BSG) to conduct a web survey of Uber's driver-partners in December 2014 in 20 market areas that represented 85 percent of all of Uber's U.S. driver-partners. The survey was conducted again in November 2015 in 25 market areas that currently represent 68 percent of Uber's U.S. driver-partners. A total of 601 drivers completed the 2014 survey and 833 drivers completed the 2015 survey. Although the response rate to the surveys was only around 10 percent, based on a comparison of aggregated administrative data, the (weighted) respondents do not appear to be very different from the full set of driver-partners in terms of their average work

hours or hourly earnings.⁷ In this section we highlight findings from the surveys that are relevant for understanding the labor market for Uber's driver-partners and their motivations for partnering with Uber, and contrast the demographic characteristics of Uber driver-partners with those of taxi drivers and chauffeurs (Census occupation code 9140) based on data collected in the American Community Survey (ACS), as well as all workers. We emphasize findings from the 2014 survey, and note any significant changes between the 2014 and 2015 surveys.

Driver Demographics

Table 1 summarizes the demographic characteristics of Uber's driver-partners based on the 2014 BSG survey and reports the corresponding characteristics of taxi drivers and chauffeurs and the entire workforce in the same 20 markets surveyed by BSG, drawing from 2012-2013 ACS data.⁸

Uber's driver-partners are spread throughout the age distribution, mirroring the workforce as a whole rather than taxi drivers or chauffeurs. Nineteen percent of Uber's driver-partners are under age 30, and 24.5 percent are age 50 or older. By contrast, taxi drivers and chauffeurs are substantially older, with nine percent under age 30, and 44 percent age 50 or above. The greater representation of younger people among Uber's driver-partners is probably a reflection of the fact that Uber provides a new opportunity, and older workers are less likely to change jobs, but it may also reflect entry barriers into the taxi driver and chauffeur professions that make it more difficult for younger people to obtain such jobs.

⁷ The BSG survey utilized a stratified design, and weights were derived to make the sample representative of all drivers in terms of the services they offered (uberX, UberBLACK or both); other strata were drawn in proportion to the population and self weighting. All statistics reported here from the BSG survey are weighted to reflect the survey design. Where cited, question numbers refer to the BSG survey.

⁸ The 20 markets in 2014 were: Atlanta, Austin, Baltimore, Boston, Chicago, Dallas, Denver, Houston, Los Angeles, Miami, Minneapolis, New Jersey, New York City, Orange County, Philadelphia, Phoenix, San Diego, San Francisco, Seattle, and Washington, D.C. The 24 markets in 2015 were: Atlanta, Baton Rouge, Boston, Charlotte, Chicago, Columbus, Dallas, Denver, Detroit, Fresno, Houston, Indianapolis, Los Angeles, Miami, New York City, Oklahoma City, Philadelphia, Phoenix, Providence, Salt Lake City, San Antonio, San Francisco, Seattle, and Washington, D.C. The 14 common markets were: Atlanta, Boston, Chicago, Dallas, Denver, Houston, Los Angeles, Miami, New York City, Philadelphia, Phoenix, San Francisco, Seattle, and Washington, D.C.

Table 1: Characteristics of Uber’s Driver-Partners, Taxi Drivers and All Workers

	Uber’s Driver-Partners (2014 BSG Survey)	Taxi Drivers and Chauffeurs (2012-13 ACS)	All workers (2012-13 ACS)
Age 18-29	19.1%	8.5%	21.8%
30-39	30.1%	19.9%	22.5%
40-49	26.3%	27.2%	23.4%
50-64	21.8%	36.6%	26.9%
65+	2.7%	7.7%	4.6%
Female	13.8%	8.0%	47.4%
Less than HS	3.0%	16.3%	9.3%
High School	9.2%	36.2%	21.3%
Some College / Associate’s	40.0%	28.8%	28.4%
College Degree	36.9%	14.9%	25.1%
Postgraduate Degree	10.8%	3.9%	16.0%
White Non-Hispanic	40.3%	26.2%	55.8%
Black Non-Hispanic	19.5%	31.6%	15.2%
Asian Non-Hispanic	16.5%	18.0%	7.6%
Other Non-Hispanic	5.9%	2.0%	1.9%
Hispanic	17.7%	22.2%	19.5%
Married	50.4%	59.4%	52.6%
Have Children at Home	46.4%	44.5%	42.2%
Currently Attending School	6.7%	5.0%	10.1%
Veteran	7.0%	5.3%	5.2%
Number of Observations	601	2,080	648,494

Notes: ACS data pertain to the same 20 markets as the BSG survey, and are for 2012 and 2013.

Women make up 14 percent of Uber's driver-partners, which exceeds the percentage of taxi drivers and chauffeurs who are women in those markets (eight percent), but is less than the share of women in the workforce overall.

Half of Uber's driver-partners are married, which is slightly below the corresponding figure for taxi drivers and chauffeurs, but close to the figure for all workers, probably, at least in part, a reflection of the varying age distributions. On the other hand, Uber's driver-partners are slightly more likely to have children under the age of 18 living with them at home (Q17) than are taxi drivers and chauffeurs.⁹ Additionally, 71 percent of Uber's driver-partners reported that they support financial dependents (Q19).

Among those reporting an ethnic/racial background, Uber's driver-partners are more likely to identify their ethnicity/race as White Non-Hispanic than are taxi drivers and chauffeurs in the same areas, although they are less likely to identify as White Non-Hispanic than the workforce as a whole in those areas.¹⁰ Uber's driver-partners are less likely to identify as Black/African American Non-Hispanic than are taxi drivers and chauffeurs while the percentages who identified as Asian or Pacific Islander and Hispanic/Latino are similar for the two groups. Looking beyond the 20 areas, the ethnic/racial composition of taxi drivers and chauffeurs in the United States as a whole closely matches that of Uber's driver-partners who responded to the BSG survey.¹¹

Uber's driver-partners are highly educated. Nearly half of Uber's driver-partners (48 percent) have a college degree or higher, considerably greater than the corresponding percentage for taxi drivers and chauffeurs (18 percent), and above that for the workforce as a whole as well (41 percent). Only 12 percent of Uber's driver-partners have a high school degree or less, whereas over half (52 percent) of taxi drivers and chauffeurs have a high school degree or less. Seven percent of Uber's driver-partners are currently enrolled in school, mostly taking classes toward a four-year college degree or higher. Higher educated individuals may be more likely to avail themselves of new technological options

⁹ One caveat here, however, is that the BSG question directed respondents to “include children living with you part time.”

¹⁰ The BSG and ACS race and Hispanic ethnicity questions are different because Hispanic ethnicity is listed with the other racial identities in the BSG race/ethnicity question (Q56), and then Hispanic ethnicity is also asked about specifically for all those who did not select Hispanic in Q56 in the following question (Q57). We have attempted to align the two surveys by reporting anyone who identified as Hispanic in either question as Hispanic, and then reporting the other groups exclusive of those indicating Hispanic origin, and excluding the eleven percent of respondents who did not provide an answer to Q56 or Q57.

¹¹ The nationwide figures for taxi drivers and chauffeurs are: 42.3 percent non-Hispanic white; 24.5 percent non-Hispanic black; 12.0 percent non-Hispanic Asian; 3.1 percent non-Hispanic other; and 18.0 percent Hispanic.

in the labor market when they become available, which may partly account for the high level of education of Uber's driver-partners.

Seven percent of Uber's driver-partners are veterans of the armed services, and one percent are members of the reserves. In addition, six percent of driver-partners have household members who are military veterans, three percent have household members who are active duty members of the armed services, and two percent have household members in the reserves. Based on the ACS data, five percent of taxi drivers and chauffeurs—and the same percentage of all workers—in the 20 areas BSG surveyed are veterans.

Only two of the demographic characteristics that we examined registered statistically significant changes between the 2014 and 2015 surveys.¹² First, the driver-partners were somewhat younger in 2015 than in 2014: 23 percent were in the 18-29 age bracket in 2015 compared with 19 percent in 2014. Second, the driver-partners were more likely to hold a post-graduate degree in 2015 (13.6 percent versus 10.6 percent in 2014). Given the large number of demographic characteristics examined, and these relatively modest differences, we interpret this as evidence that the basic demographic distribution of Uber's driver-partners was essentially unchanged from 2014 to 2015, despite the roughly four-fold increase in the number of driver-partners over this period.

Driver Employment History

The BSG survey provides retrospective information on driver-partners' work experience that offers a picture of what they were doing prior to partnering with Uber.

Around 80 percent of driver-partners reported that they were working full- or part-time hours just before they started driving on the Uber platform. Only eight percent of driver-partners in 2014 (and 10 percent in 2015) said they were unemployed just prior to partnering with Uber. This low percentage is notable given that, for the economy overall, about 25 percent of new hires came from unemployment and 70 percent came from nonemployment in 2014 and 2015.¹³ The large share of drivers who partnered with Uber while they had another job suggests the role that Uber plays in supplementing individuals' income from other sources.

¹² For comparability, the samples were restricted to overlapping cities in 2014 and 2015 in these comparisons.

¹³ These figures are based on transition rates reported by Bruce Fallick and Charles Fleischman at <http://www.federalreserve.gov/econresdata/researchdata/feds200434.html>.

