



The Labour Market for Uber Drivers in Australia

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Abstract

We describe the labour market for Uber drivers, the first detailed study of a gig

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economy market in Australia. Uber drivers' characteristics, reasons for driving with Uber, hours of work and driving schedules, earnings and job satisfaction are analysed, using both administrative and survey data. Uber drivers have diverse pathways to the job, with the objective to earn supplemental income most important in Australia. Total hours and timing of work differ substantially between drivers. Drivers express high satisfaction regarding job flexibility but lower satisfaction about pay. Hours worked and job satisfaction depend importantly on a driver's pathway to the job.

1. Introduction

At the forefront of debates on the future of work is how the gig economy might reshape labour markets. The creation of platform-based 'on-demand' supply of goods and services has brought a new way of working. Some regard it as a way of working that broadens access to employment and enables better work–life balance by increasing workers' control over timing of their labour supply. Others express concern that it is a threat to 'take over' the labour market; and that being outside the regulatory framework for standard employment brings adverse consequences for workers' wellbeing.

Despite the extent of commentary on the gig economy, evidence on its prevalence and impacts remains limited. This lack of evidence is due primarily to the absence in official national surveys of a category of work that could be interpreted as gig employment (Abraham et al. 2019, pp. 357–58). For

Australia, a review by Healy, Nicholson and Pekarek. (2017, p. 10) concluded ‘There are many questions unanswered and much that is not yet known, including exactly who works in the gig economy, why they do so, how much they are paid...’

The main evidence on the incidence and impact of gig work in Australia is from a special purpose household survey in early 2019, commissioned for a Victorian Government review, with findings reported in McDonald et al. (2019). The survey found 7.1 per cent of the population had offered to work on a digital platform in the past 12 months, although at the time of the survey only about 0.2 per cent were doing full-time gig work and entirely reliant on that source of income. Gig work was concentrated in transport and food delivery (18.6 per cent), professional services (16.9 per cent) and odd jobs (11.6 per cent).¹

In this study, we extend analysis of the gig economy in Australia by investigating labour market outcomes for a specific group of workers: Uber drivers. Uber first launched in Australia in Sydney in 2012 and has subsequently spread to 36 other cities. The market for Uber drivers seems a valuable place to start analysis of the gig economy, given the concentration of growth in the taxi and limousine services sector and the prominence of Uber in that sector (McDonald et al. 2019, p. 38 report that 20.8 per cent of individuals who had offered services via a digital platform in Australia did that with Uber). Studies describing the labour market for Uber drivers have previously been undertaken for the United States (Hall and Krueger 2017; Hyman et al. 2020), London (Berger et al. 2019), France (Landier, Szomoru and Thesmar 2016) and Egypt (Rizk 2017).²

Our study is deliberately descriptive. This is motivated by it being the first detailed study of a gig economy labour market in Australia. Two main data sources are used: first, administrative data on a one-eighth random sample of drivers who used the Uber platform in Sydney, Melbourne, Brisbane and Perth over a 1-year period from late 2017 to 2018;

and second, a survey of 824 Uber drivers in Sydney and Melbourne. Using these data sources we are able to describe a broad array of aspects of the labour market—including drivers' motivations for joining Uber, their demographic characteristics and main activity prior to driving with Uber, their hours of work and driving schedule, earnings and job satisfaction. Previous studies of the Uber labour market in Australia have been more focused: Stanford (2018) estimated the net income of Uber drivers using Uber pricing rules and assumptions on driving costs; and Holtum and Marston (2019) examined job conditions and satisfaction for a sample of 24 current and ex-Uber drivers in Brisbane. While taking a descriptive approach, we do seek to establish key patterns and themes. This is done by linking our findings about different aspects of the market, and by taking a cross-country perspective, integrating findings for Australia with other countries.

The rest of the article is organised as follows. Section 2 introduces the Uber labour market in Australia. Section 3 describes the data sources. Section 4 presents descriptive information on characteristics of Uber drivers. Section 5 provides a variety of perspectives on drivers' motivations for partnering with Uber. Section 6 describes the driving time—total hours and weekly schedules—of Uber drivers. Section 7 presents descriptive information on, and analysis of, the determinants of job satisfaction for Uber drivers. Section 8 presents summary information on hourly earnings of Uber drivers and analysis of the main correlates of earnings. In Section 9 the findings for Australia are compared with characteristics of labour markets for Uber drivers in other countries. Concluding remarks are in Section 10.

2. Background on the Uber Labour Market

Passengers use the Uber app to request a ride, including their location and destination. These trip requests are sent to a nearby driver. The driver accepts or declines the request during a short time window after seeing the rider's

location. If the driver declines the ride, the request is sent to another nearby driver. After the trip, the fare is automatically charged to the passenger's credit card or payment option. Uber handles all billing, customer support, marketing and lead generation.

Uber drivers choose when and where they work; although of course the amount of work obtained depends on the times and locations at which they choose to drive. For each trip completed, drivers are paid a base fare plus a per-kilometre and per-minute rate. A surge price—which applies a multiplier to standard fares for trips at busy times of the day and in specific locations—may also be paid. Payments are made to drivers after Uber deducts a service fee of 20 or 25 per cent (depending on when a driver started working with Uber).³ Uber also uses other incentive payment mechanisms, for example, to induce drivers to complete higher volumes of trips.

In Australia, an Uber driver must be over 21, have held a non-restricted licence (no P-plates) for at least 12 months in the past 2 years and not have any disqualifying offences on their driving record. Drivers must pass a criminal background check through the National Crime Check. They must also meet local regulations—for example, drivers in Sydney are required to obtain a Passenger Transport Licence Code. Drivers need to have a car that is less than 10 years old, passes a vehicle inspection test and is covered by comprehensive or third-party property damage insurance. GST registration and an Australian Business Number are required to access the Uber app. Drivers must also complete safety education modules prior to accessing the app, repeated annually.

