Comisión Nacional de Productividad

Disruptive Technologies:

Regulation of Digital Platforms

Transport Platforms

Abstract

This chapter deals with digital transport platforms focusing on ridesourcing or ride-hailing platforms. It provides details of some of the leading active platforms in the country and information on its users and drivers. It presents an estimation model on the efficiency gains granted by the platforms' technology, which on average imply cost savings of 33%, significantly higher than the 2% derived from savings due to the absence of regulation. Finally, the chapter delivers a set of proposed regulations for the sector.

3.1 Introduction

People move within their city to carry out multiple activities, requiring different forms of mobilization (hike, bicycle, car, etc.). These may both be collective or individual, and of public or private access (see Table 3.1). The options of mobilization affect people´s quality of life, and, because of their impact on the use of private and public spaces -such as streets or parking lots – they affect society as a whole.

The transport system that moves people and cargo is a critical factor in the modern economy. It allows participation in social activities, economic exchanges, and the spatial distribution of goods. In turn, it generates social costs, such as congestion and pollution. The challenges related to mobility are multiple and complex, which in public transport include rates, waiting and displacement times, exclusive routes, comfort, and safety, etc.; while in the private sector consider road pricing costs, road space rationing, congestion, and access to parking lots, among many others.

Table 3.1. Urban Mobility Modes.

Urban Mobility Means	**Collective Use**	**Individual Use**
Public access	Trains, subway metro, buses, trams, shared taxi, **shared ridesourcing**	Taxis, car rental, bike rentals, **bikesharing, ridesourcing, carsharing, scooter sharing**
Private access	Carpool/ridesharing, chartered services	Bicycle, walking, private vehicle

The transport systems that have increased during the past years are shown in bold font. Source: National Productivity Commission

Therefore, urban transport systems need to be addressed systemically and comprehensively, updated with changes in technology and user preferences. State coordination and management effort must tackle the challenges efficiently and effectively. For example, intermodal planning allows users to choose the combination of private and public modes of transport and strategies to solve better their mobility challenges, which can be achieved through a combination of public and private methods. A systemic approach involves conceiving the multiple interactions and reacting to technological advances that improve efficiency. These include the use of algorithms for traffic lights management fed via real-time sensors,[1] the incorporation of platforms that allow individual private transport to transform into public access transport for private and/or collective use, or, in the future, autonomous automobiles, among others.

[1] The "internet of things" refers to the digital interconnection of everyday objects through Internet (Conner, 2010, Schatzinger & Lim, 2017). It allows, for example connecting "things" such as traffic lights and vehicle satellite positioning devices (GPS) (cars in general, but especially firemen and ambulances) to handle traffic light duration better and thus manage traffic congestion.

The buses and the metro (public transport for collective use) are a key component in the sustainability of modern cities. Between 2001 and 2012 the total daily trips in Santiago increased by 12.5%, reaching 18.5 million in one working day. During the same period, the percentage of public transport trips fell from 31.3% to 25.9%, and car travel increased from 21% to 26% (SECTRA, 2014). This trend is troublesome since collective public transport (buses and subway metro) surpass all other modes concerning efficiency in public space usage. Thus, vehicle sharing is a critical component in the sustainability of cities, which, supported by the communication and location mechanisms that mobile devices enable, should be incorporated into the intermodal transport system.

Sharing a trip with other passengers in a private car (ridesharing or carpool) is not a new or unusual practice. In fact, it dates back to the early twentieth century. Authorities have encouraged it to reduce fuel consumption and mitigate market failures in public transport. For example, during both world wars, and during the oil crisis, its use was encouraged in the United States. From 1914 to 1918, thanks to the existence of economically accessible cars for the middle class, affected by the economic recession, car owners began to offer their empty seats at the same price as the tram. This ridesharing modality expanded rapidly but was rejected by tram operators, who, through regulatory channels managed to reduce the practice by 1918 (Eckert and Hilton, 1972). During the Second World War, the federal government promoted an advertising campaign[2] to encourage ridesharing by creating "car clubs" (US PAW, 1946). An advertising campaign created the iconic poster "When you travel alone, you travel with Hitler" (see Figure 3.1). This practice disappeared after the postwar boom but revived strongly during the Oil Crisis (in the 70s) when legislation in support of ridesharing initiatives[3] arose. An official working group was created to encourage car sharing and cut parking subsidies that included federal funds (MIT, 2009). According to the Census Bureau, in 1980, 23.5% of Americans used ridesharing or carpool services, versus 11% in 2011 (MIT, 2009).

Figure 3.1. Ridesharing publicity ads during WWII

Source: MIT (2009) Oregon State Archives, US Archives and Records Administration.

In several countries, the authority encourages car sharing by offering privileged use of public space such as parking lots or exclusive highways on motorways, and facilitating their incorporation into the intermodal transport system. However, the expansion of digital transportation platforms, sustained by the ubiquity of smartphones and other technologies has

[2] In partnership with the oil sector for an amount of US $ 100 million in current currency approximately.
[3] Called "Emergency Highway Energy Conservation" signed by President Nixon.

resurfaced the interest in car and travel sharing. However, it has been highly resisted by the authority.

Platforms have developed their services within a highly regulated sector; the connection of passengers and drivers for profit has confronted the platforms and their users with the traditional taxi sector and, in many countries, with the authorities. Acknowledging that technological advances have the potential to improve transportation systems for the benefit of their users, the process of change, adaptation or restriction of platforms should fundamentally consider the welfare of consumers. Traditional taxis are still an essential mode of transport in many cities, but they are usually less efficient than public collective modes, and in many cases, also less efficient than other modes of individual transportation.

The challenge is to maximize these platforms' contribution while minimizing their negative externalities and provide effective and efficient mechanisms to monitor them.

Platforms that operate in Chile, such as Uber, Cabify or Easy Taxi, and others that operate elsewhere, such as Urbvan, Jetty, Siggo, Lyft, Juno, Hail, 99, or Didi should be considered for the provision of intermodal traffic, and regulated for that purpose. Moreover, the giant Airbus operates the Voom platform, a helicopter transport service, which started operations in Sao Paulo and Mexico City, marking a growing trend that will eventually cover every modes of transport imaginable, including, in the future, vehicles without drivers.

3.2 Paid transport of passengers in Chile

Public transport is the primary mode of transport. In Chile, Supreme Decree 212 of 1992 (DS 212/92) of the Ministry of Transport and Telecommunications (MTT) regulates National Services Public Passenger Transport.[4] Its Article 20 stipulates, "*Paid public passenger transport services may be provided by buses, trolleybuses, minibuses and rental cars. In the case of rental cars, the modalities of basic taxi service, shared taxi and tourist taxi may be provided.* "

The regulation also authorizes the private transport of passengers. For this purpose, the Supreme Decree 80 of 2004 (DS 80/04) of the MTT stipulates in its Art.2 that: *"Paid private transport of passengers is an activity whereby a person hires someone else for exclusively transporting one or more previously individualized passengers, from a predefined origin to a destination*." The vehicle must meet certain requirements, such as having three rows of seats, and it aims at tourism companies. Different from traditional taxis, considered "*paid public transport of passengers*", these vehicles can offer services similar to tourist or executive taxis.

3.2.1 Public transport of passengers: Taxi Sector

The transport sector in Chile, as in the rest of the world, has an intensive regulatory burden. Most of the regulations applicable to taxis arose between 1925-1950 in the USA and Canada (Frankena & Pautler, 1984; Davis, 1998), and seek mainly to correct faults and imperfections in the market (that affect the consumer) and improve the allocation of resources. Frankena and Pautler (1984) synthesize the areas covered by the taxi regulations:

1) Price restriction (rate): Under certain circumstances, the driver may have market power that allows him to obtain passenger income, who generally are not able to estimate the price of the trip before making it. The taximeter systems correspond to a fixed rate form applicable for time and

[4] See Annex A.3.1 - Main regulations related to paid transport services in Chile.

distance (as in Santiago[5]), while the systems by zones charge a fixed price (as in Valparaíso). The purpose of this measure is to protect the consumer, not guarantee an income to the driver.

2) Access restriction (medallions): The authority imposes a limit to the number of taxi licenses delivered, adducing to congestion and demand level.

3) Service Restrictions (requirements): Some restrictions limit the possibility of services, for example, distinguishing between taxis (that pick up passengers on the street) and executive or tourism taxis (they require prior scheduling), and setting cosmetic (black and yellow paint in Chile for taxis) and technical requirements to the type of cars, amongst others. These restrictions standardize the service and reduce the variety of consumer options.

4) Quality regulation (standards): It is difficult for passengers to judge critical aspects of the taxi service quality before using it. For example, only the driver knows aspects such as vehicle safety, driver qualification, or the existence of insurance in case of accidents. The regulation seeks to increase efficiency by imposing minimum standards concerning vehicle age (no more than five years) or safety (belts and brakes), as well as having certain compulsory insurances, reducing information asymmetries.

These regulatory mechanisms sought to solve the various problems of the taxi market and were defined under mid-20th-century technology and control mechanisms. Therefore, the price fixing and the use of taximeter affect the possibility of adjusting supply and demand; the fixing of quota prevents supply increases when necessary, and generates a low competition structure that reduces the service quality, while the standards and service restriction homogenize the offer. The adverse effects of regulation make transport platforms more attractive, providing better service and better prices, and the reputation and control mechanisms included in the platforms are more informative and reliable for passengers.[6] Price freedom improves the car and driver allocation, and the variety of models and services increase users' welfare.