Prior to partnering with Uber, six percent of drivers were students, four percent were retired, and three percent were stay-at-home parents. Among those working prior to partnering with Uber, 81 percent reported that they had a permanent job that would be there until they left, were laid off, or were fired, and many appear to have continued in those jobs after partnering with Uber.¹⁴

Uber's driver-partners worked in a wide range of jobs prior to partnering with Uber. Nearly 20 percent of drivers had worked in Transportation Services in their previous job, and 28 percent had worked as a driver at some point in their career, but no other industry accounted for more than 10 percent of drivers in their previous job.

Just over one-third (36 percent) of driver-partners in 2014 were not actively looking for a new job prior to driving on the Uber platform. Only 25 percent were actively looking for a full-time job, another 25 percent were looking for a part-time job, and 10 percent were looking for either a part- or full-time job (Q8). Of those driver-partners actively looking for a job prior to partnering with Uber, 24 percent had been doing so for less than a month, 52 percent for one to six months, and 24 percent for more than six months (Q9). The fact that over one-third of driver-partners joined the Uber platform without actively searching for a job suggests that Uber provided a new alternative that enticed many people to engage in a work activity who might not have otherwise.

Driving on the Uber Platform

In 2014, drivers were split almost evenly among those who reported having no other job in addition to partnering with Uber (38 percent), those who had a part-time job in addition to partnering with Uber (30 percent), and those who had a full-time job in addition to partnering with Uber (31 percent). The 2015 survey found that a much larger share of those who had a job in addition to driving with the Uber platform had a full-time job as opposed to a part-time job. In 2015, 52 percent of driver-partners worked full-time on another job, 14 percent of driver-partners had a part-time job apart from partnering with Uber, and 33 percent of driver-partners had no other job. Not surprisingly, the administrative data indicate that, on average, those who do not have another job work the most hours per week with the Uber platform, while those who have another full-time job worked the least hours per week with the Uber platform. For example, one-third of driver-partners who reported having no other job in 2014 worked more than 35 hours per week on the Uber app since starting to work with Uber, compared with 13 percent of

¹⁴ Among those who were working at a full-time job prior to partnering with Uber, 93 percent said their job was permanent.

those who reported having another part-time job, and just three percent of those who reported having another full-time job.

The 2014 survey asked driver-partners whether a variety of possible motivations were a major reason, minor reason, or not a relevant reason for why they partnered with Uber (Q22). The most common reasons (combining major and minor reasons) were: “to earn more income to better support myself or my family” (91 percent); “to be my own boss and set my own schedule” (87 percent); “to have more flexibility in my schedule and balance my work with my life and family” (85 percent); “to help maintain a steady income because other sources of income are unstable/unpredictable” (74 percent).¹⁵

Driving on the Uber platform provides an important source of income for driver-partners. For one-fifth of driver-partners (20 percent), Uber is their only source of personal income, and for another 12 percent Uber is their largest but not only source of income. Nearly half of driver-partners view income earned on the Uber platform as a supplement to their income but not a significant source (48 percent) (Q61).

Perhaps not surprisingly—given that most driver-partners had jobs that they could have kept, and often did, when they started partnering with Uber—71 percent of driver-partners in 2014 replied that partnering with Uber has increased their overall income, while only 11 percent replied that partnering with Uber has decreased their overall income (Q28R1).

A variety of questions suggest that Uber's driver-partners value the flexibility that the Uber platform permits, and many are drawn to Uber in large part because of this flexibility. Fifteen times as many drivers said Uber had made their lives better, rather than worse, by giving them more control over their schedule (74 percent versus five percent). In addition, when asked directly (Q52), “Which of the following would you most prefer regarding your driving with Uber?” with responses describing an employment relationship and an independent contractor relationship, 79 percent chose the latter. Furthermore, when the driver-partners were asked what they would do if Uber were no longer available in their area, 35 percent (the largest group) said they would use another ride-sharing app platform, while only 21 percent said they would look for a full-time job in an unrelated industry (Q32).¹⁶ These findings suggest that there is

¹⁵ The order was unchanged considering those reasons designated as a major reason, and the corresponding percentages were 76 percent, 64 percent, 63 percent, and 51 percent, respectively.

¹⁶ Other responses were: drive a taxi (eight percent); look for a part-time job (19 percent); not look for a new job (12 percent); and other (five percent).

considerable sorting in the on-demand economy, and those who value flexibility most are the most likely to seek opportunities there.

Female driver-partners were more likely than men to highlight the need for flexibility as a reason for becoming a partner with Uber, but both men and women appear to value the opportunity to set their own schedule. For example, 42 percent of women and 29 percent of men said that a major reason for driving with Uber was that they “can only work part-time or flexible schedules” because of “family, education, or health reason[s].” Further, female driver-partners were nearly 30 percentage points more likely than men to work an average of 15 or fewer hours per week (67 percent versus 38 percent).¹⁷ Men, however, are slightly more likely than women to indicate that they would prefer a job where they choose their own schedule and can be their own boss to a nine-to-five job with some benefits (73 percent versus 68 percent).

Another aspect of Uber’s flexibility is that spending time on the platform can help smooth the transition to another job, as driver-partners can take off time to prepare for and search for another job at their discretion. Nearly one-third (32 percent) of driver-partners indicated that “to earn money while looking for a steady, full-time job” (2014: Q22R11) was a major reason for partnering with Uber, and this is particularly the case for students, and for those who do not have another job or are working part-time on another job. Likewise, those who have no other job or another part-time job are about twice as likely as those with full-time jobs to say that they will continue with Uber until something better comes along (2014: Q50). These results suggest that Uber provides a helpful “bridge” for some driver-partners until they can find new jobs that are better matches for their skills and interests.

The BLS contingent worker survey found that independent contractors were less likely to have health insurance coverage than were traditional employees. In 2015, 38 percent of Uber's driver-partners received employer-provided health insurance, either from their own employer at another job or from a spouse or other family member’s employer, down from 49 percent in 2014.

Overall, 81 percent of driver-partners said they are very satisfied or somewhat satisfied with Uber in 2015, essentially unchanged from 78 percent in 2014.

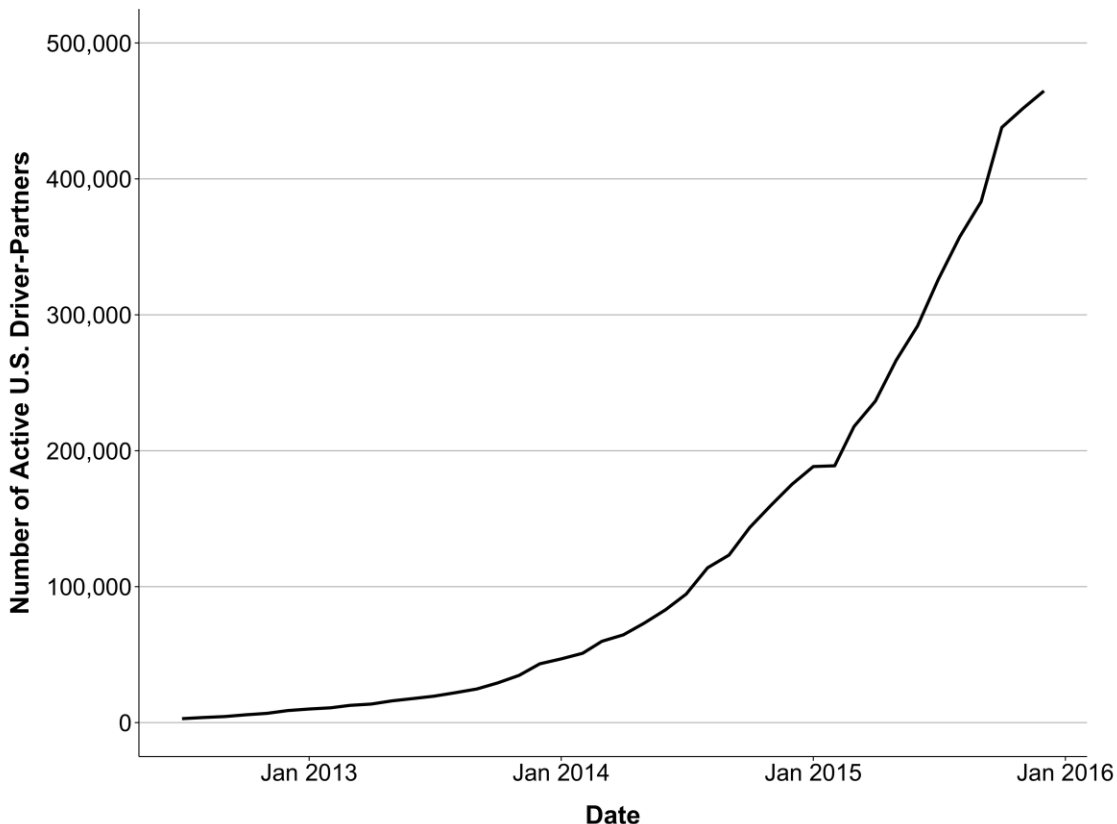
¹⁷ Hours are measured by hours with the Uber app on. Since it is possible that drivers could have another app on simultaneously, or could be conducting personal tasks with the Uber app on, our hours measure is an imperfect measure of hours working on the Uber platform.