3. Data Sources

The first main data source is administrative data. A one-eighth anonymous random sample of 10,795 drivers who used the Uber platform to provide the UberX (peer-to-peer) service in Sydney, Melbourne, Brisbane and Perth between the weeks beginning 16 October 2017 and 15 October 2018 was extracted. Drivers in Sydney and Melbourne each

account for about one-third of the Uber administrative sample, and Brisbane and Perth about one-sixth each.⁴ During this time period the regulatory environment in which Uber operated and Uber's share of the ride-share market were relatively stable. The full set of administrative data is used for analysis of drivers' hours worked; and the sample of drivers from Sydney for analysis of drivers' earnings.

For the purposes of our study, a driver is defined to be working in any week in which they spent time 'online' using the Uber platform. Correspondingly, 'hours worked in a week' are the total time in a week spent by a driver online. Being 'online' includes all time carrying passengers, driving to pick up a passenger, or being online and able to receive dispatch requests. Hours worked will therefore be greater than driving time due to the definition of being online.⁵ As well, working time can include commuting to the location where a driver plans to work, periods when drivers are multi-apping but only going offline from Uber if they receive a job from another platform, or time when a driver is online and at home waiting for a request to come through. In the survey of Uber drivers, about 25 per cent reported using a ride-sharing app in addition to Uber, with the main other services being Ola and Didi.

'Weeks worked' for a driver is calculated as the sum of weeks during the sample period in which a driver spent any time online using the Uber platform. For some purposes an alternative measure, 'weeks on platform', is used: defined as the duration from the first week to the last week in the sample period when a driver is observed using the Uber platform. The two measures differ where a driver has some weeks not using the Uber platform but subsequently again uses the platform.⁶

A range of information on characteristics of trips completed by drivers is used. First, driver-level data on hours worked each week are available. Weekly hours worked can be disaggregated between four time periods: weekday daytime; weekday evening; weekend daytime; and weekend evening. Daytime is

defined as hours from 6 am to 7 pm, and evening from 7 pm to 6 am. Second, it is possible to identify time spent by drivers in 'core areas' and in 'preference mode'. Core areas are the smallest set of geographic areas in a capital city in which two-thirds of rides occur. In preference mode drivers are able twice a day to nominate that they are only available to pick up rides in the direction they are already heading. This is to allow them to provide rides while returning to their homes. Third, for the time they spend online, it is possible to calculate each driver's completion rate, equal to the ratio of rides completed to rides offered, as well as the proportion of trips for which surge pricing applied. Our measure of drivers' earnings is average hourly earnings, calculated as total earnings (net of Uber service fees) divided by total hours worked in the sample period.

The second major data source is a survey of Uber drivers undertaken for Uber by YouGov. Several types of questions were included in the survey, relating to: (1) job and life satisfaction (following the question and response format of the HILDA survey); (2) activities prior to joining Uber; (3) driving behaviour with Uber; and (4) motivation for being an Uber driver.⁷ The sample frame was a representative sample of 10,000 drivers provided to YouGov. The survey was conducted from late November 2018 to early February 2019. Responses to the survey were made by 1,255 drivers, and after removing surveys with incomplete and inconsistent responses there were 1,155 drivers remaining.

Responses to the driver survey came predominantly from Sydney and Melbourne, and for this reason it was decided to restrict analysis of the survey data to those cities. The data have been reweighted using weeks and average hours per week worked to be representative of driving time for all drivers in Sydney and Melbourne.⁸ Even with this reweighting, it is important to recognise that survey respondents may not be representative of the full sample of Uber drivers—for example, in other characteristics we do not observe or in how they responded to the survey questions.

Several other sources of data are used. First, data from the Australian Bureau of Statistics (ABS) Census of Population and Housing are used to compare selected characteristics of Uber drivers with the occupation of automobile drivers. Second, a variety of data sources are combined to construct an estimate of the average costs incurred by an Uber driver in Sydney. Third, data from the HILDA survey are used to compare perceptions of job satisfaction for Uber drivers with the Australian workforce. Fourth, estimates of hourly earnings for employees in Australia are derived from the HILDA survey and ABS data sources to compare with Uber drivers.

4. About Drivers

Descriptive information on the characteristics of Uber drivers is presented in Table 1. Where possible, comparisons are made with workers in the occupation group of automobile drivers, using data from the 2016 Census.⁹

Uber drivers in Australia are predominantly male, consistent with the occupation group of automobile drivers. They are heavily concentrated in the age range from 25 to 54 years, which makes them somewhat younger on average than all automobile drivers.¹⁰ Just over 70 per cent of drivers are married or living with a partner and about one-half have children aged under 18 years in their household.

Uber drivers are relatively highly educated compared to the occupation of automobile drivers and all employed persons in Australia. For example, almost 50 per cent of Uber drivers have a Bachelor's degree or above as their highest education attainment, compared to just over 30 per cent for all employed persons and 25 per cent for automobile drivers.

Drivers are doing a range of other activities while working with Uber. About 31 per cent are working full-time in another job and 18 per cent part-time, 11 per cent are studying, 16 per cent running a business and 18 per cent looking for another job.

Length of tenure of Uber drivers is dispersed. About one-half of drivers in the

Table 1 Characteristics of Uber drivers, Australia

Variable	Uber driver-partners (%)	Automobile drivers (ABS 2016)	All employed persons (ABS 2016)
Uber administrative data (Sydney, Melbourne, Brisbane, Perth)			
(1) Gender			
Male	92.8	94.2	52.5
(2) Age			
18–24 years	5.5	2.9	14.5
25–34 years	38.7	24.3	23.1
35–54 years	44.2	40.7	43.7
55 plus years	11.6	30.1	18.7
(3) Tenure			
Up to 6 months	32.5		
6 months to 1 year	16.3		
1–2 years	26.6		
2 years plus	24.6		
Uber driver survey (Sydney and Melbourne)			
(4) Current status—In addition to driving with Uber are you...			
Working in another full-time job	30.6		
Working in another part-time job	18.3		
Caregiving	4.3		
Studying to obtain more qualifications	10.6		
Have your own business	16.2		
Looking for another job	18.0		
Retired	2.9		
Other	15.1		
(5) Highest education qualification			
Postgraduate degree/professional qualification	25.0	9.2	10.2
Diploma or VET	31.7	30.2	32.8
Bachelor degree	24.9	17.3	22.0
Senior secondary school	11.6	38.4	31.7
Junior secondary school	6.9	4.9	3.3

Notes: Automobile drivers (ANZSCO 7311) is defined as an occupation with the task of driving passengers to destinations.