Finding 3.1*:* The existence of multiple market failures that affect the transport sector has led to the implementation of a set of regulations that cover various areas of taxi operations. These regulations are based on mid-20th-century technology.

Access restriction

Chile´s taxi medallions and vehicle fleet grew significantly during the 90s (CIS, 2005), which led authorities to suspend the registration of taxis in the National Registry of Passenger Transportation Services (Law No. 19,593) for two years (1998 to 2000).

When the suspension was announced (as temporary in 1998), there were 127,000 vehicles in the country offering taxi services in its four variants. This number has been maintained for 20 years, for this measure turned out to be permanent.[7] In 2019, taxis amounted to 102.494 (see Table 3.2), as some medallions were not renewed by their owners upon expiration (at twelve years), and are

[5] For example, in Santiago, the initial value for the first 200 meters of travel (the "lowering the flag") is 300 pesos in basic taxis and 1,400 pesos in executive taxis, and the costs for time and distance are of minimum of 100 pesos and a maximum of 130 pesos for every 200 meters traveled or 60 seconds elapsed. (Resolución Exenta 4574, Seremitt Metropolitana 11 de julio de 2018).

[6] For example, security standards are higher when the information on the number plate; rates, suggested route and estimated time are available through a platform; this information is unavailable through a traditional taxi transport system.

[7] Quotas have been allocated according to the needs of each region. Annex A.3.2 presents the medallions handed out From 2010 to September 2018 per region. 250 medallions were allocated in 2013, and 500 in 2017.

uninheritable upon the death of the owner. The Metropolitan Region concentrates 68% of basic taxis and only 23% of shared taxis.

Table 3.2. Metropolitan Region taxis and taxis at a national level, according to the type of service, as of March 2019.

Service	Metropolitan region	National Total
Basic Taxi	23.332	34.176
Urban Shared Taxi	10.162	51.476
Rural Shared Taxi	3.718	7.801
Tourism Taxi	814	3.283
Executive Taxi	3.201	5.758

Source: National Registry of Passenger Transport Services of the Transport Under secretariat (2019).

The limitation of the number of taxis (quota) is meant to reduce traffic congestion and air pollution (BCN, 2005, BCN, 2015), but, it has also benefited taxi drivers by falling competition and service levels, for it restricts the taxi supply and lengthens the waiting times for consumers.

Requirements

To offer taxi services, both the driver and the vehicle must meet several requirements,[8] regulated for different purposes.

The driver must have a Class A professional driver's license (A1, A2 or A3) that requires a minimum age of 20 years, two years of driving experience with a Class B license,[9] a professional driver's course and a specific and more demanding theoretical exam than class B. It is renewable every four years versus six for class B.

The vehicle must comply with a list of requirements that includes:

a) Two annual technical reviews.
b) When applying for the first time at the National Registry of Passenger Transportation Services (Law No. 19,593), the vehicle must be, at the most, a year old.
c) Engine capacity of 1.5 liters (or more).
d) They must be painted according to the norm (black car body and yellow roof).
e) They must be standard manufacturing models, without adaptations or modifications.
f) It must have four doors and up to two rows of seats.

[8] See Annex A.3.3 – Taxi requirements (DS212 / Transport).

[9] The Class A exam considers the general topics of the test for Class B drivers (for example driving rules, the effects of alcohol and fatigue) and also specific topics applicable to different types of vehicles and services. Among these, driving techniques, efficient driving, regulations for public passenger transport, cargo transport (for example, transport of dangerous substances) and school transport, labor regulations, relaxation techniques, quality of service and passenger treatment.

g) Basic taxis must have a taximeter[10] in communes where its use is mandatory (tourism taxis and shared taxis do not require taximeter).
h) Car age must not exceed 12 years in the Metropolitan Region or 15 years in the rest of the regions (measured according to the year noted in the Registry of Motor Vehicles).

There are five types of taxi service: 1) basic taxi (traditional or "yellow roof" taxi), 2) urban shared taxi, 3) rural shared taxi, 4) tourism taxi, and 5) executive taxi. Only basic and shared taxis can pick up passengers on the street. Each modality has additional entry mechanisms and requirements.

Basic taxis offer the traditional transportation service that either pick up passengers on the street, or are booked through platforms or by phone. They enjoy an exclusive taxi parking. Potential taxi owners must obtain a valid basic or tourism taxi permit (medallion) in the corresponding region,[11] and comply with the other conditions. The basic taxis that use a taximeter (as in Santiago) must exhibit visibly, in the front windshield, the rate for the first 200 meters of travel (300 pesos in Santiago) and the amount to charge for each additional 200 meters travelled, or every 60 seconds wait- whichever comes first- (130 pesos in Santiago). There are more than 50 communes[12] in the country[13] that must comply with the mandatory use of taximeters. Others have a fixed rate according to geographical zones.

Executive taxis are not required to publish their prices, except in the Metropolitan Region,[14] do not have previously set fees,[15] and are not required to paint the car in a specific manner either. Likewise, authorities do not previously fix the rates. In general, they offer transportation services associated to hotels or companies. They are not allowed to pick up passengers on the street, and can only provide their service via previous telephone or platform appointment. The only way to enter the market is by acquiring the executive taxi right, tendered by a seller with a valid right. This operation takes place in the Regional Secretariat of the Ministry of Transport and Telecommunications (Seremitt in Spanish) of the corresponding region. A basic taxi can become an executive one if it meets a series of additional requirements. In the Metropolitan Region there is a fleet requirement, in other words, a minimum of 3 vehicles are required to register an executive taxi service in the National Registry of Public Passenger Transportation.

Shared taxis (fixed-fare and fixed-route taxis shared by up to four people) may pick up passengers on the street at predetermined stops. A vehicle with a valid shared taxi permit in the corresponding region must be purchased, and operate on a determined route. Once purchased, like basic taxis, an old vehicle can be unsubscribed and the permit may be reallocated to the new car, which must comply with the characteristics that the Regional Seremitt stipulates. Shared taxis must work in association with a transport company, where the legal representative is in charge of registering or canceling the vehicles. Shared taxis are considered part of the urban public transport system, and

[10]The taximeter refers to article 79 of DS N°212/92 of the Ministry of Transport an Telecommunications, and its characteristics are set in the Resolution N° 46/93 of the same Ministry.

[11] The replacement of an old vehicle (in its quota) by a new one (or a used car up to 3 years old) (with the medallion) can be made with a form.
[12] The communes are a minor and basic administrative geographical division in Chile.
[13] According to the exempt resolution 538 of the Ministry of Transport and telecommunications.
[14] A minimum of three vehicles is required to register an executive taxi service in the National Registry of Public Passenger Transport, In the Metropolitan Region. This requirement varies between regions
[15] The DS N212, of 1992, does not establish that executive taxis have fixed or minimum rates for they enjoy tariff freedom. However, Exempt Resolution No. 2862 of October 2, 2015 of the MTT, which modifies this decree, regulates the rates of basic taxis and executive taxis (which use taximeters as tariff collection mechanisms) in an exceptional manner in the Metropolitan Region (RM) (valid thru 2022). The current fare is $ 1500 base and a minimum variable fee of $ 100 and maximum of $ 130 for each 200 meters or 60 seconds of travel, whichever comes first. (Exempt Resolution 4574, Metropolitan Seremitt July 11, 2018).

are not for hire vehicles like taxis. Therefore, they cannot move from being a shared taxi to a basic, tourism or executive cab.

Tourism taxis offer services to passengers mainly at hotels, airports and other tourist venues. They must operate previously authorized by the Regional Seremitt (for example, Concepción), who may establish as a charging mechanism the use of a taximeter. However, they may use this instrument, but they also can operate freely setting their fees. They have no cosmetic restrictions.

Each regional Seremitt is in charge of monitoring the taxis. They are also responsible for supervising: vehicles, passengers, establishments (technical review plants, drivers' schools, psychotechnical cabinets, among others), subsidy services and frequency controls (for buses and collective taxis). The personnel for field control is reduced, considering the extensive responsibilities and the size of the regions. For example, in the Valparaíso Region there are 23 auditors, similar to Bío Bío and only surpassed by the Metropolitan Region (which has 263 auditors). Aysén (5 auditors), Atacama and Arica-Parinacota (7 auditors) have the lowest endowment (see Annex A.3.4). Between January and September of 2018, 100,599 taxi vehicles were inspected, 40% were in the Metropolitan Region. Of these audits, 39,148 corresponded to basic taxis at the national level (67% was carried out in the Metropolitan Region).

As long as the current randomized control model in the field is maintained, the supervision capacity of the Seremitts' will be insufficient as platforms expand. One of the most important advantages of technology applied to transport vehicles is the possibility of online inspection, which would facilitate identification and locate offenders. Technology should not only reach all the private participants of the transport system, but also the authority in its monitoring.

Quality regulation

The permit to operate a taxi belongs specifically to the car and its owner, and not the driver. Some drivers rent the cab on a monthly or weekly basis, or even within daily time ranges, and they must generate a minimum income to cover the rent before attaining their own salary. As these are mostly informal arrangements, renters have no incentive to comply with regulations.