Completing the Picture with Uber Administrative Data

Uber collects extensive data on driver-partners' trips, fares, and time via the Uber app. Below, we summarize findings based on Uber's administrative data using aggregated, anonymized tabulations from Uber's databases to round out the analysis of the labor market for Uber's driver-partners.

Figure 1 documents the exponential growth in the number of active Uber driver-partners in the United States from mid-2012, when uberX was launched, to the end of 2015. The spectacular growth of the number of active driver-partners over the last few years is evidence that Uber provides many workers a choice that they prefer to other available options or to not working at all. During the latest month for which we have data, December 2015, a total of 464,681 driver-partners completed four or more trips using the Uber platform.

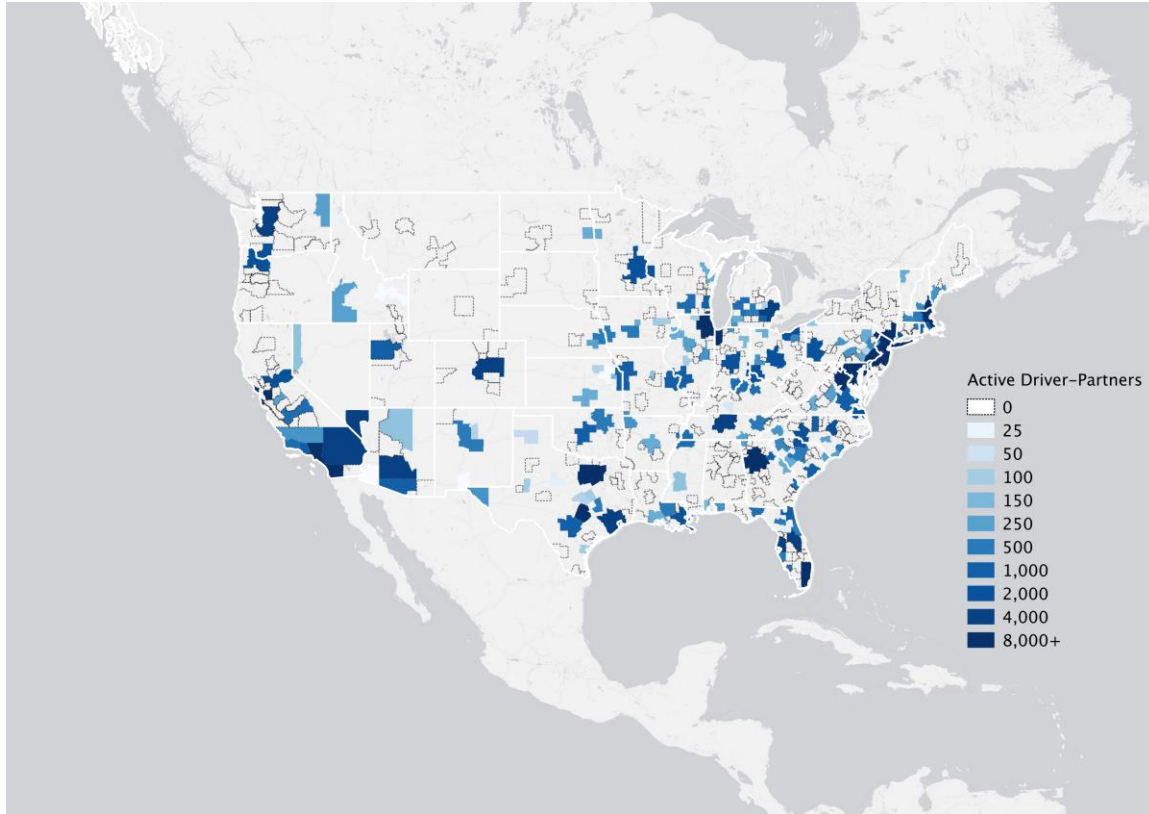
Figure 1: Number of Active Driver-Partners in United States Each Month



Note: Figure based on U.S. UberBLACK and uberX driver-partners providing at least four rides in any month (1,085,765 individuals). Source: Uber administrative data. An active driver-partner is defined as a driver-partner who completed at least four trips in the month.

Geographically, Uber’s driver-partners are distributed across the country, and most common in the larger population centers. *Figure 2* shows that Uber driver-partners are particularly prevalent in the Northeast, Southeast, Midwest, and upper and lower West coast.

Figure 2: Active Driver-Partners By Census MSA



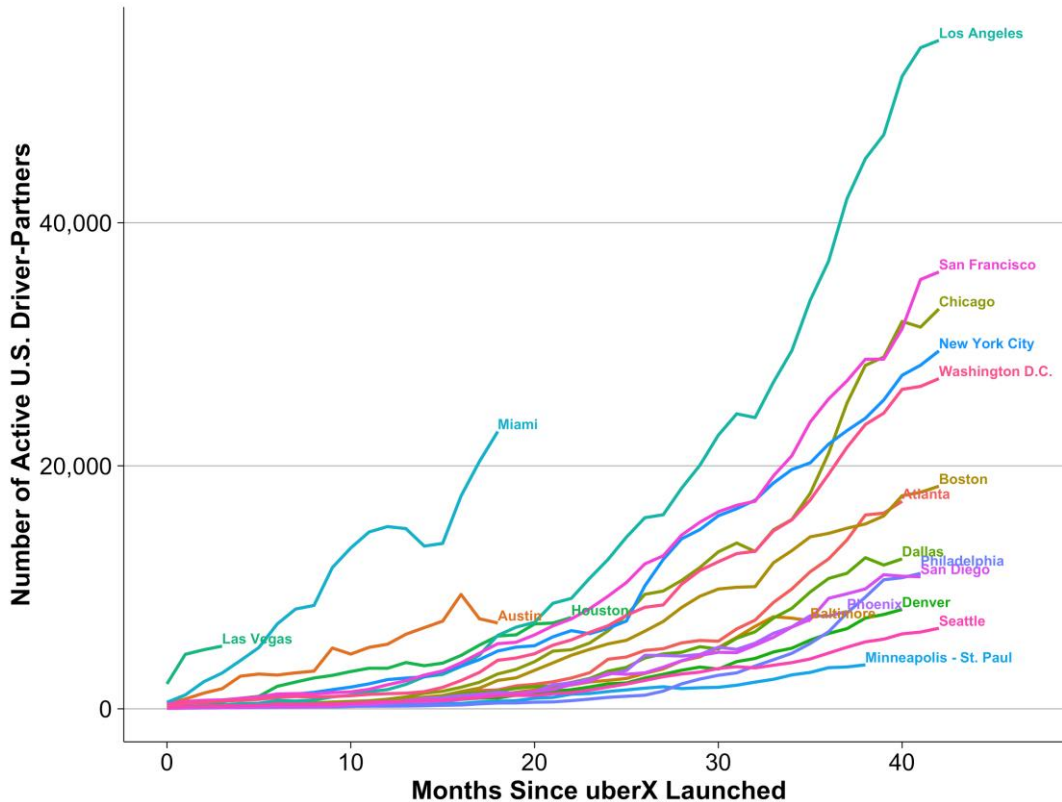
Note: The map indicates the number of Uber driver-partners who took at least four trips in October 2015, by Census MSA.

Figure 3 displays growth in the number of Uber’s driver-partners in each of the BSG metropolitan areas, indexed to the number of months since Uber started operating in the city through January 2016.¹⁸ The growth for the Austin market reflects the period prior to the suspension of operations in May 2016. The fastest growth in the number of driver-partners has been in Miami and Las Vegas, markets in which Uber only recently became fully operational. Cramer (2016) finds that cities in which Uber grew more quickly experienced a (less-than-proportionate) decline in the number of taxi drivers but little

¹⁸ The way in which Uber classified New Jersey trips in its database has changed over time, so, for the sake of consistency, New Jersey is omitted from this chart. Also, Orange County is reported as part of Los Angeles.

change in the average wages of taxi drivers, consistent with the idea that taxi drivers were receiving few economic rents prior to the entry of Uber. Future research can link these city-specific patterns to other city-level data to study the effect that Uber has had on the taxi industry and other outcomes.¹⁹

Figure 3: Active U.S. Driver-Partners Over Time, by City



Note: Figure reports the number of U.S. UberBLACK and uberX driver-partners making at least one trip in the specified month, indexed to the number of months since Uber began in the city or June 2012, whichever came later.

Predictors of the growth in the number of Uber drivers across cities provides some insights into the forces underlying Uber’s success. The outcome variable that we focus on is the log of the number of active driver-partners per month in 2015Q4 divided by the number of months that Uber has operated in the city. Because Uber started from a base of zero in 2009, the dependent variable reflects Uber’s growth rate per month that it launched in each city. We compiled a set of city characteristics for 97 cities in which

¹⁹ One paper in this vein is Greenwald and Watal (2015), who examine the relationship between ride sharing and alcohol-related motor vehicle homicides across cities in California.