Sources: Uber administrative data and driver survey; ABS, Commonwealth Census 2016, Tablebuilder.

administrative sample had been working with Uber for less than a year, one-quarter for 1–2 years and one-quarter for more than 2 years. Underlying the tenure distribution is a pattern of inflows to and exits from Uber by drivers. Drivers exit steadily from Uber for the first 6 months after commencing using the platform, by which time the percentage of drivers remaining is between 50 and 60 per cent. After that time, there is little further exit through to the end of the sample period at 12 months.¹¹

5. Motivation for Driving

A distinguishing feature of work with Uber is the scope for drivers to choose the times at which they are willing to supply labour. Table 2 presents drivers' responses to survey questions relating to their preferences over alternative work arrangements. In administering these questions, the order of responses was randomised. A large majority of drivers express a preference for flexible hours over fixed hours; and a slight majority say that they

Table 2 Uber drivers' preference for flexibility versus security, Sydney and Melbourne

	Percentage
(1) Preference for:	
Remain an independent contractor for Uber so I can keep the flexibility to choose when and where I drive and set my own schedule, but not be eligible for things like a guaranteed minimum wage and holiday pay.	55.9
Be classified as a worker or employee of Uber so I could be eligible for things like a guaranteed minimum wage and holiday pay, even if that means having less flexibility to set my own schedule or being told when and where to drive and which trips to accept.	44.1
(2) Would you prefer to work fixed hours rather than the fully flexible hours you have now?	
Yes	31.0
No	69.0

Source: Uber driver survey.

prefer to remain an independent contractor over the alternative of a being an employee.

Previous work for the United States (Mas and Pallais 2017) found that the average worker does not put a high value on flexibility in scheduling their work times, but that a small group of workers do attach a high value to this job characteristic. Hence, it appears that, to a large degree, Uber drivers are self-selected from the subset of the overall workforce who do attach high value to scheduling flexibility. Uber drivers in the United States and London also are found to place a high value on scheduling flexibility (Berger et al. 2018; Chen et al. 2019).

An alternative perspective on drivers' motivations can be obtained by linking their main activity prior to joining Uber with information on their other current activities. Table 3 is a transition table presenting this linked information for drivers who prior to Uber were employed, unemployed or studying, accounting for 89.4 per cent of drivers who responded to the survey. Several main patterns are evident.

First, a large proportion of drivers are continuing to do what was their main activity prior to joining Uber. For example, of those drivers who were working full-time or part-time prior to working with Uber, 35–40 per cent remain employed in jobs outside Uber. Drivers who are working in another job spend less hours working with Uber than other drivers, and drivers who work full-time in

another job have lower average hours than those working part time.¹²

Second, some drivers have joined Uber from unemployment or are looking for work while driving with Uber: 6.7 per cent state that unemployment was their main activity prior to joining Uber, and 10–15 per cent of drivers who were previously employed have looking for another job as an activity. Of those who were unemployed before joining Uber, some had relatively long durations; for example, over 55 per cent had been unemployed for more than 6 months. Studies for the United States have found that financial distress is a major motivation for drivers starting with Uber (Koustas 2019; Jackson 2019; Garin et al. 2020).¹³

Third, some drivers appear to be using Uber to earn income having moved to running their own business (in addition to Uber), studying or being a caregiver. For example, of those drivers whose main activity prior to Uber was working full-time or part-time, about 20 per cent were working in their own business when driving with Uber.

How drivers' incomes are affected when they join Uber differs according to their pathway to the job. Table 4 shows drivers' responses on what happened to their monthly income after joining Uber. Overall, 43 per cent state that their incomes increased and 38 per cent that their incomes decreased. But this story changes considerably when distinguishing between drivers according to their

Table 3 Uber drivers' activities: Before and while working with Uber, Sydney and Melbourne

Prior to Uber	Per cent of drivers	Other activities while working with Uber (Per cent of sample based on activity prior to Uber)								Total
		Studying	Caregiver	Working FT	Working PT	Retired/Pensioner	Looking for another job	Own business	Other	
Working PT	19.1	6.6	4.4	21.9	35.8	0.6	11.9	9.9	8.8	100.0
Working FT	60.0	4.5	2.6	37.4	7.9	1.7	15.5	12.0	18.3	100.0
Unemployed	6.7	7.7	0	7.7	0	6.2	25.0	15.5	37.9	100.0
Studying	3.6	63.3	3.4	0.4	19.1	0	3.9	2.8	7.1	100.0

Note: (1) The list of drivers' activities prior to joining Uber is not exhaustive. Hence the percentages do not add to 100 per cent; (2) Multiple responses could be given to the question on 'Status now'. Where a driver gave one status now it is given a weight of one; where a driver gave two current statuses each is given a weight of 0.5, and so forth.
Source: Uber driver survey.

path to joining Uber.¹⁴ Of drivers who were working full-time or part-time prior to joining Uber, and continued working in that category of job after joining Uber, about 65 per cent experienced an increase in income. By contrast, for drivers who had been working full-time or part-time, but at the time of driving with Uber were looking for work, only 22 per cent had an increase in income and about 60 per cent experienced a decrease.

6. Hours Worked and Timing of Work

Two main dimensions of drivers' hours of work can be identified—total hours worked and the timing of work (weekday/weekend and daytime/evening). For each dimension, we report two main types of descriptive information: first, averages for the entire sample period; and second, measures of week-to-week variation.