The authority sets quality criteria for cars to be used as taxis. Vehicles with current medallions at the time of either registration or renewal (every 12 years) must comply with the set standards. Currently, an engine capacity greater than 1.5 cc and 1.6 cc respectively and be fully equipped with air conditioning, central locking system, and electric car windows on all four doors are the requirements for basic and executive taxis. Programs such as "Renew your Shared Taxi" provide subsidies to shared taxis to improve quality criteria, safety, and vehicle performance.

Regarding safety, taxis pay a higher cost of the Compulsory Personal Accidents Insurance (in Spanish: Seguro de Accidentes Obligatorio Personal – SOAP) given their higher exposure levels. However, this insurance is equivalent to that of other vehicles because SOAP does not make any coverage differences regarding the type or use of the insured vehicle (up to 300 UF). Additionally, some drivers have personal insurances that cover the car.

Several aspects of the basic taxis service favor users' poor perception regarding their quality. The most common complaints refer to dirty vehicles or in poor condition. Bad odors, loud or unwanted music, the absence of the driver's visible identification, reckless and risky driving, refusal to offer the service because the journey is too short, occasionally charging higher fares (for example at the exit of mass events and bus terminals), among others. It is not easy to check for music volume or bad odors, although penalties have been recorded for taximeter adulteration and other problems.

The April 2016 Plaza Pública Cadem survey inquired on the main issues reported by users of basic taxis, with the following results: adulterated taximeters or extra fees (59%), followed by mistreatment by drivers (11%), and safety (8%). The problems are similar in Santiago and other cities. In fact, the Ministry of Transportation received in 2016, 509 complaints on taxi drivers, of which 384 corresponded to problems with fares or taximeter (75%).

Finding 3.2*:* Chile regulates the taxi market similarly to other countries, setting standards, requirements, fares, and quotas.

Finding 3.3: Taxi regulatory requirements generate a homogeneous service, which limits the variety of vehicles (City Cars, Hatchbacks or Station Wagons are forbidden).

Finding 3.4*:* Most of the complaints against basic taxis refer to the adulteration of taximeters and extra charges. These complaints amounted to 75% in the Metropolitan Region in 2016.

Finding 3.5*:* Taxis must have the Compulsory Personal Accident Insurance SOAP (up to 300 UF of coverage) just like any vehicle, although it can cost up to three times more than a private car SOAP due to higher exposure levels.

3.2.2 Private passenger transport

Between 2004 and 2016, 41,325 vehicles were authorized to exercise private paid passenger transport (Adriasola, 2016). These permits increased 33% in the 2013-2016 period, with an emphasis on Station Wagon type vehicles that went from 1,919 to 5,427.

To register a vehicle for private passenger transport, a "general permit" must be requested (DS80/04). The vehicle documents, a contract that certifies the relationship with a contracting entity and an insurance policy, other than SOAP, for the driver, must be attached along with the application. Drivers must have a professional A2 or A3 license.[16]

Some radio taxi companies and transport platforms register vehicles under this modality when they actually use it as an executive taxi (regulated as public transport). This is illegal and punishable by regulation.[17]

Finding 3.6*:* Over 40,000 vehicles were authorized to work as paid private passenger transport between 2006 and 2016. This increased in the 2013-2016 period, coinciding with the rise of transport platforms.

3.2.3 Taxation

According to the Income Tax Law (Decree Law No 824, 1974), the owner of a vehicle used for transportation (or the owner of the medallion for taxis) whether he uses it through third parties - as a transportation entrepreneur- or personally –as a driver, is affected by the first category income

[16] License A-1 is accepted if it was obtained before March 8, 1997.
[17] With a 15 UTM fine (DS 80).

tax. For this, the effective income from the transportation activity must be accredited through full accounting, or benefit from a particular tax regime called "Presumed Transportation Income."[18]

Most taxi drivers use the presumptive taxation regime, so the taxable net income on which the first category income tax will be applied (equivalent to 25% for 2018), corresponds to 10% of 70% of the current value of the vehicle.[19] For example, a Nissan Tiida 2016 model taxi with tax assessment of $ 6,300,000, will deduct 30%, remaining at 4,410,000. 10% of the value is calculated, resulting in $ 441,000, and the first category tax is calculated from the value that corresponds to 25%, equivalent, in 2018, to an annual payment of $ 110,250.

The first category tax constitutes a credit against the respective complementary global tax, with the right to a refund in case this credit exceeds this tax. On the other hand, taxis can reimburse the emissions' Green Tax from mobile sources, paid by all other vehicles acquired since December 28, 2014,[20] that circulate in the country.

A non-owner taxi driver may be subject to the first category income tax (or a presumptive taxation regime), according to the general rules, or be a second category taxpayer if he or she has an employment contract with the owner of the taxi. A driver may also choose to be subject to the complementary global income tax by giving an invoice or receipt to the taxi owner. In the latter case, according to the reported amounts (around the monthly gross of one million pesos), it is likely that most of these are exempt from payment for being below the first taxable installment.

Finding 3.7: Taxi drivers who own the vehicle generally take advantage of presumptive taxation regime, generating a first category annual tax liability equivalent to 25% of the vehicle's 10% value of the vehicle's 70% fiscal appraisal. Non-owner taxi drivers can alternatively benefit from three systems; first category (or presumptive income tax), second category if they have a work contract with the taxi owner; and complementary global tax, by giving invoices to the taxi owners. In the latter case, the effective payment is estimated to be zero or very low.

3.3 Digital Transport Platforms

3.3.1 Introduction

The digital transport platforms can be classified into three categories according to the service they provide. Some platforms encourage carsharing, whereby a car can be leased from either a company or a private while it is not being used. This way, different people use the same vehicle at different periods, without strangers sharing the same trip.

Travelers can share trips (by ridesharing or carpool) whereby strangers agree to use simultaneously a car that travels to a predetermined direction, as either a profit or non-profit activity. That is, a person goes offers the empty spaces of the car to people who go in his/her same direction. The price of the trip can merely cover the costs or include a profit.

This chapter focuses on the third type of platforms, those that enable intermediation between people seeking to make a trip, and for-hire vehicles with private drivers, willing to deliver this

[18] As long as a natural person is acting as an individual entrepreneur, constituted as an Individual Limited Liability Company or that is a member of a Community, Cooperative Society, Partnership basis or Joint Stock Company, formed exclusively by natural persons.

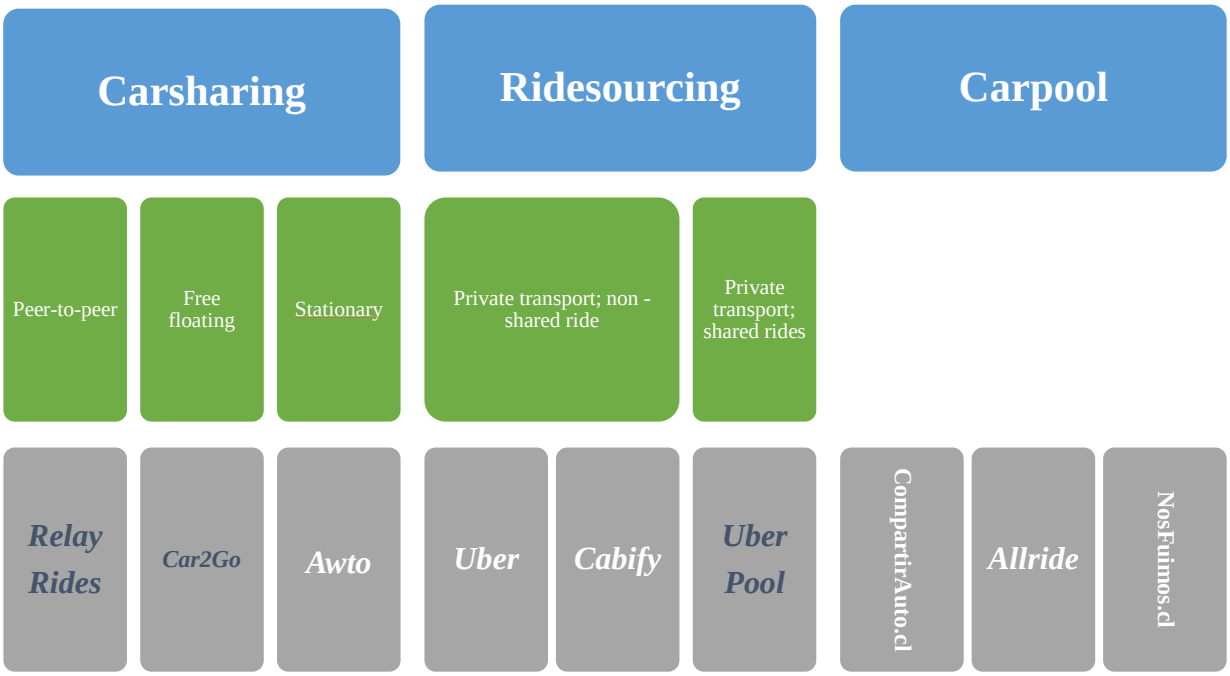
[19] The IRS publishes the tax assessment of light vehicles for annual taxation calculation.

[20] http://www.sii.cl/portales/reforma_tributaria/impuestoverde.html; https://www.chileatiende.gob.cl/fichas/39080-impuesto-verde-por-la-compra-de-vehiculos-nuevos

service (ridesourcing)[21] (Dans & Seisdedos, 2016). These can be exclusive trips or shared trips with other unknown travelers at a lower fare (shared ridesourcing or pooled ridesourcing). These platforms are intermediaries that contact a supplier (which may be an individual or a company) with a requestor. In the future, this may include autonomous vehicles,[22] which in turn could change the nature of the platform, and make it migrate to a vertical integration model (owner of the fleet).