Uber operates and regressed the growth measure on these characteristics. Results are summarized in Table 2. Column 1 provides estimates for the full sample of 97 cities, and columns 2-4 restrict the sample to 80 cities for which we have information on the number of taxi licenses,

In all of the estimated models, the number of Uber drivers per month in operation rises with city population, and we cannot reject a unit elasticity. Cities with more taxi licenses per capita have added relatively more Uber drivers, suggesting that there is excess demand for ride-sharing services in cities with relatively more taxis, all else equal. Interestingly, the cost of a five-mile Uber ride has a statistically insignificant and small coefficient. The unemployment rate in a city is also unrelated to the growth in the number of Uber drivers, consistent with the observation made in light of Figure 1 that the exponential growth of Uber drivers held in periods of high- and low-unemployment. Real GDP and population density in a metropolitan area are both found to be unrelated to the number of Uber drivers. Lastly, cities where Uber started earlier have added significantly more drivers per month than cities where Uber started later, suggesting that Uber was strategic in launching earlier in cities with greater latent demand for ride-sharing services.

Table 2: Determinants of Growth of Uber Driver-Partners Across Cities

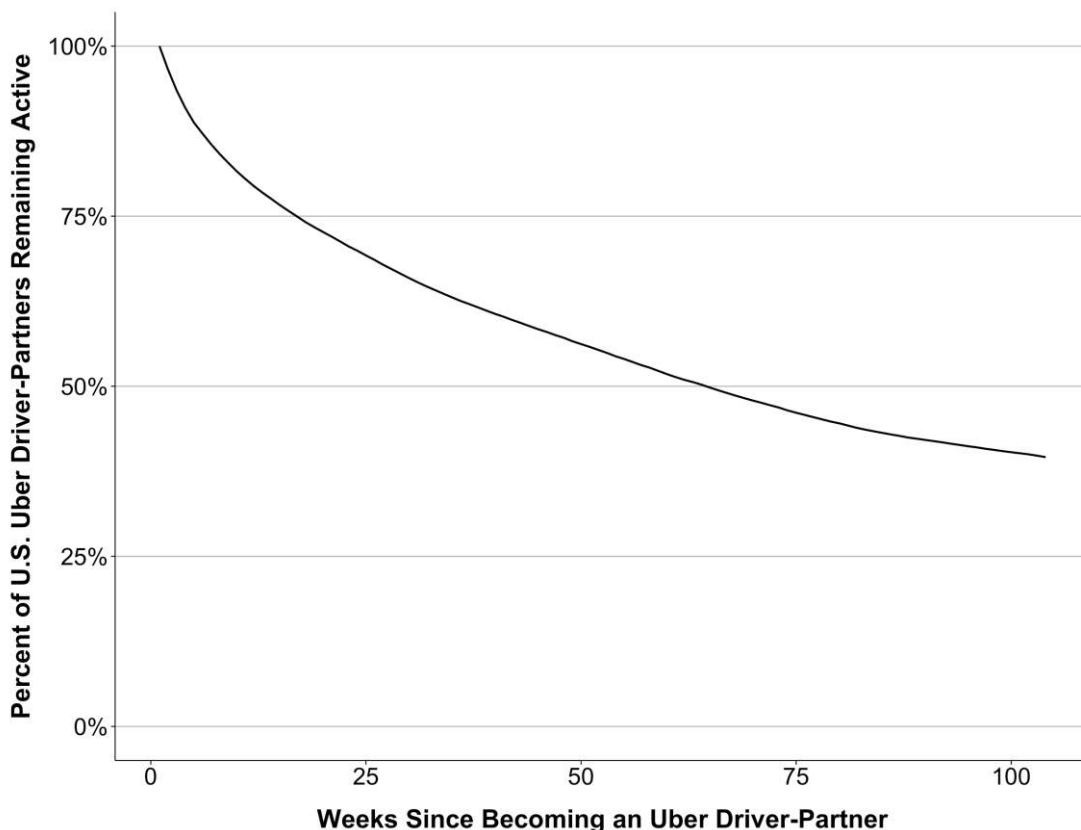
	<i>Dependent variable:</i>			
	Log of Average Active Monthly Driver-Partners in 2015Q4 Per Number of Months Operating			
	(1)	(2)	(3)	(4)
Months Operating	0.045 ^{***} (0.008)	0.041 ^{***} (0.008)	0.041 ^{***} (0.007)	0.042 ^{***} (0.007)
Log of MSA Pop. (2010)	1.097 ^{***} (0.325)	1.098 ^{***} (0.327)	0.876 ^{***} (0.313)	0.895 ^{***} (0.315)
Log of MSA Density (2010)	0.122 (0.090)	0.132 (0.100)	0.012 (0.100)	0.022 (0.101)
Log of MSA Real GDP (2013)	-0.267 (0.293)	-0.201 (0.298)	-0.028 (0.282)	-0.048 (0.285)
Log of MSA Median Taxi Earnings (2015)	0.386 (0.606)	-0.056 (0.628)	-0.039 (0.590)	-0.093 (0.598)
Annual Unemployment (2014)	-0.061	-0.059	-0.035	-0.039

	(0.050)	(0.058)	(0.055)	(0.056)
Log of Number of Taxi Licenses Per 1000 People			0.301***	0.289***
			(0.084)	(0.086)
Cost of a Five-Mile Uber Trip in 2014			0.015	0.012
			(0.019)	(0.020)
Log of the Number of Cars Per 1000 (MSA)				-0.316
				(0.470)
Constant	-7.842***	-7.525***	-5.285**	-3.357
	(2.116)	(2.208)	(2.154)	(3.593)
Sample Size	97	80	80	80
Adjusted R ²	0.880	0.894	0.908	0.907
Residual Std. Error	0.546 (df = 90)	0.511 (df = 73)	0.476 (df = 71)	0.478 (df = 70)
F Statistic	118.780*** (df = 6; 90)	111.545*** (df = 6; 73)	98.252*** (df = 8; 71)	86.710*** (df = 9; 70)

Note: * p<0.1; ** p<0.05; *** p<0.01
Data from Uber, The Taxicab Fact Book (TLPA), US Census, and US Bureau of Economic Advisors

Dynamics. Because Uber offers a flexible work option with low barriers to entry, a large number of workers try the service, and some discontinue using it after a period of time while others continue for an extended period. As described in the previous section, there are many reasons driver-partners vary their length of time using the platform. Those spending fewer hours may find that Uber is not a good match for their lifestyle or they may use Uber only when they are between jobs; others may find that it provides them with a flexible work schedule and source of income that they have been looking for and continue using the platform for much longer. *Figure 4* reports the weekly continuation rate (i.e., the survivor curve) for all driver-partners who started on the platform in the first half of 2013.

Figure 4: Continuation Rate for U.S. Driver-Partners Over Two Years



Note: Figure based on U.S. UberBLACK and uberX driver-partners who made their first trip between January and June of 2013 and had subsequently made at least four trips (11,267 individuals). A driver-partner is classified as becoming inactive at the start of any period in which he or she does not record a trip for the next six (or more) months.

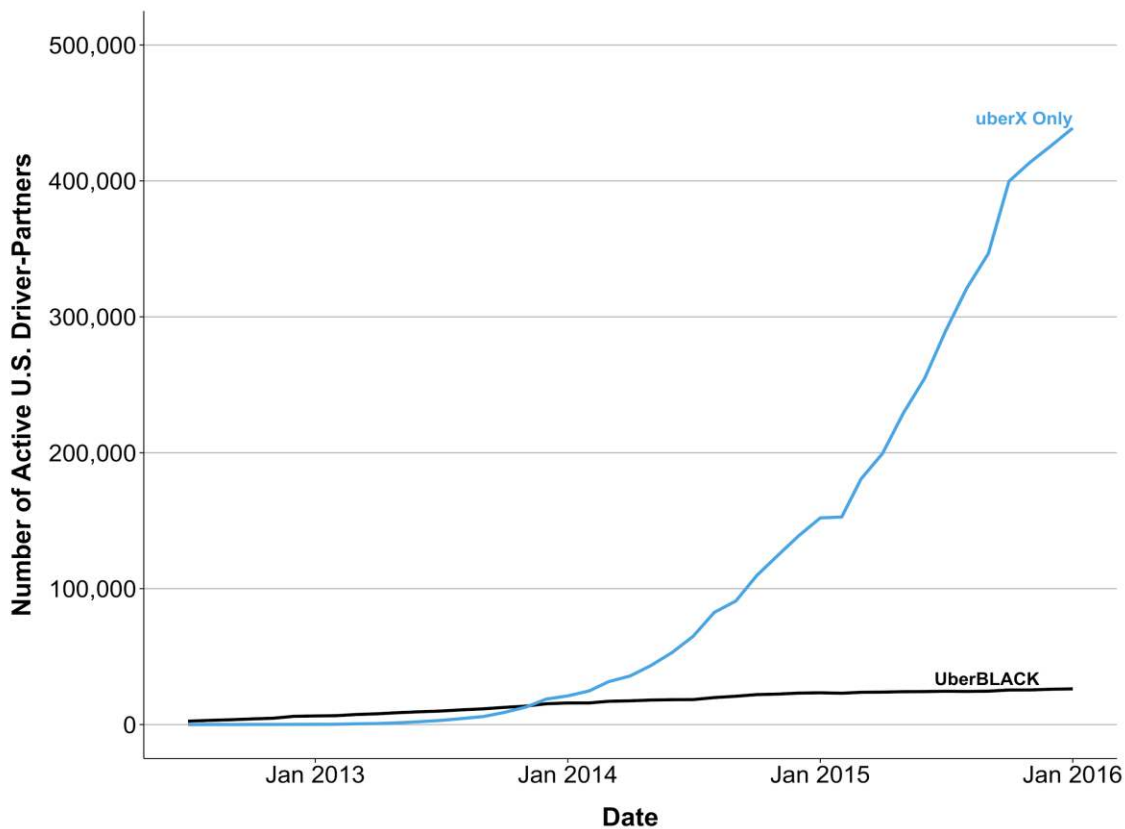
Within a month of becoming an active Uber driver-partner, 11 percent of driver-partners became inactive, defined as not using the service over the next 6 months. After half a year, 70 percent of those who started using Uber in the first half of 2013 were still actively using the system, and more than half of those who started in the first half of 2013 remained active a year after starting. A third were still active two years after starting on the platform. These figures suggest that Uber provides a bridge for many who are seeking another position in the labor market, and it provides a longer-term option for others.