The distribution of total hours worked by drivers over the sample period is shown in Figure 1.¹⁵ What stands out is the heterogeneity. Looking at the distribution for all drivers, about 35 per cent worked for less than 100 hours over the 12-month sample period, while almost 20 per cent worked for more than 1,000 hours. For the sample of drivers who worked at least 8 weeks, the distribution becomes more weighted towards longer total hours driven, but the heterogeneity remains.

Differences between drivers in total hours worked could be due to variation in weeks worked or in average hours per week worked (or both). A simple regression with $\ln(\text{total hours})$ as the dependent variable and either $\ln(\text{weeks worked})$ or $\ln(\text{average hours per week})$ as the explanatory variable finds that each appear equally influential in explaining driver-level variation in total hours.¹⁶

The distribution of weeks worked shows a large percentage of drivers who worked for less than 10 weeks (about 40 per cent) and relatively even percentages working higher numbers of weeks.¹⁷ The distribution of average hours worked per week is concentrated at shorter lengths. Almost 60 per cent of drivers on average worked less than 20 hours per week and only 13.5 per cent met the

Table 4 Changes in drivers' incomes since commencing driving with Uber, Sydney and Melbourne

<i>Since driving with Uber, do you think your average monthly income has:</i>	<i>All responses</i>	<i>Worked FT prior to and while driving for Uber</i>	<i>Worked PT prior to and while driving for Uber</i>	<i>Worked FT or PT prior to driving for Uber and currently looking for work</i>
Increased a lot	4.9	3.3	2.8	3.3
Increased a little	38.2	63.7	57.3	22.3
Stayed the same	18.3	10.3	20.6	17.7
Decreased a little	19.8	17.6	12.2	15.7
Decreased a lot	18.8	5.1	7.1	41.0
Total	100.0	100.0	100.0	100.0

Note: Worked FT prior to survey includes drivers doing multiple jobs prior to survey.

Source: Uber driver survey.

definition of full-time employment (35 hours and above).¹⁸

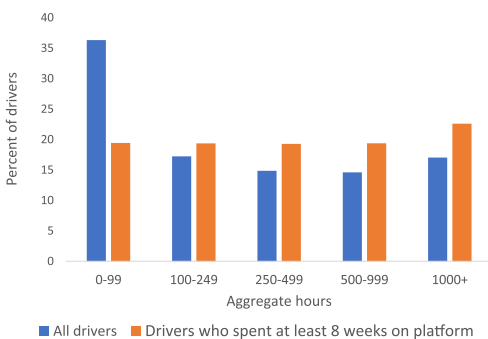
Descriptive information on week-to-week variation in drivers' hours worked is reported in Table 5. Drivers are classified into categories based on their average hours of work per week, for weeks when they were on the Uber platform. For each category of average hours, the table shows the distribution across actual hours. For example, the top left-hand element shows that for drivers with average weekly hours of work between 0 and 9 hours, in 66.1 per cent of the weeks in which they were on the Uber platform their weekly hours fell into that interval.

Generally, what is apparent is a high incidence of week-to-week variation in drivers' weekly hours of work. For example, for drivers whose average hours worked were 20–34 hours, in any given week only about

40 per cent of those drivers on average were working that number of hours. Switching of hours by drivers is however primarily to adjacent hours categories.¹⁹

We now turn attention to drivers' weekly schedules. Table 6 summarises schedules using the four time periods into which hours of work can be classified. Drivers are defined to have a *weekday evening* schedule when they spend more than 5 percentage points above the average time spent by all drivers working on weekdays (53 per cent) and more than 5 percentage points above average time spent by all drivers working on evenings (44 per cent). Similarly, drivers are defined to have a *weekend daytime* schedule when they spend more than 5 percentage points above the average time spent by all drivers working on weekends and more than 5 percentage points above the average time spent by all drivers working at daytime. *Weekday daytime* and *weekend evening* schedules are defined analogously. Altogether, drivers with these four schedules account for 83.3 per cent of the administrative sample.

Table 6 shows that there is substantial heterogeneity in drivers' 'average' weekly schedules. The most common schedule is weekday daytime, accounting for about one-third of drivers. Drivers in this category have relatively high hours worked per week. Weekend evening and weekend daytime schedules each account for about one-fifth of drivers. Drivers with weekend evening schedules tend to work a small number of hours each week and are not likely to spend a large

Figure 1 Distribution of Total Hours Worked by Uber drivers, Australia

Source: Uber administrative data.

Table 5 Variation in weekly hours worked by Uber drivers, Australia

Average weekly hours band	% of drivers	Distribution of hours worked by average hours band (%)				
		0–9	10–19	20–34	35–44	45+
0–9	46.7	66.1	25.4	6.6	1.1	0.9
10–19	17.3	27.6	39.9	26.5	4.2	1.9
20–34	16.7	9.9	18.7	42.3	19.0	10.1
35–44	6.7	4.2	7.4	22.3	29.6	36.5
45+	12.6	6.5	8.2	15.0	15.0	55.3

Note: Data are for all weeks on the Uber platform by drivers, excluding the summer holiday period.

Source: Uber administrative data.

Table 6 Distribution of 'average' weekly schedules of Uber drivers, Australia

Schedule	Per cent of sample	Per cent with average hours worked below 10 hours	Per cent spending high amount of time driving in core location
Weekday evening	8.2	32.4	44.3
Weekend evening	21.7	45.8	16.7
Weekday daytime	33.4	29.6	42.7
Weekend daytime	20.0	36.4	71.2

Note: Drivers are defined to have a 'xx' schedule when they spend more than 5 percentage points above the average time spent by all drivers working at that time. Numbers in column 'Per cent of sample' add to 83.3 per cent.

Source: Uber administrative data.

amount of time driving in core areas. Drivers with weekend daytime schedules, on the other hand, spend a large fraction of their time working in core areas. Only a small percentage of drivers have a weekday evening schedule.

Week-to-week variation in drivers' schedules is described in Table 7. Each element in the table shows the percentage of drivers who, having worked in a time period in one week, worked in the same time period in the next

week, for the sample of episodes where drivers worked positive hours in adjacent weeks. Given the breadth of the time periods and the restriction to drivers who worked positive hours in adjacent weeks, the high degree of variability in driving schedules is notable. For example, although the weekday daytime period encompassed about one-third of hours worked each week, still one-quarter of drivers working in that period in 1 week did not work at all in the weekday daytime period in the next week.