Figure 3.2 displays this classification, including some of the platforms that offer services in each category in Chile. We find the following options among the shared vehicles (carsharing): peer to peer, free-floating, and stationary fleet. As for private transport with driver (ridesourcing), we find shared trips (shared ridesourcing or pooled ridesourcing) and non-shared (ridesourcing). Finally, the carpool allows you to share journeys without commercial purposes to reduce costs.

Figure 3.2. Transport Platform Classification.



Source: National Productivity Commission. Services not available in Chile are in blue.

None of the services offered by the platforms mentioned here is new. There is a long history (of several centuries) of vehicle renting (with or without drivers) or sharing trips. However, the emergence of platforms supported by mobile devices and georeferencing allow these services to be available globally, improve the efficiency of previous systems, and offer users different service options and security mechanisms otherwise difficult to obtain. Moreover, not only have they caused a drastic decrease in the sector's costs, they have also opened a window for increased income and consumer options for millions of people.

[21] "Ridesourcing" is a short form for "ride outsourcing," that is, the hiring of a car trip. The word ridesourcing does not have a clear and simple translation into Spanish, with some alternatives being "travel on demand" and "rental vehicles with a private driver." In literature, there are multiple names for digital ridesourcing platforms, such as ride-hailing, e-dispatching, ride-booking, on-demand rides and transport network companies (TNC). All refer, in general, to the platforms that intermediate for short trips for commercial purposes.

[22] Since 2016, tests have been performed in three U.S. cities (Pittsburg, San Francisco, and Tempe).

Finding 3.8: Mobility options have increased due to the multiple categories of transport platforms. These include car sharing, for-hire vehicles with driver (ridesourcing), and ridesharing/carpool.

3.3.2 Carsharing

In carsharing models, the platform provides renters with a fleet of cars -which may be owned by them, belong to a third party, or arise from the aggregation of private cars with available time of use –similar to what classic car rental companies do. The fundamental difference lies in the flexibility, the ability to eliminate all previous control and collection mechanisms, and short-term rental fragmentation, which lasts only the time required by the journey (Dans & Seisdedos, 2016).

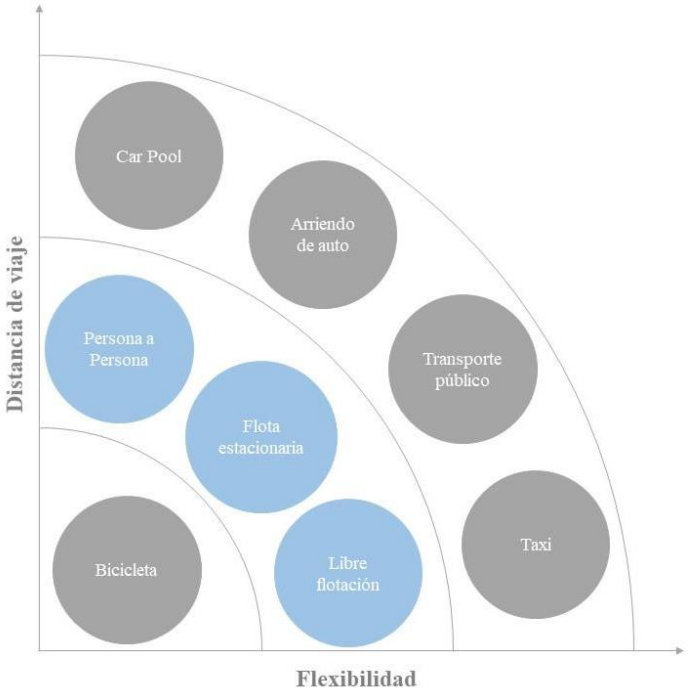
The platforms' business models may be peer-to-peer, free-floating or stationary carsharing, through short-term car rental (Deloitte, 2017). A commission on the transaction funds the platform (Dans & Seisdedos, 2016).

In the peer-to-peer model, the platform groups individuals who offer their car for a specific period. It is a cession of use between individuals in which the company gathers supply and demand, offering other additional services that facilitate the transaction (for example, insurance, contracting procedures, collection, etc.). In the free-floating model, the platform owns the cars that it rents, and users can leave the vehicle in a previously delimited area (Deloitte, 2017). The main advantage of this model is its flexibility, mainly for short trips - often only one way - in urban areas, and generally charges only the used time (Deloitte, 2017). Usually, these companies offer small or medium size cars, easy to park and efficient in public space use. In some countries (such as Spain), the use of electric vehicles on these platforms is encouraged, enabling free parking spaces. In the stationary fleet model, the platform acts as a traditional car lease company.

At present, no carsharing platform has managed to consolidate itself in Chile (except Awto, still growing). Instead, these platforms enjoy high popularity in the United States and several European countries. An exciting feature of these particular models is the possibility of promoting electro-mobility by making electric car use profitable, even though they have recharging limitations and travel capacity. For example, in Singapore, a platform was created that seeks to multiply the use of shared cars to reduce the purchase of private vehicles,[23] and all their cars are electric.[24] Autolib in France uses only electric cars, and Car2Go in the USA offers both electric and fuel cars. Since the trips of shared car platforms tend to be on average short-distance (in cities like London, the main reason is driving to the supermarket) and last between two and four hours, electric cars are highly suitable.

[23] www.autolib.eu
[24] www.bluesg.com.sg

Figure 3.3 Car sharing models. Source:



National Productivity Commission, based on Deloitte (2017). The blue circles correspond to shared vehicles.

Figure 3.3 summarizes the advantages of shared car models regarding travel flexibility and autonomy. For a congested city -with current road space rationing- and complex mobility challenges such as Santiago, the potential contribution to the intermodal transport system of shared car platforms is high, and should be considered when thinking about future operations. However, the use of shared cars and the incentives for the incorporation of electric cars into this system require public-private partnerships, and their expansion depends on encouragements through the use of public space such as parking lots and energy recharging areas.

***Finding 3.9*:** Car-sharing platforms have enormous potential concerning raising the practical use of cars, reducing congestion, and pioneering electric vehicles. International experience suggests that these platforms are reinforced with public-private partnerships regarding the use of public space.

3.3.3 Ridesourcing

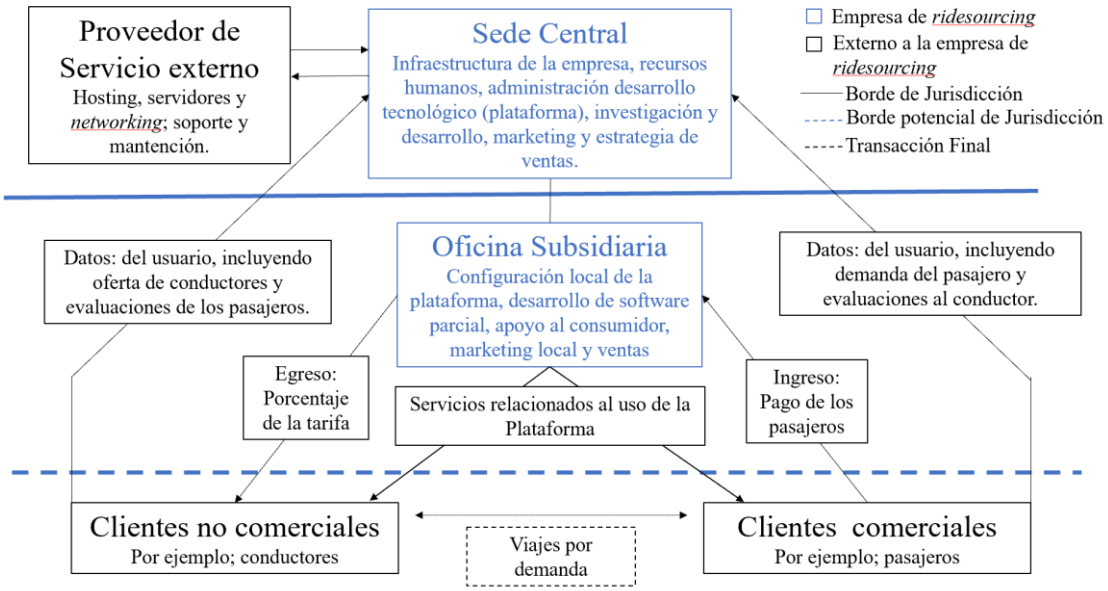
Ridesourcing platforms act as intermediaries between a transport service provider (a driver with his car, or a company with a fleet of cars with drivers) and a passenger, who agrees to make a trip with predetermined origin and destination, in exchange for a payment settled between the parties. The provider can be a professional (for example, taxi-driver) or a private driver, and the trip can be made individually or include other passengers sharing the vehicle (shared ridesourcing). These platforms have increased worldwide, and, due to their direct competition with taxis, have generated the most significant controversy with the traditional sectors.