Uber’s driver-partners can select into providing different types of car service. The Uber platform offers several tiered service levels to potential riders. Roughly speaking, throughout the United States, UberBLACK is the premium option. Driver-partners on UberBLACK are commercially licensed drivers with “black cars” that adhere to specific vehicle standards. Many driver-partners on UberBLACK are employees or contract

workers for limousine companies that use Uber’s technology. In most markets (New York City being a notable exception), driver-partners on uberX, the lower cost product offered on the platform, may drive their personal automobiles, utilizing commercial insurance (with \$1 million in liability and uninsured/underinsured motorist bodily injury coverage provided through the Uber platform) when conducting commercial activity. As previously stated, uberX driver-partners must pass a background check prior to driving on the platform.

Figure 5 indicates that Uber’s exponential growth is fueled by the spectacular growth of uberX driver-partners. UberX has grown rapidly likely because it is available in more U.S. markets than UberBLACK, because of greater customer demand for a lower-cost service, because of the lower entry barriers (e.g., absence of need for a commercial license and luxury car), and because of Uber’s promotional efforts.

Figure 5: Active Uber Driver-Partners by Service



Note: Sample consists of all U.S. UberBLACK and uberX driver-partners making at least four trips in any month (1,149,024 individuals).

As previously noted, about two thirds of Uber driver-partners work either full-time or part-time on another job. Therefore, it is not surprising that most drive with Uber part-time. The platform is conducive to a wide range of work schedules, and this is supported by the fact that there is little discernible relationship between hourly earnings and hours spent on the platform. *Table 3* illustrates this pattern for October 2015 for uberX drivers, which we selected as a month after Uber’s summer fare cuts and before the holiday season to represent more normal market conditions. The table reports earnings per hour with the app on, broken down by amount of time spent driving per week in the six largest markets where Uber operates, and for the 2014 BSG markets combined. Reported earnings here are net of Uber’s fees but do not adjust for driver-partners’ expenses, which we try to estimate below.²⁰ We also emphasize that the hours measure is an imperfect and probably overstated measure of hours worked, as drivers can have an app for another ride-sharing platform on while their Uber app is on, and they can conduct personal tasks while the Uber app is turned on.

Table 3: Distribution and Trimmed One-Percent Mean²¹ of Hourly Earnings of uberX Driver-Partners by Hours Worked, Oct. 2015

	1 to 15 hours/week		16 to 34		35 to 49		Over 50	
	Percent of driver-partners	Earnings per hour	Percent of driver-partners	Earnings per hour	Percent of driver-partners	Earnings per hour	Percent of driver-partners	Earnings per hour
BOS	51%	\$20.27	32%	\$20.64	12%	\$20.51	5%	\$19.87
CHI	58%	\$15.48	29%	\$15.94	9%	\$16.05	4%	\$15.82
DC	52%	\$17.71	31%	\$18.27	12%	\$18.21	5%	\$17.57
LA	55%	\$18.09	30%	\$18.09	10%	\$17.57	5%	\$16.46
NY	24%	\$23.13	32%	\$24.46	27%	\$24.48	17%	\$23.86
SF	53%	\$22.53	31%	\$23.86	11%	\$24.02	4%	\$23.75
All BSG Survey Markets	53%	\$18.75	30%	\$19.41	12%	\$19.33	5%	\$18.81

²⁰ Note also that the tables do not include earnings from promotional offers and incentives (most often hourly and monthly price guarantees conditional on driving a certain number or set of hours) that Uber offers drivers from time to time, most often at the beginning of a driver-partner’s time on the network or around the launch of a new Uber market. This omission causes us to slightly understate drivers’ earnings.

²¹ Trimmed one-percent means were selected instead of medians because the results were similar and because it is more appropriate to average trimmed means across cities than medians to derive an aggregate measure.

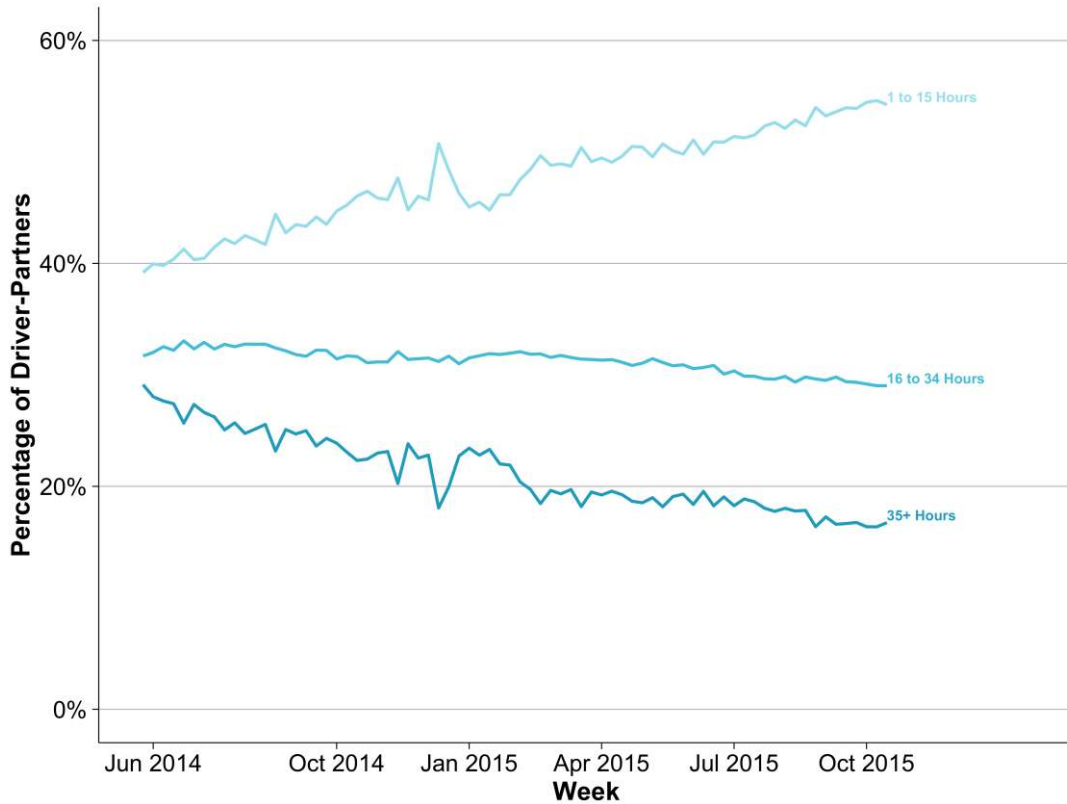
Source: Uber. Data aggregated at the driver-partner-week level. Figures exclude incentive payments that are offered to new driver-partners in some markets. Earnings are net of Uber's fees but do not adjust for driver-partners' expenses. Final line reflects the 20 survey markets in the 2014 BSG surveys. Cities weighted by their trip distributions in October 2014.

In the combined set of 20 areas, more than half of uberX driver-partners chose to drive for 15 hours or less a week, and fully 83 percent chose to drive less than 35 hours a week.²² Yet the largest difference in hourly earnings across workers in the various hours categories was \$0.66 (about four percent) between those driver-partners driving 16 to 34 hours a week and those driving one to 15 hours a week. Across all uberX drivers, earnings per hour each week are negatively correlated with hours logged with the app on that week, although this negative correlation may partly be a statistical artifact of the imprecision in measuring hours, as noise in hours will tend to induce a negative correlation due to division bias. A regression that instruments for hours worked in week t using hours worked during week $t-1$ found no evidence of an effect of hours worked on hourly earnings. In any event, there is little evidence that uberX drivers who work longer hours per week earn more per hour than those who work shorter hours, which may make the platform particularly attractive to those interested in working short hours.