Table 7 Week-to-week variation in Uber drivers' schedules, Australia

Whether worked any time in week t during	% of drivers	Whether worked same period of week in week $(t+1)$
Weekday daytime	83.9	77.1
Weekday evening	67.1	56.0
Weekend daytime	75.6	63.0
Weekend evening	80.5	71.5

Note: Sample restricted to episodes where drivers worked positive hours in adjacent weeks.

Source: Uber administrative data.

7. Job satisfaction

This section reports findings on the job satisfaction of Uber drivers. We begin with summary information on Uber drivers' satisfaction ratings, both for overall job and specific job attributes, presented in Figure 2. These questions were asked at the beginning of the driver survey to avoid ordering effects (see for example the discussion in Berger et al. 2018, pp. 19–20). The ratings are based on questions with 11-point response scales

Figure 2 Satisfaction with Aspects of Working on the Uber Platform, Uber Drivers, Sydney and Melbourne



Note: 11-point scale: low satisfaction = 0–3; medium satisfaction = 4–6; and high satisfaction = 7–10.
 Source: Uber driver survey

where a response of zero was designated as ‘totally dissatisfied’ and 10 as ‘totally satisfied’. We have defined low satisfaction as 0–3; medium satisfaction as 4–6; and high satisfaction as 7–10.²⁰

Generally, Uber drivers appear satisfied with their work. A high level of overall satisfaction with their job is expressed by about 60 per cent of drivers. A majority of drivers express high levels of satisfaction with work hours, flexibility, job security and the work itself. Satisfaction with pay is more evenly distributed across the categories.

The job satisfaction of Uber drivers and general populations of workers (all workers and

the subset of workers in the occupation category of machinery operators and driver) are compared in Table 8. Data on the general populations of workers are from the HILDA survey. Responses are from employed persons aged above 18 years who answered questions on gender, age and income. Observations are reweighted by age and gender to match the survey sample of Uber drivers from Sydney and Melbourne.

Overall job satisfaction for Uber drivers (6.8) is lower than for all workers (7.6), but similar to the occupation group of machinery operators and drivers (7.0). Job satisfaction is higher for Uber drivers who expressed a preference for flexibility in their work.²¹ On specific job attributes, Uber drivers have higher average levels of satisfaction than machinery operators and drivers regarding flexibility to balance work and non-work commitments, and similar satisfaction for hours of work and the work itself. On the attributes of total pay and job security, Uber drivers have lower average levels of satisfaction. Similar findings on satisfaction from gig work in Australia are reported in McDonald et al. (2019).

A further interesting perspective on job satisfaction is to compare between drivers who experience increases and decreases in income after joining Uber. This is done in Table 9. Satisfaction levels are strongly ordered by the direction of income change. Drivers whose income increased after joining

Table 8 Job satisfaction of Uber drivers (Sydney and Melbourne) and all workers, Average scores

	Uber drivers			General population of workers	
	All drivers	Prefer to remain independent	Partnered for flexibility	All workers	Machine operators and drivers
(1) Overall job	6.8	7.3	7.1	7.6	7.0
(2) The flexibility to balance work and non-work commitments	7.8	8.4	8.0	7.5	6.8
(3) The hours you work	7.0	7.6	7.3	7.3	6.7
(4) Total pay	5.3	5.9	5.6	7.1	6.6
(5) Job security	6.1	6.7	6.3	7.7	7.0
(6) Work itself	7.2	7.6	7.2	7.6	7.2

Notes: (1) Scores are average from a 0–11 scale; and (2) Uber drivers are classified as preferring to remain independent and partnering for flexibility if they agreed or strongly agreed with these statements—see Table 2.

Sources: Uber driver survey; HILDA 2018 survey.

Table 9 Job satisfaction of Uber drivers, Sydney and Melbourne

<i>Income when join Uber</i>	<i>Percentage of drivers</i>	<i>Job satisfaction</i>	<i>Financial stress</i>	<i>Employment opportunities</i>
Increased a lot	4.9	8.3	7.4	8.3
Increased a little	38.2	7.2	6.2	7.1
Stayed the same	18.3	6.9	6.2	6.8
Decreased a little	19.8	6.8	5.9	6.7
Decreased a lot	18.8	5.5	4.8	5.3

Source: Uber driver survey.

Uber have a relatively high average level of overall job satisfaction. But drivers whose incomes decreased express much lower levels of satisfaction. Drivers' feelings of satisfaction about financial stress and employment opportunities are also positively correlated with the change in income they experienced after joining Uber.

As a final step to investigate job satisfaction of Uber drivers, we estimated OLS regression models for the determinants of overall job satisfaction, with a focus on the impact of preferences for flexible working hours.²² Drivers' preferences for flexibility are strongly associated with their job satisfaction. Drivers who partnered with Uber to have more flexibility, who value being able to choose their own hours or who prefer to remain an independent contractor express levels of job satisfaction about 0.8–1 point higher (on the 11-point scale); whereas drivers who prefer fixed hours express levels of satisfaction that are lower by the same amount. Effect sizes are reduced, but for the most part remain significant, when the four variables representing preferences for flexibility are included together.

Drivers' other activities while working with Uber are generally not a significant determinant of job satisfaction. The exception is that drivers who are looking for work express satisfaction levels that are 1.1–1.4 points lower than other drivers.

8. Earnings

8.1 Descriptive

Average hourly earnings for drivers over the sample period, calculated as earnings per hour

excluding Uber's service fee, were \$29.46 for all hours online and \$32.11 excluding commuting time from hours online.²³ The average total incremental cost of driving in Sydney is estimated to be \$8.46 per hour. This accounts for GST, fuel, maintenance, vehicle depreciation and the additional cost for comprehensive insurance for Uber drivers.²⁴ Hence, the average hourly earnings of a driver, net of costs, was \$21.00 or \$23.65, depending on the measure of hours worked.