Uber is the most well-known company of ridesourcing platforms, operating in over 400 cities in 70 countries. Other platforms, although less widespread compared to Uber, are active players in relevant markets such as Brazil, Mexico, China, India or the United States. As ridesourcing is

regularized, several of these platforms will become global players. Uber will face more competition and passengers and drivers shall have more options.[25]

The business model is similar for most of these platforms, with variants according to the country of origin and its regulations. In general, the platform's matrix does not directly interact with the users, rather through a subsidiary office (often not constituted in the same country) choosing some convenient location for its development. Occassionally, certain configurations may reduce the tax obligations (see Figure 3.4a) – as in the case of Uber. The subsidiary office provides local services, such as platform configuration and the software's partial development. The platform's local version is used by non-commercial customers (i.e. drivers), as well as by commercial customers (passengers). The passenger and the driver carry out the final service, and payment is sent electronically from the passenger to the rental company. Transport companies generally depend on an external service provider (e.g. servers) to host the application, data storage and other computer services, such as the execution of data analysis algorithms (OECD, 2018).

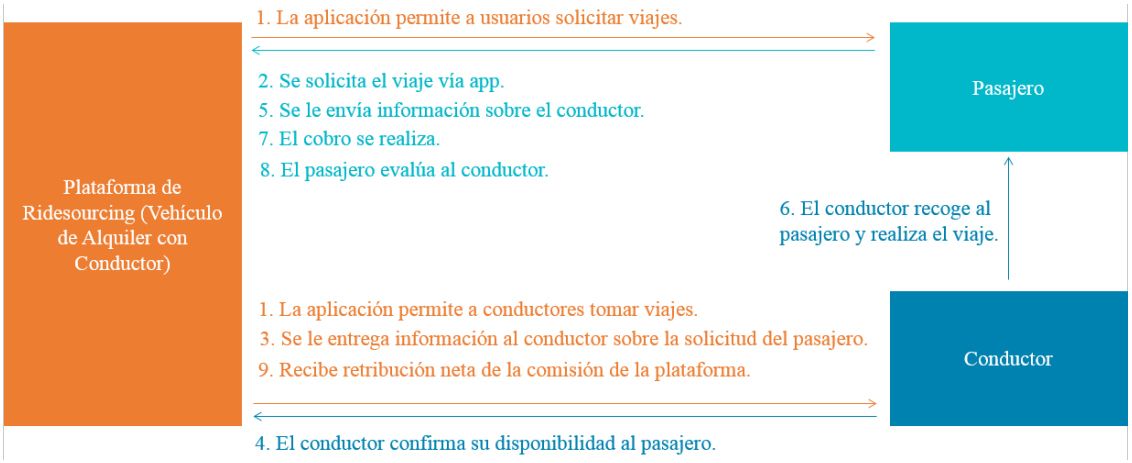
Figure 3.4a. business model scheme of ridesourcing platforms**.**



Source: National Productivity Commission based on OECD (2018)

[25] Although there is always the risk of market concentration due to the effects of growing networks.

Figure 3.4b. Diagram of ridesourcing platform functioning.



Source: National Productivity Commission based on a diagram of R&P Research (date unavailable)

As well as the simplicity and the service's comfort, the model also provides greater security and transparency by providing personal information. The driver's and passenger's evaluation is made public, GPS tracking is available, the estimated rate is published, and the use of electronic means of payment is available. The evaluation system encourages better behavior in both passengers and drivers, for an under-average evaluation risks the permanence of both on the platform. On the other hand, the platforms allow choosing the type of transport needed: basic, executive, with bicycle support, children's chair, handicapped, pets, etc. The variety of services is highly regarded by consumers and is efficient from the social point of view since large cars only circulate upon requirement.

Upon appearance, most ridesourcing platforms did not comply with the local regulations (of the countries where they operate) generating controversies and conflicts worldwide. They were and still are deemed illegal and/or compete unfairly with taxis. In Chile, Uber and Cabify have been the target of complaints, criticisms, and sanctions, since the authority considers that the service delivered by these platforms is illegal, for they do not use licensed cars for public passenger transport (taxis).[26] Instead, platforms such as EasyTaxi, Safer Taxi, and Hola Taxi, which operate with traditional taxis as suppliers, are considered legal. However, the success of a platform does not depend on the opinion of the authority regarding the legality of the service, but on the preferences of its users. To date, the choice revealed by consumers favors platforms such as Uber and Cabify.

The platform´s success depends mainly on the density of its network of vehicles and drivers, which raises the offer by reducing prices and waiting time. Some platforms use non-professional drivers and without a professional license, in addition to cars with different requirements than taxis, thus achieving a greater number of vehicles and drivers. In contrast, the platforms that limit their fleet to taxis reach lower levels of success because they have a limited supply. However, as it will be seen, o the speed or the price of the service are not the main attributes valued by users of platforms such as Uber and Cabify.

Technology's positive impact, which increases the fleet and each vehicle's efficiency, reduces downtime and maximizes the practical use of the asset and the driver will be, in part, responsible for the future of private transport. The platforms already grant greater confidence and security to the users (even though they are not regulated and considered illegal) as they reduce the

[26] For private passenger transport regulation, review Decree 80 and Decree 212 for passenger public transport.

information asymmetries that plague the market of traditional taxis. Once regularized, the sector will increase competition between platforms (Edelman & Geradin, 2015), which will have affect prices and efficiency. It is difficult to see in the future a market niche for traditional taxis, unless it is a residual market of passengers moving on predetermined arteries of the cities.

Finding 3.10: The for-hire vehicles with driver (ridesourcing) platforms are the most successful and widespread in Chile, and in the world. The controversy has been proportional to the success, and in Chile, the service is considered illegal.

3.3.4 Ridesharing

Ridesharing (or carpool) platforms connect drivers who offer a pre-determined trip (for example, to work, to a concert, or to another city) with passengers who want to make the same trip. As a rule, passengers share the operating expenses of the trip, which means that the driver does not charge for the service, but for cost recovery. The platforms focus their efforts on passenger safety, motivated by a community goal and interrelation among users. In addition to the passenger aggregation service for short and habitual routes such as going to work, these platforms have become more popular with intercity and international trips.

In several countries, the authority has promoted non-profit shared trips to reduce the use of private cars, and thus congestion and emissions. Incentives involve the free use of public space, such as fast lanes for a certain amount of passengers or exclusive parking. In several European countries, this mode of transport is widely used and is also regulated, for it represents a low-priced travel option between cities and countries while generating new social relationships and chances to know the local culture at the same time.

The best-known platform is the French BlaBlaCar, with ten years in the market and a large amount of users. Both drivers and passengers are platform users and have an individualized account that collects personal, car and financial information for payments. A driver publishes a trip to be done, delivering details such as the time and place of departure, the route, etc. He/She also gives details of him/herself, and of his/her social skills that may be of interest to potential passengers. Thus, a laconic driver would be in the "Bla" category, whereas an extroverted one in the "BlaBlaBla" category, indicating to potential passengers if the journey will be silent or talkative. Once the driver and the passenger agree on the logistical details, the platform charges the passengers in advance but delivers the payment once at destination. The platform has been acquiring other platforms such as Aventones and Rides, and was available in Chile until 2016 but withdrew its activities.

In general, Chilean platforms offer intercity travel. As of March 2018, the active carpool platforms in Chile are Carpoolworld, NosFuimos, AllRide, Carpool, and Allride for Communities (Súbete). The Tripda, Yeba.me, CarPooling and CompartirAuto platforms were operative but eventually closed.

The category mentioned above overlaps with a ridesourcing platform modality that consists of shared trip (shared ridesourcing). It is similar to the shared taxi but without a predefined route. Thus, a car on course may pick up other passengers traveling in the same direction. Sharing a car with driver can mean a reduction of 30% of the trip's cost, although the trip´s duration increases. Uber (UberPool) and Lyft (Lyft Line) make use of this modality, and according to Uber, 20% of their trips worldwide are UberPool[27] and can reach 25% in New York.[28]

[27]https://techcrunch.com/2016/05/10/uber-says-that-20-of-its-rides-globally-are-now-on-uber-pool/
[28]https://www.theverge.com/2017/5/22/15667008/uber-uberpool-pickup-dropoff-changes-nyc

As of March 2018, there are no ridesourcing platforms in Chile offering this modality.

***Finding 3.11*:** The ridesharing platforms have the potential to offer urban and interurban transport services, although their scale is smaller than that of ridesourcing platforms. The ridesourcing platforms that operate in Chile do not provide the shared ridesourcing modality.

3.3.5 Ridesourcing platforms versus traditional passenger transport

The technology (platform and algorithms) of the main ridesourcing platforms allow drivers and passengers to be paired in real time, assign better routes according to traffic and distance, minimizing waiting times.

The platform also allows making the transaction online without the need of payment in cash. To achieve efficiency (low waiting times and low rates), platforms require a high number of users (drivers and passengers). This is because they are affected by the so-called "network economy", which increases their efficiency with the number of users. Platforms therefore have, at the core of their business model, the aim of increasing the registered vehicles by registering drivers and vehicles with a minimum of requirements.

Technology use reduces transaction costs through 1) reducing search costs for drivers and users, 2) reallocating drivers in real time, and 3) reducing information asymmetries (Cramer & Krueger, 2016). Compared to traditional taxis, platform vehicles achieve higher occupancy rates, more efficient routes and higher mean speeds that reduce fuel costs, allow shorter average waiting times and an increase in demand thanks to safety and payment mechanisms. All this contrasts with the traditional taxi industry (see Table 3.3).