Figure 7 shows the distribution of weekly hours with the app turn on over time for all Uber drivers combined. As Uber has expanded over time, more and more driver-partners are utilizing the platform for 15 hours or less per week, while the percentage of those on the platform for more than 35 hours a week has declined. This is partly a result of the fact that uberX grew more rapidly than UberBLACK drivers, and uberX drivers tend to drive less per week.

²² Driver-partners who provided service on both UberX and UberBLACK during the course of October 2015 are excluded from Table 3. Drivers who utilized the UberBlack platform tended to log longer hours per week than UberX drivers: 52 percent of UberBlack drivers used the platform for 35 hours or more a week.

Figure 7: Distribution of Uber Driver-Partner Hours Over Time

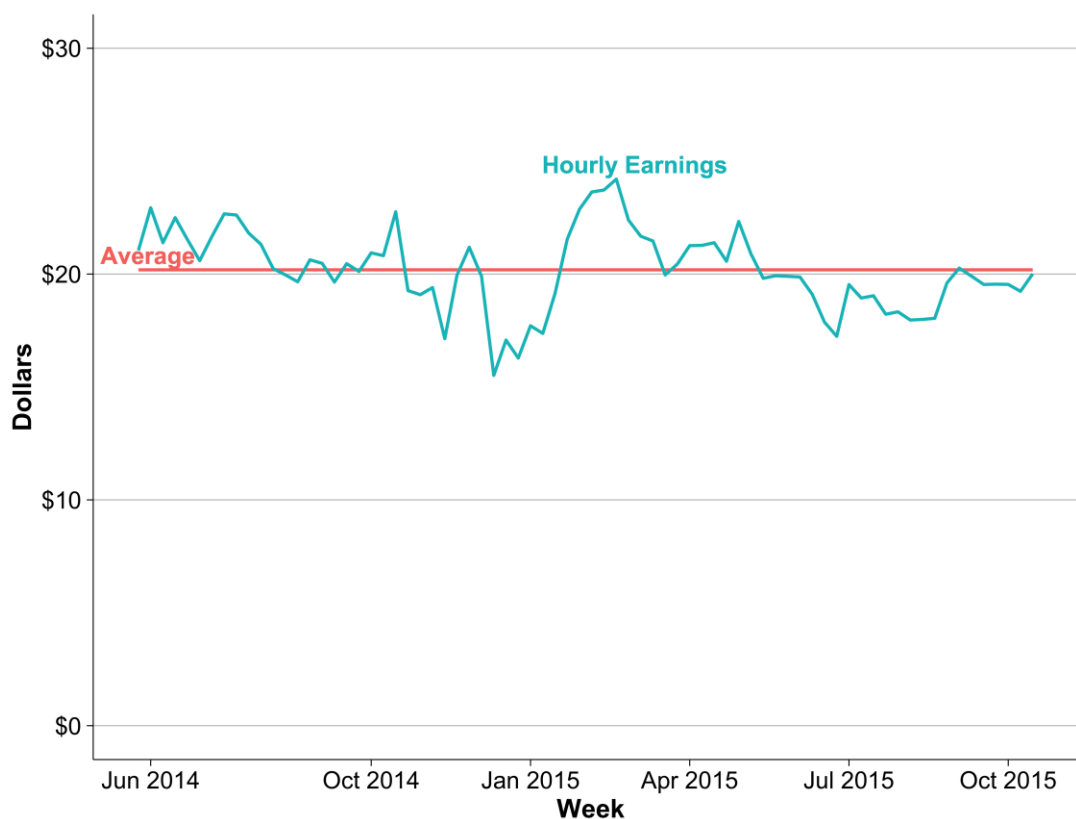


Note: Sample consists of all U.S. uberX and UberBlack driver-partners spending at least an hour online in a given week in 20 BSG US cities surveyed in 2014.

Figure 8 likewise provides an analysis of driver earnings over time. Specifically, for each city we calculated the 1-percent trimmed mean, and then computed a fix-weighted average across cities to hold constant shifts across cities. Driver-partner earnings fluctuate from week to week, but in the 20 markets in the 2014 BSG survey, the average was \$20.19 from June 2014 through October 2015. A regression of hourly earnings on time found no evidence of a time trend. The fact that fares have trended down while hourly earnings display no time trend suggests that hourly earnings are anchored to the drivers' alternative wages, with the entry and exit of workers causing utilization rates to adjust to clear the market at a more or less fixed wage.²³

²³ Hsieh and Moretti (2003) reach a related conclusion concerning the earnings of real estate agents, namely that entry and exit of real estate agents leads their real earnings to be invariant to fluctuations in housing prices.

Figure 8: UberX Driver Weighted-Average 1-Percent Trimmed Mean Earnings Over Time



Note: Sample consists of all U.S. uberX and UberBlack driver-partners spending at least an hour online in a given week in the 20 BSG U.S. cities surveyed in 2014. A one-percent trimmed mean of average hourly earnings across drivers was calculated for each city, and cities were weighted by the total number of trips provided in the city in October 2014 to hold constant changes in the distribution of drivers across cities.

Uber vs. Taxi. Table 4 illustrates the breakdown of Uber driver-partners (combining both UberBLACK and uberX driver-partners) by hours worked per week in October 2014, compared to taxi and limo drivers based on the ACS. Taxi drivers and chauffeurs work longer hours per week than Uber’s driver-partners, with more than one-third of taxi drivers usually working 50 or more hours per week. Slightly more than half of Uber drivers use the platform for 15 hours or less a week, compared with just 4 percent of taxi and limo drivers. This drastically different allocation of work time probably reflects the fact that the medallions required to operate a taxi are typically leased on a daily or weekly basis, which gives taxi drivers an incentive to work long hours over the duration of the lease. Uber driver-partners do not face this incentive, which enables them to flexibly select their hours, and to better align their work schedules to customer demand.

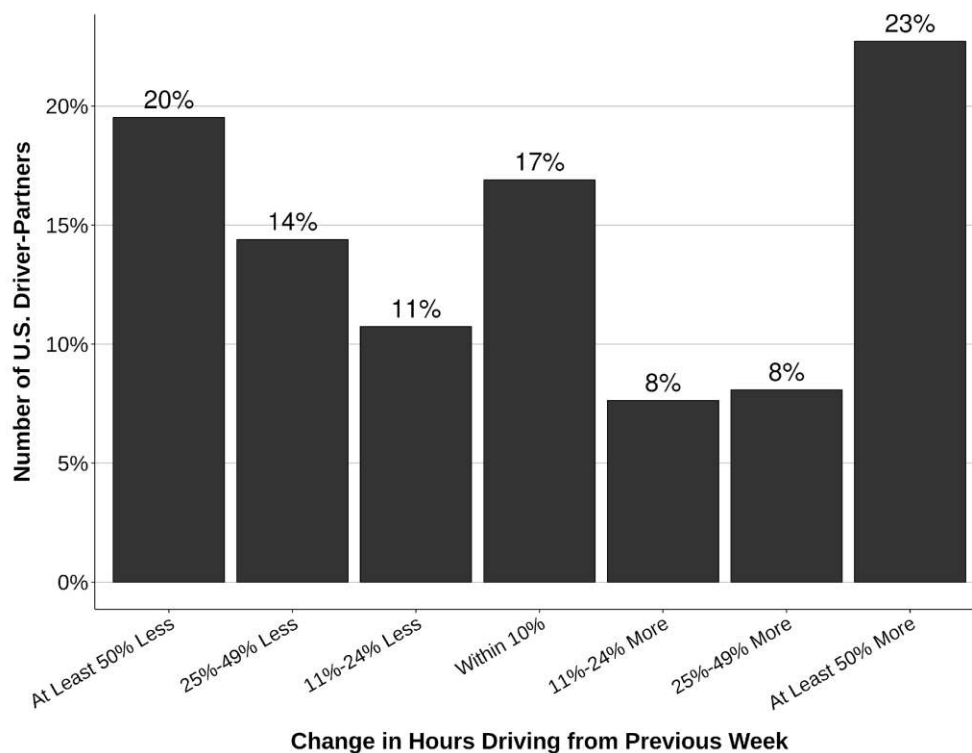
Table 4: Distribution of UberX Driver-Partners and Taxi Drivers and Chauffeurs by Hours Worked

	UberX Driver-partners (October 2014)	UberX Driver-partners (October 2015)	Taxi Drivers and Chauffeurs (ACS)
1-15 hours/week	51%	55%	4%
16-34	30%	29%	15%
35-49	12%	10%	46%
50+ hours/week	7%	6%	35%

Source: Uber and 2012-13 American Community Survey. Data for Uber driver-partners pertain to each week when they worked at least one hour in October 2014. ACS hours based on “usual hours worked per week past 12 months.” All data are for BSG surveyed market areas.

Figure 9 shows that driver-partners vary the number of hours in which they use the Uber platform by a considerable amount from week to week. In any given week, well more than half (65 percent) of driver-partners drive 25 percent more, or 25 percent less, than the amount they drove in the previous week. Only 17 percent of driver-partners tend to drive within 10 percent of the amount of time that they drove in the previous week. The within-driver, across-week coefficient of variation of hours with the app turned on for drivers who were active throughout the same period is 0.35 for the 25th percentile driver, 0.54 at the median, and 0.81 for the 75th percentile driver. These figures indicate considerable variation in the amount of time drivers spend driving on the platform from week to week, and are consistent with responses to the BSG survey, which indicated that drivers valued the flexibility that driving with the Uber app provides.