How do earnings of Uber drivers compare with other workers in Australia? To make a comparison with a group of workers similar to Uber drivers, we focus on adults working full-time or part-time as casual employees (not receiving paid leave), both in aggregate and for occupation groups where Uber drivers would be classified (although unfortunately it is not possible to obtain a robust estimate of average earnings for the detailed category of automobile drivers). We obtain measures of the average and distribution of hourly earnings for these employees from HILDA and ABS surveys. As the measures are derived based on time spent working, we compare with average hourly earnings for Uber drivers excluding their commuting time. Table 10 presents a representative summary of the available measures.

Average hourly earnings of Uber drivers are about 25 per cent less than for all casual employees in either Australia or Sydney; and their average places them at the 35th percentile of the distribution of average hourly earnings of casual employees.²⁵ When compared to groups of employees doing a job in the same occupation category, however, the difference in average hourly earnings narrows to 10–20 per cent.

Table 10 Average hourly earnings, by type of worker, Australia 2018

Source	Age	Location	Type of worker	Average hourly wage
HILDA ¹	18–69 years	Australia	All employed persons	\$36.00
			All casual employees	\$31.28
			Casual employees – Road and rail drivers	\$26.82
ABS—Employee Earnings and Hours ²	Paid adult rates	Sydney	All casual employees	\$31.04
		Australia	All casual employees	\$33.90
ABS—Characteristics of Employment ³	All	Australia	Casual employees—Machinery operators and drivers	\$29.00

Note: HILDA measure equal to (Imputed current weekly gross wage and salary in main job)/(Hours per week usually worked in main job); and restricting to hourly earnings between \$6.24 and \$208.10 (following Lass and Wooden 2020). Sources: ¹HILDA 2018 survey; ²ABS, Employee Earnings and Hours, Datacube 4; ³ABS—Characteristics of Employment, table 4.2.

8.2 Decomposition of Sources of Driver-Level Variation in Earnings

Drivers' earnings per hour are the multiple of their trips per hour and earnings per trip. Trips per hour is the volume of work. It depends on: (1) rides offered per hour; and (2) the acceptance rate by drivers. Rides offered depends on influences such as location and times worked. The acceptance rate reflects drivers' preferences and strategy, such as selectiveness about trips. Earnings per trip depends on (i) distance travelled and (ii) the rate of pay. Distance travelled reflects the purpose of the passenger's trip and is likely to vary by location and times worked. The rate of pay is determined by whether a driver is working at a time where standard pricing or surge pricing applies and incorporating any promotions or additional bonus offers.

A simple decomposition can be used to determine the relative influence of variation in trips per hour and earnings per trip on drivers' earnings per hour. This is done by estimating a regression with $\ln(\text{earnings per hour})$ as the dependent variable and either $\ln(\text{trips per hour})$ or $\ln(\text{earnings per trip})$ as the explanatory variable. Both variables are shown to be important determinants, but trips per hour explains much more of the variation in earnings per hour (63 per cent) than earnings per trip (13 per cent).²⁶

8.3 Correlates of Earnings

To investigate further the correlates of drivers' earnings, we have estimated regression models for $\ln(\text{earnings per hour})$, $\ln(\text{trips per hour})$ and $\ln(\text{earnings per trip})$. The findings are reported in Table 11. All regressions are estimated weighted by drivers' total hours of work. Three sets of explanatory variables are included in each model: first, variables representing contemporaneous and accumulated working time (tenure on Uber platform; weeks worked and average hours worked per week); second, variables representing driving behaviour (distribution of work by time period; per cent of time worked in core areas or preference mode; per cent of trips driven when surge pricing applied; completion rate); and third, demographics (gender, age).²⁷

Findings from the regression analysis should be regarded as showing associations rather than necessarily causal relations. For example, it is possible that the results reflect reverse causality—such as if drivers choose the amount of time they work and their driving schedules with a view to optimising their earnings per hour.

The strongest correlations exist between earnings per hour and the driving behaviour variables. First, variation in the driving schedule is found to be strongly associated with earnings. For example, hourly earnings of a driver who allocates 10 per cent of

Table 11 Correlates of earnings (pre-cost) of Uber drivers per hour worked, Sydney

	(1) <i>ln(Earnings per hour)</i>	(2) <i>ln(Trips per hour)</i>	(3) <i>ln(Earnings per ride)</i>
Weeks worked	0.0015* (0.009)	0.0004 (0.010)	0.0012* (0.0007)
Weeks worked squared	0.000018 (0.000013)	0.0000016 (0.000015)	-0.000019* (0.00001)
Hours per week	0.0031*** (0.0007)	0.00030*** (0.0001)	0.000045 (0.00005)
Hours per week squared	-0.00003*** (0.00001)	-0.00005*** (0.0001)	0.000024*** (0.000007)
% Driving weekday night	0.095*** (0.022)	0.051** (0.025)	0.0231* (0.016)
% Driving weekend day	0.25*** (0.023)	0.165*** (0.026)	0.101*** (0.017)
% Driving weekend night	0.510*** (0.016)	0.472*** (0.018)	0.052*** (0.012)
% Time driving in preference mode	-0.150*** (0.017)	-0.222*** (0.019)	0.085*** (0.012)
Completion rate	0.740*** (0.068)	2.286*** (0.077)	-1.613*** (0.051)
Age—25–34 years	-0.018 (0.014)	-0.034** (0.016)	0.017 (0.010)
Age—35–54 years	-0.025 (0.014)	-0.052** (0.016)	0.025** (0.010)
Age—55 plus years	-0.020 (0.015)	-0.033** (0.017)	0.009 (0.011)
Female	-0.015 (0.012)	0.018 (0.014)	-0.033** (0.009)
Tenure (Weeks worked)	0.00049** (0.00022)	0.00004 (0.0002)	0.00005 (0.001)
Tenure (Weeks worked) squared	0.0000065 (0.0000010)	-0.000002* (0.000001)	0.000028*** (0.000005)
% hours in core areas	0.280** (0.012)	0.436*** (0.012)	-0.131*** (0.009)
% trips in November or December	0.18*** (0.020)	0.198*** (0.022)	0.0004 (0.015)
% trips when surge pricing applies	0.720*** (0.048)		0.515*** (0.036)
Constant	2.15*** (0.067)	1.851*** (0.076)	4.067*** (0.050)
R-squared	0.495	0.436	0.437
Number of observations	3,668	3,668	3,668

Note: [1] Earnings are net of the Uber service fee but unadjusted for costs incurred; [2] Earnings data are from 16/10/2017–15/10/2018; [3] Omitted categories are: (1) Driving time: Weekday daytime; (2) Age: 15–24 years; [4] ***Significant at 1 per cent level; **Significant at 5 per cent level; *Significant at 10 per cent level.