The technology allows the assignment and reassignment of drivers in real time to pick up the nearest passengers, and it involves dynamic adjustments (based on analysis of large databases). This is highly challenging for low-density platforms (without network economies), and almost impossible to perform through the assignment of a traditional radio taxi company. Thus, the platforms can re-assign another nearby driver upon arrival to the destination (or if the first one rejects the original ride), and, assign a new trip in the surroundings. Their services also makes it possible to reduce information asymmetries, which generates a positive impact on demand, through 1) real-time georeferencing that allows visualizing the driver's location and the approximate waiting time, 2) prior information on the trip´s price,[29] the assigned route, and the car or driver,[30] and 3) user evaluation. Evaluations are more straightforward to do than formal claims against a traditional taxi[31] and encourage good behavior of both parties. If a passenger or driver is aggressive, a cautionary may be issued, and the account could be disabled. Moreover,

[29] The importance of comparing rates is relevant because Uber has a dynamic fare, which increases according to demand, whilst Cabify has a fixed rate, which varies according to the time block. As of December 2017, a surcharge for high demand was added, calculated by an algorithm.

[30] In a normal taxi, the passenger cannot make an accurate estimate of the total fare of the trip (without prejudice to other problems) nor does it have any information about the driver.

[31] An unsatisfied passenger could try to write down the license plate, and then try to file a complaint with the appropriate authorities, but most passengers anticipate that such complaints usually have limited effect. For example, 10% of the complaints made in the Metropolitan Region reported by the Comprehensive Citizen Attention System for 2016 on the grounds of driver quality are verifiable.

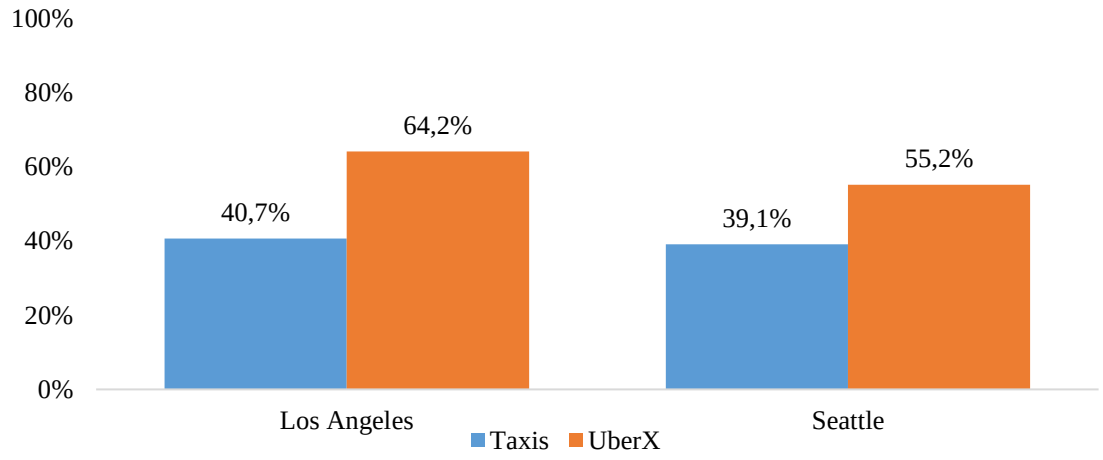
although these systems are not perfect,[32] they constitute an early warning system, difficult to replicate in a non-digital environment.

Transport services' efficiency can be measured through their utilization rate, which may be defined on a spatial or temporal basis. The utilization rate is the fraction of the total time (or the total distance traveled) which the vehicles circulate with passengers. Thanks to technology, ridesourcing platforms allow a higher vehicle capacity utilization rate (less time and distance without passengers) which translates to time and fuel saving (due to higher average speed), higher hourly income for drivers and shorter waiting times for passengers. This is the competitive advantage of platforms, which cannot be reproduced in off-platform vehicles.

Cramer & Krueger (2016) examine Uber's transport service efficiency by comparing the UberX driver utilization rate and taxi drivers in five cities in the United States.[33] Their results indicate that: 1) UberX drivers have a passenger in the car 50% of the time they are available in the application (a robust result when comparing the studied cities); 2) taxi drivers have a passenger in the car between 30% and 50% of the time they are working; but this result varies between cities, and 3) UberX drivers have a higher capacity utilization rate than taxi drivers[34] (see Figure 3.5).

On average, an UberX travels with a passenger 30% more time and 50% more kilometers than a taxi. Efficiency gains grant consumers reduced prices (by increasing their surplus and quantity demanded) while maintaining the level of income for service providers (Edelman & Geradin, 2015). Drivers and platforms share this income. Additionally, services such as Uber or Cabify, as well as reducing operating costs, also eliminate additional equipment such as taximeters and credit card processors (Point of Sale Terminal) that are added to the traditional taxi's fixed and variable costs (Edelman & Geradin, 2015).

Figure 3.5. Capacity Utilization Rate (Percent of Miles Driven with a Passenger) for Taxi and UberX Drivers in Los Angeles and Seattle.



[32] These evaluation systems may be the main cause of passengers reporting a higher level of courtesy of Uber drivers than of taxis (Lemire, 2015). It is easy to deliver a negative evaluation to Uber, and, apparently, significantly more likely to get a response (Perry, 2015, Banks, 2014).
[33] Boston, Los Angeles, New York, San Francisco and Seattle.
[34] In statistical terms, we refer to the fact that UberX dominates Taxis in the first order. See Annex Figure A.3.3. Accumulated distribution of the percentage function of hour worked with a passenger by a Taxi and UberX driver in San Francisco.

Source: Cramer & Krueger (2016)

Shared ridesourcing options (for example, UberPool) further increase the utilization rate (and the occupancy rate), by allowing two or more passengers heading in the same direction to share a trip efficiently, which is impossible to achieve without an algorithm of adjustments in real time. They are similar to shared taxis; inflexible regarding their routes, insufficient at certain hours and sometimes have longer waiting times. Furthermore, they present the same information and security problems as traditional taxis.

In addition, platforms are also able to discriminate between consumers according to their needs and willingness to pay. They offer specialized services, which are not available in a traditional model. They expand the variety and therefore also increase benefits and improve resource allocation in the market. For example, platforms offer different car sizes and services levels, and cover special needs such as children's chairs, bike racks, and assistance for disabled or handicapped people, etc. In platforms without network economies, this service is unavailable, and taxi regulation forces the standardization of the service.

It is important to note that efficiency gains and cost reduction, as well as the information asymmetry reduction provided by ridesourcing platforms, are accessible to traditional taxi drivers who become users-drivers of platforms. Technology's efficiency can vary between cities and schedules, but it definitely raises the taxis' usage rate and passenger welfare. It is desirable to accelerate the technological updating process for the traditional taxi sector; given the multiple advantages provided to both consumers and drivers, and the reduction of negative externalities.

Finally, it is necessary to review the current regulations in the transport sector, considering the ways technology is capable of correcting a series of market failures that affect the transport market, requiring minimum control efforts. In parallel, it is desirable that future tenders of collective transport lines and taxi requirements updates include mandatory use of the same technological mechanisms that make transport platforms so efficient and valued by users. This would allow the collection of vital data for mobility and urbanism policies and enablers for other digital services. The gains regarding efficiencies and market failure correction are potentially so substantial, that should be considered in subsidies for the renewal of shared taxi and others, that may support the sector by updating its technology.

Finding 3.12: Technology raises the utilization rate of vehicles operating on ridesourcing platforms over that of traditional taxis. This is achieved by improving the allocation mechanisms between driver and passenger, optimizing routes, and real-time reallocation of drivers.

Finding 3.13: The ridesourcing platforms offer diverse mechanisms that allow solving part of the taxi market failures, including information, price and quality faults, and others that in the past justified the regulation of the sector. Examples of these mechanisms are the location of passengers in real time, driver data, integrated digital taximeter, evaluation system and standards by type of services.

Table 3.3. Comparison between taxis (without platform) and ridesourcing platform vehicles

Characteristic	Traditional Taxis	Transportation Platforms
Access to the market (Vehicle)	Medallions applied to the vehicle (not the driver), which allows the owner to lease it permanently or when the owner is not working. Vehicle must meet requirements.	No quota restrictions. The vehicle is private and multipurpose, and must meet the minimum requirements imposed by the platform.
Matching process between driver and passenger	Taxis have a monopoly on the collection of passengers on the street, but they must pick them up while driving around or waiting in a parking lot or site. There is no assignment criterion.	The platform assigns the driver-passenger pair through an algorithm that seeks to minimize passenger waiting time. Before the service is finished, the driver has already been assigned another trip.
Advance request and refusal of reservations	Picks up passengers on the street without reservations. Must drive without passengers until they find one. Rejection of the service without fast adjustment.	Advance request through the platform. In case of a cancellation, another driver is searched from nearby.
Capacity utilization Rate	Taxis must search for passengers (or wait at a central if they are radio taxis) A long time may be spent driving without passengers, so the utilization rate is lower.	The platform allows spending less time driving without passengers, so the utilization rate is higher.
Rate and payment methods	Fixed by the authority and calculated by the taximeter or other methods, even free rates in some cities. Mainly cash payments. Some have debit / credit card payment processors.	The application sets a fare according to the suggested route, and the level of demand (dynamic rate). Payment is automatic via credit card, and some apps allow cash payment.
Driver's information	Driver information is not necessarily available, nor are their compliance with requirements and other criteria.	Information on the driver is readily available from the moment the trip has been

	Complaint mechanisms are slow and cumbersome.	assigned. There are simple complaint mechanisms and a rapid internal response.
Shared Taxis/ Shared Ridesourcing	The groups have a fixed route in which they can pick up passengers.	The platform identifies two or more passengers who wish to travel in the same direction and share a journey. There is no fixed route.
GPS	Taxis are not compelled to use GPS or have the vehicle geo referenced, which makes inspection difficult.	The platforms require the driver to be with the GPS on at all times.
Driver Working Condition	Drivers who own taxis must declare presumed income. Taxi tenants should issue an invoice as independent workers.	If the drivers are independent workers, they must issue an invoice.