Figure 9: Distribution of Changes in Work Hours from Week to Week



Note: Figure based on all pairs of weeks in which a U.S. UberBLACK or uberX driver-partner spent at least one hour on the Uber app in the initial week. Sample period is August 31, 2014 through November 22, 2014 (170,505 individuals).

Since the Uber platform applies a new model to an existing industry, it is instructive to compare driver-partner earnings to those in similar occupations. Although we cannot look at earnings specifically for taxi drivers, taxi drivers, limo drivers, and chauffeurs are classified together in the Occupational Employment Statistics ([OES](#)) survey, which reports earnings for drivers who are employees (in contrast to Uber’s drivers, who are independent contractors). Taxi drivers, limo drivers and chauffeurs who are on payroll probably do not bear expenses for gasoline, vehicle maintenance, depreciation, etc., which are incurred by Uber driver-partners (although deductible from income taxes in many cases). As a consequence, we subsequently present estimates of drivers’ expenses to facilitate a comparison of net earnings.

Table 5: Comparison of Estimated Net Hourly Profits of Uber Driver-Partners and Hourly Wages of Taxi Drivers and Chauffeurs, October 2015

	Earnings Per Hour or Hourly Wages	
	Uber Drivers-partners (Net Earnings Per Hour)	OES Taxi Drivers and Chauffeurs (Hourly Wages)
BOS	\$20.86	\$12.96
CHI	\$16.23	\$12.54
DC	\$18.45	\$14.26
LA	\$18.43	\$14.53
NY	\$23.69	\$15.74
SF	\$23.87	\$13.92
Avg. BSG Survey Uber Markets	\$19.35	\$12.56

Source: Uber. Data aggregated at the driver-partner-week level. Drivers utilizing all Uber platforms are included in sample. Figures exclude incentive payments that are offered to new driver-partners in some markets. Earnings are net of Uber’s fees but do not adjust for expenses. Final line reflects the 20 survey markets in the 2014 BSG surveys. Cities weighted by their trip distributions in October 2014. OES data from the May 2015 survey.

The data in *Table 5* indicate that Uber’s driver-partners generally receive higher earnings per hour (before vehicle expenses) than employed taxi drivers and chauffeurs. As long as drivers’ costs are less than \$6.79 per hour, the net earnings of Uber driver-partners would exceed those of taxi drivers and chauffeurs, on average.

Notice also that Uber’s driver-partners tend to earn more in markets where taxi drivers and chauffeurs tend to earn more. The Pearson correlation across the 19 areas with available data is 0.52. At least in the long run, the process of labor market equilibration in the presence of varying local labor market conditions should generate a positive correlation in the wages of those doing similar work in the same market.

Expenses. Uber’s driver-partners are not reimbursed for their driving expenses, such as gasoline, maintenance, depreciation, or insurance, while employed driver-partners covered by the OES data may not have to cover these costs. Costs vary for each driver-partner depending on their model of car, driving style, traffic, and other factors. Note also that drivers may partially offset their costs by deducting work-related expenses from their income for tax purposes, including depreciation or leasing fees, gasoline, maintenance, insurance, mobile device and data fees, and license and registration fees. We disregard possible tax deductions in our calculation below, however, leading to a somewhat overstated estimate of driver costs.

To derive estimates of Uber driver-partner costs tailored to each category of vehicle that drivers use, we use cost data from the AAAs “Your Driving Costs” reports.²⁴ Each year the AAA produces a report containing estimates of the five-year cost to own for the top five selling vehicles in each of five categories: small, medium, and large sedan, truck, and minivan. We combine this data with estimates of average miles driven per hour while the Uber app is on derived from driver GPS data for a random sample of 2,000 driver days per city in each of the 20 BSG cities surveyed.

Costs in the AAA report are broken down on a per mile basis for variable costs (e.g. gas) and a per year basis for fixed costs (e.g., insurance and taxes). Only one variable cost of interest is not explicitly provided, marginal depreciation. Instead, the AAA provides annual depreciation estimates for vehicles driven 10,000, 15,000, and 20,000 miles per year. We derive *per mile* depreciation estimates from these data as follows: we assume that average per mile depreciation over the first 10,000 miles is the same as it is between mile 10,000 and mile 15,000. Additionally, we assume that the average per mile

²⁴ <http://exchange.aaa.com/automobiles-travel/automobiles/driving-costs/#.Vx7mc5MrJdA>

depreciation between mile 15,000 and mile 20,000 applies to miles driven in excess of 20,000.

We apply the AAA cost figures to two scenarios: driving full time and driving part time on the Uber platform. In the case of full-time driver-partners we include the fixed costs of the vehicle under the assumption that they specifically purchased a new car to earn money as a professional driver and otherwise would have had recourse to another car for personal use. For full-time drivers, we further assume that the car is used mostly for providing ride-sharing services, but partly for personal use. Specifically, fixed costs are spread across 35,000 business miles (approximately the distance one would travel in 2,000 hours of professional driving) and 15,000 personal miles. We compute costs for full-time drivers under two assumptions: 1) excluding insurance and registration fees, as these costs would be required if the car were to be used for personal driving absent Uber; and 2) including insurance and registration fees, as these costs would be additional if the car is used exclusively for professional driving or if the driver would not have used the car absent Uber. In the part-time case we disregard fixed costs, assuming that drivers are using a car they already owned which would have depreciated regardless of driving on the platform and that they would have been responsible for insurance and registration fees regardless of occasionally driving on the Uber platform. Under these assumptions, *Table 6* reports estimates of hourly costs for five vehicle types for part-time (column 1) and full-time drivers (columns 2 and 3).

Table 6: Estimated Hourly Expenses by Vehicle Type and Part-Time and Full-Time Driver-Partners

Vehicle Type	Part Time	Full Time	Full Time with Insurance and Registration
Small Sedan	\$2.94	\$3.76	\$4.29
Medium Sedan	3.60	4.79	5.33
Large Sedan	4.25	5.83	6.38
4WD SUV	4.38	5.94	6.46
Minivan	4.02	5.34	5.84

Source: authors' calculations based on AAA data and Uber GPS data on average driving speed per hour with app on. See text for further details.

Drivers' hourly expenses vary depending on their model of car and full- or part-time status. For part-time drivers, costs range from \$2.94 to \$4.38 per hour, and for full-time drivers they vary from \$3.76 to \$6.46 per hour. Thus, the AAA expense data suggest that, taking expenses into account, the average Uber driver-partner is likely to earn at least as much per hour, and probably more, than the average taxi driver and chauffeur.

Earnings Regressions

We next consider how earnings vary across Uber driver partners. *Table 7* presents earnings regressions using the BSG 2014 survey data, where the dependent variable is the log of the earnings per hour net of Uber fees.²⁵ The column labeled (1) presents a model with explanatory variables that relate to driving with the Uber platform, such as whether the driver provides rides under the UberBlack service and the driver's average weekly hours since partnering with Uber, as well as city dummy variables. The second column adds variables reflecting the drivers' personal characteristics, such as race, experience and education. Tenure at Uber is defined as the number of months that the driver has used the platform.

The city dummies are jointly highly significant, which is not surprising in light of the results in Tables 3 and 5. Drivers who provide the UberBlack service earn more per hours than those who exclusive provide uberX rides, which is not surprising given that UberBlack requires a luxury car and drivers who are typically commercially licenses. There is a quadratic relationship between earnings and accumulated seniority using the Uber platform, with earnings peaking after about 14 months. Drivers with more potential experience (defined as age minus education minus 6) also have slightly higher hourly earnings. Drivers' education, race, and sex are not statistically significant predictors of earnings.

²⁵ It is not possible for us to link the BSG survey data back to Uber administrative data. Consequently, we are limited to the survey data collected by BSG and the administrative information that Uber provided to BSG. Thus, we cannot estimate driver expenses because we do not know the type of car or mileage that each driver drove. Moreover, the earnings per hour data provided to BSG indicated the decile interval of the drives hourly earnings in 2014, not the exact hourly earnings. We use the log of the midpoint of the interval as the dependent variable.

Table 7: Earnings Regressions for Uber Driver Partners, 2014

	<i>Means:</i>	<i>Dependent variable:</i>	
		Log of Midpoint of Decile Hourly Earnings	
		(1)	(2)
Log of Midpoint of Weekly Hours	2.987	-0.034 (0.066)	-0.013 (0.061)
UberBlack Driver-Partner (=1 if yes)	0.354	0.562*** (0.165)	0.480*** (0.158)
Finance Car	0.472	0.099 (0.099)	0.064 (0.085)
Lease Car	0.103	0.271* (0.150)	0.225 (0.149)
Short term rental/Lease Car	0.053	0.234 (0.314)	0.195 (0.290)
Other Car Procurement	0.036	-0.832 (0.513)	-0.595 (0.520)
New Service Fee	0.295		-0.132 (0.257)
Education	2.396		0.013 (0.009)
Tenure (time using Uber app in months)	6.712		0.054** (0.027)
Tenure Squared	96.900		-0.002* (0.001)
Experience	7.074		0.010* (0.005)

Experience Squared	361.562	-0.00000 (0.0002)
Female	0.121	0.031 (0.123)
Black	0.186	-0.181 (0.228)
Hispanic	0.151	-0.399 (0.254)
Asian	0.158	-0.273 (0.177)
Other	0.140	-0.010 (0.192)
City Dummies	Yes	Yes
Constant	1.121*** (0.221)	0.916*** (0.225)
Adjusted R ²	0.336	0.353
Residual Std. Error	1.246 (df = 575)	1.229 (df = 564)

Notes: BSG 2014 survey data. N=601.