Source: Uber administrative data.

driving time to weekend evening instead of weekday daytime are higher by 5.1 per cent; with that effect coming both from higher trips per hour and higher earnings per ride. Second, the associations between earnings per hour and the choice variables—completion rate, time spent in core areas and preference

mode—are significant. A higher completion rate and a larger fraction of time spent time driving in core areas are associated with an increase in trips per hour but decrease in earnings per trip. For both these variables the former effect outweighs the latter so that there is a positive relation with earnings per hour.

By contrast, a larger fraction of time spent driving in preference mode is associated with less trips per hour but higher earnings per trip. In this case the former effect dominates so that there is a negative relation with earnings per hour. Third, surge pricing is significantly associated with earnings per trip. Average hourly earnings for a driver who goes from having no trips with surge pricing to the average number of trips (about 10 per cent) are higher by 7.2 per cent.

Evidence on the correlations between the working time variables and trips per hour or earnings per trip is mixed—and in any case the coefficient sizes are small. From the demographic variables tested, drivers 25 years and above are found to have less trips per hour than younger drivers; and for females, there is a significant negative association with earnings per trip, but no apparent relation with trips per hour.

9. Cross-Country Comparison

A main finding from analysis of the Uber labour market in Australia is the diverse pathways into working with Uber. The same diversity of pathways exists in Uber labour markets in other countries. What is noteworthy is how the relative importance of the pathways appears to differ between countries.²⁸ In Australia and the United States, the role of Uber as a supplementary source of income predominates, whereas in London and France, Uber constitutes a main source of income for a large share of drivers. This difference is evident in several ways. First, in Australia and the United States, much larger percentages of drivers are doing other jobs at the same time as driving with Uber than in London (50–60 per cent compared with 20 per cent). Second, weekly hours worked are higher for drivers in London and France than Australia or the United States (for example, about one-half averaging more than 30 hours per week in London compared to 10–15 per cent working 35 hours or more in Australia). Third, there is a variety of direct evidence that in the United States driving for Uber mainly provides a supplemental source

of income (often in response to financial distress); whereas in France 71 per cent of drivers report working with Uber as their main source of income. Uber drivers in France must obtain a professional VTC license, which involves studying for and passing a written exam as well as a practical, on-the-road exam. This entry requirement may cause a selection effect: only for those potential drivers who expect to earn a relatively high income from driving for Uber is it worth qualifying for the VTC licence. Fourth, while similar percentages of Uber drivers in the three locations come to Uber from full-time or part-time work, a much larger percentage in London transit from work in the transportation sector and in France from unemployment.

Valuable cross-country perspectives also come from looking at the determinants of drivers' earnings. Some variables have a common effect across all locations. An example is the findings of a positive relation between tenure as an Uber driver and earnings per hour. Cook et al. (2018, p. 21) suggest that: '... there is much to learn being a driver on Uber. Uber pays according to a fixed formula, but many of the parameters of the formula...are within the driver's control ... As drivers work more, they can begin to learn optimal driving behaviors to maximize earnings'. Other examples of common findings are how driver preferences for location and driving time are related to their earnings; and lower earnings for female drivers, although the effect appears to be smaller in Australia than the United States (Chicago).

10. Conclusion

Our study has investigated the market for Uber drivers in Australia using administrative and survey data from 2017 to 2018. Being the first detailed analysis of a gig economy labour market in Australia, the empirical approach taken has been deliberately descriptive.

We identify that drivers have diverse pathways to working with Uber in Australia. One group of drivers were working prior to, and remain in another job after, joining Uber. For these drivers Uber appears primarily to

constitute an extra source of income. Another group of drivers seem to join Uber as a response to moving out of a job they previously held—either voluntarily to commence study or to or involuntarily via job loss; and for these drivers working with Uber is likely to be their main source of income. In Australia, the group for whom driving with Uber provides a supplementary income are the majority.

Drivers' total hours of work and driving schedules in Australia exhibit heterogeneity and variability over time, similar to other countries. This diversity most likely reflects the differing circumstances of drivers—such as the need for many drivers to fit working with Uber around other jobs. The flexibility to choose work hours makes being an Uber driver attractive to workers who place a high value on that job characteristic. A majority of Uber drivers express a preference for flexible hours over a guaranteed minimum wage; and drivers with a preference for flexibility express higher levels of job satisfaction.

Overall job satisfaction for Uber drivers is on a par with workers in the occupation group of machinery operators and drivers, but below the average for all workers in Australia. Job satisfaction of Uber drivers is shown to depend importantly on their pathway to the job. Drivers for whom Uber provides supplementary income express a higher average level of job satisfaction. By contrast, drivers who are looking for other work and have experienced a decrease in income express lower average job satisfaction. Of course, saying that these drivers report lower average satisfaction is not equivalent to saying they are being made worse off by working with Uber. Drivers who are looking for other work and have experienced a decrease in income may be less satisfied than other drivers—because of being out of work and having to do a job that is not their most preferred option—yet they may still be better off than if they did not have the option of working with Uber.