Source: National Productivity Commission

3.3.6 Impacts of the ridesourcing platforms

Although carsharing and ridesharing platforms are relevant, ridesourcing platforms have generated the most significant debate in society due to their massive presence. This section analyzes the impacts of ridesourcing platforms in various aspects, including competition, availability and security, labor, taxation, congestion, pollution, and data.

3.3.6.1 Competition

The transport platforms have strongly increased competition by different modes of transport. They compete with the subway metro, buses, the various taxi categories, as well as with bicycles or walks, among others.

Ridesourcing platforms are similar to taxis and radio taxis. The shared ridesourcing options (not available in Chile) are similar to the shared taxi. Greater competition induces lower prices, higher quality, and variety of services. It also affects lower profit margins, primarily if the increase in competition occurs in sectors where supply has been restricted and regulated. These characteristics apply to the taxi sector in Chile, which some authors portray as monopolistic due to both the high entry barriers that limit competition, and the regulation that limits variety in supply. The access restriction (medallions) allow generating economic gains for some agents, reducing the level of service quality and extracting surplus from consumers. In the absence of ridesourcing platforms, dissatisfied consumers have few substitution options, having to incur additional costs either by sacrificing convenience if they must use a bus or subway metro, or, in economic terms, if they use private transportation services or their vehicle (Wallsten, 2015). Complaints to the regulator are time-consuming, and in general, unsatisfactory.

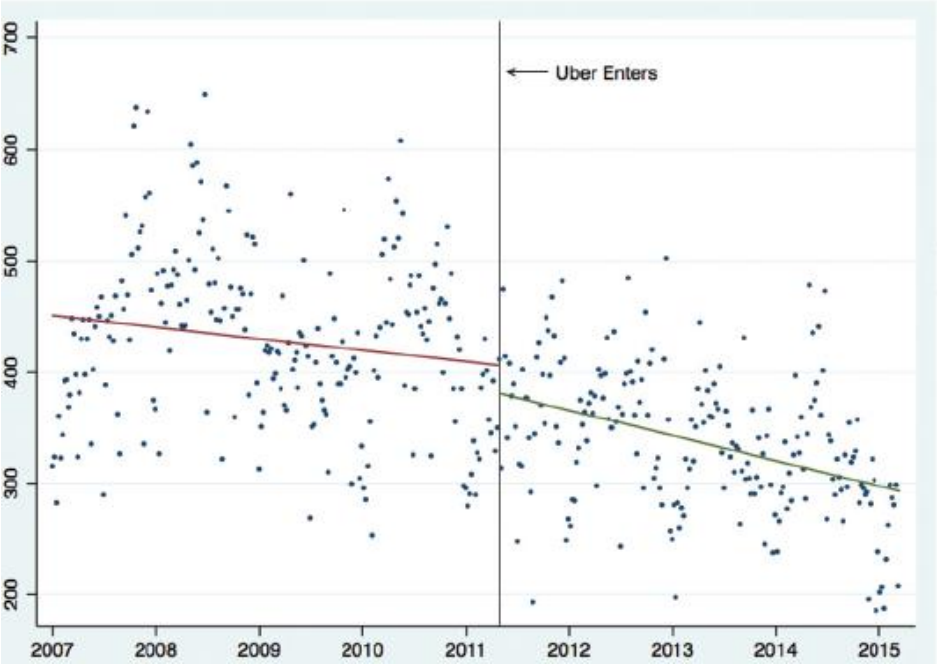
The taxi sector's characteristics extend worldwide, with variations depending on the countries and cities, which accounts for the global reaction to prevent the ridesourcing platform propagation. In the city of San Francisco (USA), the increased competition displaced the

traditional taxi demand to the new models of transport services,[35] and consequently, taxi use dropped by 65% in the years 2012-2014.[36] In 2016, the largest taxi company in the city (Yellow Cab Co-Op, with 530 medallions) announced that it would file for bankruptcy (Fitzgerald, 2016).

The lower prices offered by the platforms induce greater consumption by users. However, the preference for the service is not limited to costs. For example, the Uber platform has a dynamic rate tool that adjusts prices according to car availability and passenger demand. Its rates may be at times higher than basic taxis, and nonetheless, passengers still request them. In other words, as well as the low prices, users also value other aspects of the service such as security, electronic payment or better quality cars (Salnikov et al., 2015).

Traditional taxis have great difficulties to react to the increased competition via prices due to tariff regulation.[37] One option is to compete in quality, improving the service, which Wallsten (2015) verifies in New York and Chicago, where fewer complaints were filed after platforms appeared (see Figure 3.6).

Figure 3.6. Number of complaints at the New York City Taxi and Limousine Commission.



Source: Wallsten (2015).

Regarding the variety and quality of the service, the platforms offer a wide range of services for different needs such as high-end, budget, or large cars, with children's car seat or wheelchair accessible vehicle (WAV). This greater variety can induce and substitute demand in other mobility options.

Another crucial competition area is between platforms. As a platform accumulates a critical number of users (drivers and consumers) and increases the number of trips, it simultaneously gathers a significant amount of information that feeds and improves the analytical capacity of its algorithms, and the response of its suppliers. These are the so-called network economies, the

[35] San Francisco Municipal Transportation Agency, Resolution No. 16-072.
[36] The average monthly number of trips fell from 1,200 to approximately 600 according to data from the San Francisco Municipal Transportation Agency (2014).
[37] Readjusted concerning more than one year.

digital homolog to the economies of scale in the physical world. They lead successful platforms to a level hardly replicable by others, raising an entrance barrier and threatening competition.

On the other hand, the level of accumulated information regarding users, and the impossibility of comparing prices for the same route of other users in the platform, would theoretically allow platforms to discriminate in prices. In this situation, each user would be charged the maximum price that they are willing to pay, which maximizes drivers and platforms' incomes. However, this situation still does not happen.

Finding 3.14: Ridesourcing platforms introduce competition in an uncompetitive market, with gains for consumers in price, quality, and variety of service. This reduces the profits of traditional providers like taxis.

***Finding 3.15*:** Taxi tariff regulation prevents them from competing via prices, so they can only react by improving the quality of the service.

3.3.6.2 Availability and Security

Another advantage of ridesourcing platforms over traditional taxi services is their ubiquity, for vehicles are available in places and times where taxis and regular public transport decrease or disappear. For example, in areas more than 500 meters away from a public transport route, taxi availability is reduced and practically disappears at night.

A report by the Shared Use Mobility Center (2016)[38] researched the relationship between public transport and the above-mentioned transport modes in seven US cities.[39] They found that ridesourcing services are most often used for recreational purposes between 22:00 hours and 04:00 a.m. when public transport is less frequent or unavailable, suggesting that at certain times and places platforms complement public transportation (Feigon et al., 2016). Complementarity also allows travel between areas of high public transport provision, to others further away, covering thus the "last mile" (Bialik et al., 2015, Fischer-Baum & Bialik, 2015, Rayle et al., 2016).

The higher availability has increased the need for these services, especially at night, which contributes to the prevention of driving under the influence of alcohol. Several studies have documented this positive effect (see Table 3.4). Additionally, electronic payment (without cash) via credit card or other electronic payment methods protects both drivers of non-payment and passengers, reducing crime risk.

Table 3.4. Main academic articles on the reduction of driving under the influence of alcohol due to ridesourcing platforms.

Authors	Findings and/or research description
Grove (2013)	States that the ridesourcing platforms have a positive impact in avoiding driving under the influence of alcohol, since it allows locating a transport service in places where there is no regular public transport.

[38] Bike-sharing, car-sharing, micro-transit, private shuttles, ridesharing, ridesourcing, ride splitting, along with public transport (buses and trains), taxis and for-hire vehicles to rent.
[39] Austin, Boston, Chicago, Los Angeles, San Francisco, Seattle, and Washington, DC.

Greenwood & Wattal (2015)	Find that deaths from driving under the influence of alcoholdecreased in the cities of California after the introduction of Uber. The death rate decreased between 3.6% and 5.6% per quarter in California, after the introduction of UberX. This is due to the low prices, given that the introduction of UberBLACK or dynamic tariff prices have no significant effects.
Badger (2014)	Shows that driving rates under the influence of alcohol decreased in Philadelphia and San Francisco after the introduction of these platforms.

Source: National Productivity Commission.

Finding 3.16: Ridesourcing platforms increase the supply of transportation in areas and schedules with none or fewer public transport and traditional taxi services.

Finding 3.17: Ridesourcing platforms can have positive effects on safety, both for the driver and the passenger, as well as on public roads. For example, by reducing driving under the influence of alcohol, and thru the electronic payment method (without cash) to prevent fraud and crime.