*p<0.1; **p<0.05; ***p<0.01
Mean(Dep. Var.) = 2.40, SD(Dep. Var.) = 1.53

Conclusion

This paper has attempted to provide the first comprehensive description Uber's driver-partners, based on both survey data and administrative data. Several findings are worthy of emphasis and exploration in further research.

First, the Uber platform provides a great deal of flexibility for driver-partners, and this characteristic of work in the on-demand economy may attract workers who supply labor to the sector more generally. Responses to the BSG survey indicated that many driver-partners valued the flexibility to choose their hours and days of work. Furthermore, the administrative data indicate that a large share of driver-partners avail themselves of this flexibility and vary their hours from week to week. Compared with traditional taxi drivers, Uber driver-partners tend to work substantially fewer hours per week. For example, taxi drivers and chauffeurs were five times more likely to work 50 or more hours per week. The high fixed costs of obtaining a medallion to drive a taxi in many areas could explain the longer hours of taxi drivers. The finding that hourly earnings for Uber's driver-partners are essentially invariant to hours worked during the week also makes Uber an attractive option to those who want to work part-time or intermittently, as other part-time or intermittent jobs in the labor market may entail a wage penalty.

Second, Uber's driver-partners are more similar in terms of age and education to the general workforce than to taxi drivers and chauffeurs. There are many possible explanations that could have contributed to this result. First, the U.S. economy was operating at less than full employment during the period studied, and more highly educated and younger workers may have had fewer alternatives available than is normally the case in this time period. Uber may have represented a particularly attractive bridge option for these workers. Second, entry barriers in traditional taxi and limo services may prevent a broader segment of the workforce from gaining such jobs. And third, a segment of the general public may be drawn to Uber over traditional taxi and chauffeur jobs because Uber permits greater flexibility in terms of scheduling. The fact that new drivers continued to partner with Uber at an accelerating rate in late 2014 and 2015, when the economy strengthened and the unemployment rate fell below six percent, suggests that weakness in the economy was not the major reason why driver-partners partnered with Uber. In addition, most driver-partners were employed prior to joining Uber. These considerations suggest that Uber has attracted driver-partners with a wide range of backgrounds because they value the type of opportunity for flexible work that Uber provides.

Third, although it is difficult to compare the after-tax net hourly earnings of Uber's driver-partners with that of taxi drivers, it appears that Uber driver-partners earn at least as much as taxi drivers and chauffeurs, and in many cases more than taxi drivers and chauffeurs. The prospect of higher compensation is likely part of the explanation for why the number of Uber driver-partners has grown at an exponential rate (along with lower entry barriers and flexibility). Another aspect of Uber that can influence the pay of driver-partners vis-à-vis taxi drivers is that customers rate their driver-partner when they take a trip with Uber, and driver-partners' ratings are made available to potential customers. This leads Uber's driver-partners to develop reputations, and to have an incentive to perform well to develop and maintain a good reputation. By contrast, taxi drivers typically are anonymous and customers are not aware of their reputations. Reputations matter in markets.²⁶ Driver-partners are rewarded for having a good reputation, which could lead Uber's driver-partners to earn more than taxi drivers. Furthermore, driver-partners who expect to do a good job and develop a strong reputation are more likely to be attracted to Uber than to traditional taxi service.²⁷ Estimating the impact of driver-partners' reputations on their earnings is an important topic for further research. The wage regressions that we present find little evidence of earnings differences by driver education, gender or race, but we do find a return to early experience using the Uber platform.

Lastly, Uber's growth rate has varied considerably across cities. Understanding why Uber grew more rapidly in some cities than others could provide insights into the likely future path of the on-demand sector. For example, if inefficient taxi regulations and restricted supply of taxi licenses contributed importantly to Uber's rapid expansion, then demand for on-demand services may be slower outside of for-hire transportation services.

²⁶See, for example, Cabral and Hortaçsu (2010) for research on the relationship between sellers' ratings and sales on eBay, which, like Uber, is an online marketplace that uses a ratings system to build reputations for both sellers and buyers.

²⁷This sorting effect could partly explain why Uber's driver-partners are more highly educated than traditional taxi drivers and chauffeurs.

References

Bernhardt, Annette. “Labor Standards and the Reorganization of Work: Gaps in Data and Research.” *UC Berkeley: Institute for Research on Labor and Employment*, January 2014. Available at <http://www.irlle.berkeley.edu/workingpapers/100-14.pdf> and accessed January 12, 2015.

Benenson Survey Group (BSG). “Survey of Uber Driver-Partners.” Internal Survey. December 2014. Available at <http://www.bsgco.com/uber>.

Bureau of Labor Statistics, U.S. Department of Labor. “Contingent and Alternative Employment Arrangements, February 2005.” *U.S. Department of Labor*, July 27, 2005.

Bureau of Labor Statistics, U.S. Department of Labor. “Occupational Employment and Wages, May 2013, 53-3041 Taxi Drivers and Chauffeurs.” U.S. Department of Labor, April 1, 2014. Web. Accessed January 10, 2015.

Camerer, Colin; Babcock, Linda; Lowenstein, George and Thaler, Richard. “Labor Supply of New York City Cabdrivers: One Day At a Time.” *The Quarterly Journal of Economics*, May 1997, 112(2), pp 407-441.

Chou, Yuan K. “Testing Alternative Models of Labor Supply: Evidence from Taxi Drivers in Singapore.” *University of Melbourne, Department of Economics Research Paper*, 2000, 768.

Cohany, Sharon R. “Workers in Alternative Employment Arrangements.” *Monthly Lab. Rev.* 1999, 119(31).

Cabral, Luís and Ali Hortacsu. “The Dynamics of Seller Reputation: Theory and Evidence from eBay.” *The Journal of Industrial Economics*, March 2010, 58(1), pp 54-78.

Cramer, Judd L and Krueger, Alan B. “Disruptive Change in the Taxi Business: The Case of Uber.” *NBER Working Paper*, March 2016, No. 22083.

Crawford, Vincent P; Meng, Juanjuan. “New York City Cab Drivers’ Labor Supply Revisited: Reference-Dependent Preferences with Rational Expectations Targets for Hours and Income.” *The American Economic Review*, August 2011, 101(5), pp. 1912-1932.

Farber, Henry S. “Is Tomorrow Another Day? The Labor Supply of New York City Cabdrivers.” *Journal of Political Economy*, 2005, 113(1), pp. 46-82.

Farber, Henry S. “Reference-Dependent Preferences and Labor Supply: The Case of New York City Taxi Drivers.” *The American Economic Review*, June 2008, 98(3), pp. 1069-1082.

Farber, Henry S. “Why You Can’t Find a Taxi in the Rain and Other Labor Supply Lessons from Cab Drivers.” *NBER Working Paper*, October 2014, No. 20604.

Farrell, Diana and Greig, Fiona. “Paychecks, Paydays and the Online Platform Economy,” JPMorgan Chase & Co. Institute, February 2016a.

Farrell, Diana and Greig, Fiona. “The Online Platform Economy: What is the growth trajectory?” March 2016b; <https://www.jpmorganchase.com/corporate/institute/institute-insights.htm>

Greenwood, Brad N and Wattal, Sunil. “Show Me the Way to Go Home: An Empirical Investigation of Ride Sharing and Alcohol Related Motor Vehicle Homicide (January 29, 2015). Fox School of Business Research Paper No. 15-054. Available at SSRN: <http://ssrn.com/abstract=2557612> or <http://dx.doi.org/10.2139/ssrn.2557612>.

Hsieh, Chang-Tai and Enrico Moretti. “Can Free Entry Be Inefficient? Fixed Commissions And Social Waste In The Real Estate Industry.” *Journal of Political Economy*, 11(5) ,Oct 2003, 1076-1122.

Katz, Lawrence F and Krueger, Alan. “The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015 (March 29, 2016). Available at Princeton: https://krueger.princeton.edu/sites/default/files/akrueger/files/katz_krueger_cws_-_march_29_20165.pdf.

Kuttner, Robert. “The Task Rabbit Economy.” *The American Prospect*, October 10, 2013.

OECD Publishing. “OECD Factbook 2014: Economic, Environmental and Social Statistics.” May 6, 2014.

Polivka, Anne E. “Contingent and alternative work arrangements, defined.” *Monthly Labor Review* 1999, 119(3).

Sheldon, Michael. “Income Targeting and the Ridesharing Market.” Unpublished Manuscript. 2014. Available at <https://sites.google.com/site/michaelsheldonhomepage/working-papers>.