Our final contribution is to provide a detailed perspective on drivers' earnings. Uber drivers in Sydney had average hourly

earnings of \$32.11 (net of Uber services fees and excluding commuting time) and \$23.65 after subtracting average hourly costs of driving. Variation between drivers' earnings per hour are primarily related to differences in their number of trips per hour, which in turn is mainly associated with their choices regarding location of driving, driving schedule and whether to accept offered rides.

There are many extra topics that could be pursued in further work on the gig economy and Uber labour market in Australia. Determinants of tenure as an Uber driver, the effect of driving with Uber on subsequent labour market outcomes, and the effect of competition from the gig economy work on standard labour markets, are just several examples of interesting questions.

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Endnotes

1. Measures of the incidence of gig work in the United States have been derived from financial transactions data and tax records. These studies conclude that: (1) about 1.5 per cent of a sample of checking account holders were involved in platform-based gig work in 2018, but a much larger proportion, 4.5 per cent, had been involved at some time in the past 12 months (Farrell et al. 2019a, 2019b); (2) about two-thirds of platform-based gig employment is in the taxi and limousine services industry (Abraham et al. 2019; Collins et al. 2019; Farrell et al. 2019a, 2019b); and (3) growth in participation has been driven by workers for whom the gig economy provides a secondary source of income (Collins et al. 2019).
2. See also Berg and Johnston's (2019) critique of the Hall and Krueger study; and a response by Hall and Krueger (2019). Other studies using Uber data include Angrist et al. (2021), Chen et al. (2019) and Cook et al. (2019). Studies using alternative data sources that examine the determinants and consequences of gig economy work are Buchak (2020), Berger et al. (2018) and Jackson (2019).
3. In major Australian cities Uber has upfront pricing for riders. The upfront price is calculated using the expected duration and distance of the trip and local traffic. The upfront price may change if a rider adds stops, alters their destination or the route or time to complete the trip

changes materially. More information is available on base rates from the rider fare estimator at: <https://www.uber.com/au/en/price-estimate/>.

4. This is similar to the distribution of automobile drivers across those capital cities. The regions covered by Uber in each city are displayed at: <https://www.uber.com/en-AU/cities/>. An example (Sydney) is shown in Appendix S.1.

5. Hyman et al. (2020, p. 74) find that in Seattle, Uber drivers spent one hour commuting to pick up passengers for every four hours driving with passengers.

6. Figure S2.1 shows the distribution of drivers' weeks worked as a fraction of their weeks on the Uber platform. A majority of drivers work in more than 90 per cent of the weeks in which they are on the Uber platform.

7. The standard YouGov template was used to introduce the survey to drivers. The survey is included as Appendix S.3.

8. Table S2.1 shows that the characteristics of drivers from Sydney and Melbourne who responded to the survey (unweighted or weighted) are much the same as for the full sample of drivers who responded. Table S2.2 shows the difference in weeks worked and average hours of work per week between all drivers in the administrative data set and the drivers from Sydney and Melbourne who responded to the survey. Weighting was undertaken by dividing the samples into 25 categories (using five categories for weeks worked and five categories for average hours worked per week (contingent on working)).

9. Extra descriptive information is in Table S2.3.

10. Studies for the United States and London show that respectively 13 per cent and 1 per cent of Uber drivers are females (Hall and Krueger 2017; Table 1; Berger et al. 2019; table 2.1). The same finding on the age of drivers is made for the United States (Hall and Krueger 2017; Table 1) and London (Berger et al. 2019; table 2.1).

11. See Figure S2.2.

12. See Table S2.4.

13. Surveys of self-employment in the United States, United Kingdom and Italy similarly find that gig economy workers are primarily seeking to earn top-up income or to buffer negative shocks to income (Boeri et al. 2020, p. 182).

14. The hypothesis of equal proportions of changes to income between drivers who followed different pathways to Uber is rejected using a chi-squared test at the 1 per cent significance level.

15. An overall perspective on hours worked by Uber drivers is provided in Figures S2.3a and S2.3b. Weekly hours worked showed a slight upward trend over the sample period. The exception to this pattern was during the summer holiday period. The percentages of hours worked each week at weekends and at evenings were relatively stable across the sample period at about 40 per cent. The percentage of trips with surge payment averaged 11 per cent.

16. Results are presented in Table S2.5.

17. See Figure S4a. The incidence of short spells may reflect drivers who commenced and stopped driving with Uber during the sample period, but also drivers who only commenced at the end of the sample period (and hence have censored spells).

18. See Figure S4b. For drivers who worked for at least 8 weeks the distribution of average hours worked per week shifts towards higher average weekly hours. However, the percentage of drivers whose average hours are 35 or more is similar to the full sample.

19. Table 5 excludes the summer holiday period (where drivers might have been constrained to drive zero hours due to lack of demand) in order to more closely represent changes in weekly hours that can be attributed to choices made by drivers. Table S2.6 shows a similarly high degree of variability when week-to-week transitions in hours worked by drivers across the whole sample period are considered.

20. The full ratings are reported in Table S2.7.

21. The hypotheses of equal distributions of overall job satisfaction ratings for drivers who (i) did and did not partner with Uber for flexibility and (ii) prefer/do not prefer to remain an independent contractor are rejected at the 1 per cent level of significance.

22. Full results are reported in Table S2.8. A variety of studies have shown that the findings from OLS models of ordinal response items are typically very similar to using ordered models (see the discussion in Berger et al. 2018, p. 20).

23. Over the sample period, average weekly earnings ranged from about \$26 to \$35 per hour. See Figure S2.5.

24. This estimate is from detailed analysis undertaken by AlphaBeta (2019). For more details on AlphaBeta's calculation of the average total incremental cost, see Appendix S.4.

25. Since the implied National Minimum Wage for casual employees in 2018 was \$23.66, this suggests a relatively large proportion of casual employees were being paid below the NMW. Lass and Wooden (2019) have previously noted that low-paid casual employees experience a wage penalty compared to permanent employees.

26. See Table S2.9.

27. Descriptive information on explanatory variables is in Table S2.10.

28. For the supporting references for the cross-country comparisons, see Table S2.11.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.