3.3.6.3 Labor

Transport platforms contribute to the increase in non-traditional work agreements during the last decade, and to the debate on the contractual nature between platforms and subjacent service providers (drivers). The platforms offer workers flexibility by both establishing a personalized and adjustable work schedule, as well as in the use of the vehicle (for both personal matters and passenger transport).[40] Several drivers see this occupation as an opportunity to increase their income through flexible and voluntary work, choosing when and how much to work.[41] Even though drivers face an opportunity cost of their time, the available evidence suggests that this cost could be relatively low.[42]

The labor flexibility allows for the existence of two distinct groups of drivers on the platforms: those who drive full time and those who do it part-time or occasionally. According to Uber, in Chile, in 2017 there were 70 thousand drivers (10% are women). As of September 2018, Uber reports 80 thousand drivers where 8% are women. 55% work less than 10 hours a week, and 9% work 40 hours (or more) a week (full-time).

An average Uber driver in Chile drives 18 hours a week. In Australia, an UberX driver drives 19 hours a week on average, and a study conducted in selected US cities notes that 51% drive between 1-15 hours and 30% between 16-34 hours a week (Hall & Krueger, 2015).

Hall & Krueger (2015) find that Uber drivers are interested in working through the platform mainly because of flexibility, income, and relatively stable earnings per hour worked. Indeed, many workers who participate can do so as a supplementary occupation or while looking for

[40] For example, a driver can start the service from home by taking a trip to work.
[41] Hall and Krueger (2015) show that drivers occupy the Uber platform at different schedules, which vary considerably from day to day, week to week, depending on workers' wishes in light of market conditions.
[42] Hall and Krueger (2015) find that Uber drivers tend to work for periods that, otherwise would not have worked at all. That is, work hours are induced.

another job. The results of Chen et al. (2017) indicate that, although Uber's relationship may have other drawbacks, drivers benefit significantly from flexibility.

***Finding 3.18*:** Drivers who use the platforms benefit from flexible hours and additional income, and most work part-time.

3.3.6.4 Taxation

Transport platforms' taxation does not differ significantly from other digital platforms. In transport, both drivers and platforms generate taxable income following current legislation. However, the platform's legal organization affects the final payment, so the inspection of these tax commitments requires an adequate regulatory framework.

Uber's tax planning shows the risk that opens the opportunity for the relocation of digital companies and has been the focus of controversy in many countries, including ours. Generally, when traveling with an Uber driver outside the United States, Uber B.V., in the Netherlands, receives the income. Once the passenger payments are received, Uber B.V. returns a percentage of the money to the driver (through payment management companies) and keeps a commission that varies between 25% and 30%.[43] After discounting the operating expenses, Uber B.V. retains 1% of the profits and transfers the remaining 99% to Uber International CV for intellectual property royalties (La Nación, 2017). Uber International CV is headquartered in Bermuda, and its owner is Uber Technologies based in California, USA. Thus, in Chile no income is recorded, in the Netherlands the royalties for intellectual property are exempt from taxes, and neither do they pay in Bermuda.[44] Box 3.1 shows Uruguay's tax collection of digital platforms.

Box 3.1. Taxation of the Transport Platforms in Uruguay 2017

In Uruguay, the General Tax Directorate (DGI) 2017 raised US $ 3.65 million -at the average dollar worth of the year- in 2017 (starting in March and not including payments for services in December). Most of this amount corresponds to the platforms, and to a lesser extent to what drivers are charged.

In this country, the platforms are perceived as non-resident entities that have a partially developed activity in the national territory and must pay the Non-Resident Income Tax (IRNR), which corresponds to 12% on the income obtained (50% of the gross remuneration). Additionally, they must pay VAT for the totality of the compensation acquired. Drivers are registered as small businesses[45] and pay a minimum VAT and contributions' payment to the Social Security Bank. The company retains the taxes that drivers must pay. Once the driver demonstrates tax payment (to the DGI) the platform frees the retention. In case this payment is not made, then the company pays the DGI directly, assuring the payment of the driver's tax. Source: Da Silva (2018)

[43] To have the effective Uber commission the travel request fee must be considered.

[44] Uber International CV, based in Bermuda, was created in 2013 by Uber Technologies' (headquartered in California, United States) parent company, and where several of its foreign subsidiaries were transferred to, as well as part of its intellectual property (O ' Keefe & Jones, 2015). That same year, Uber International CV paid Uber Technologies approximately US $ 2 million plus 1.45% royalties for the use of intellectual property outside the US. In this way, the US government controls only 1.45% of royalties for the use of intellectual property. Treasury verifies that Uber International CV identifies itself as a Netherlands' company (although its parent company is in California), so tax is postponed indefinitely (La Nación, 2017). On the other hand, the Dutch authority perceives Uber International C.V. as a company under North American control, with a central office in Bermuda, so technically it should not have commercial operations or taxable income in the Netherlands.

[45] The Director of Revenues reported that there are 3,600 registered drivers in the DGI.

This mechanism has raised concern in many countries, requiring, as a primary solution, the platforms' incorporation in the current legal framework, to carry out effective tax collection.

As of this report's date, the bill that seeks to regulate the digital transportation platforms in Chile compels these companies to register in the country as a transport company, which would lead them to pay taxes under the general regime in Chile.

***Finding 3.19**:* Ridesourcing platforms have a relevant economic presence in multiple countries. However, some of their tax planning has been controversial since it reduces or cancels the tax collection related to this economic activity.

3.3.6.5 Vehicle Congestion

Vehicle congestion is the saturation of traffic due to the excess of circulating vehicles, producing increases in travel times along with higher fuel consumption and pollutant emission. [46] Congestion is measured in different ways, usually based on the difference in travel time between the original location and a desired one, without traffic or with reasonable traffic levels. Traffic can also be measured through the number of vehicle-kilometers traveled (VKT), the higher the VKT, the greater the number of accidents, pollutant emission and congestion.[47]

Measured in VKT, ridesourcing platforms may maintain, increase or reduce traffic. For example, if the ridesourcing vehicle replaces a private car trip, where the time spent in the search for parking is equivalent to the time the driver drives without a passenger, then traffic would be the same. However, congestion increases if, on the other hand, the platform replaces a ride that would otherwise have been made through a more efficient (energy wise or regarding congestion) shared transport system (bus, train, subway metro or tram). The same is true if it replaces a ride in a private car (if the time traveled without a passenger is greater than the parking search) or if it induces a more significant number of trips. This comparison is valid regarding traffic only, without taking into account the benefits to the passenger, dependent on the service level of the existing modes of public transport, including waiting and displacement time, security and comfort, etc. It is important to note that any additional VKT increases traffic, but not necessarily congestion. Congestion rises when traffic increases in nearly saturated or saturated routes.

Platforms can also reduce traffic by reducing VKT, which occurs when private car possession or use decreases.[48] Paying the cost per trip, versus the costs associated with having a private car[49] may generate more significant use of platforms and reduce having or using a private vehicle. VKT can also be reduced by eliminating the time and distance spent searching for parking space,[50] or when they replace trips made during high traffic schedules in more inefficient vehicles such as traditional taxis. Additionally, platforms increase the occupancy rate of cars (passengers per vehicle per trip), encouraging shared rides.

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[46] In this section, the literature review and results of Tirachini and Gómez-Lobo (2017) were extensively used.

[47] Aunque un vehículo eléctrico no contamina, sí genera mayor contaminación al aumentar el tiempo de circulación de los vehículos no eléctricos, por el incremento en el tráfico.

[48] The increase of transport options (bikesharing, ridesourcing, ridesharing, carsharing, etc.) reduces car dependence and the demand for parking (Hainaut, 2017), and in this sense, ridesourcing platforms have the potential to reduce car ownership (Li et al., 2016).

[49] Vehicle cost, driving license, maintenance, fuel, insurance, avoid the need to drive, find parking, parking payment, etc.

[50] In some cities, the search for parking is a major contributor to congestion (Shoup, 2006).

Finally, platforms could contribute to the use of more efficient transport modes covering the “last mile"[51] between the passenger's location, and the nearest bus stop or subway metro.

In Denver, 5.5% of trips were combined with another mode (Henao, 2017). Clewlow and Mishra (2017) analyze seven cities in the US: Boston, Chicago, Los Angeles, New York, San Francisco, Seattle and Washington DC, and estimate that ridesourcing decreases bus demand (-6%) and trams (-3%), but demand for the suburban train increases (+ 3%). That is, ridesourcing is primarily a substitute for public transportation in urban areas, but a complement in suburban travel, serving "the last mile" to and from train stations. Thus, the study points to a probable increase in VKR product of ridesourcing (Clewlow & Mishra, 2017).

Whether the impact on congestion is positive or negative depends primarily on the areas and periods of traffic saturation (congestion), the transport mode replaced, and the number of additional trips induced. Table 3.5 summarizes the substitution found in research done in San Francisco, Denver, and Santiago. The table presents the percentage of answers to the question: “How would you have made this trip if the ridesourcing platform were not available?” Rayle et al. (2016) analyzed the case of San Francisco, where taxi substitution is of 36%, while that of public transport (bus or train) is of 31%, and 8% were induced trips. Henao (2017) analyzes Denver, where taxi substitution was 9.6%, public transport 22.2%, and private cars 32.8%, and 12% were trips induced in this city. The evidence is mixed and it depends on the analysis site, its level of car penetration and the quality of the public service. Schaller Consulting (2017) find a 36% increase in VKTs in the period 2013-2017 in New York after the platforms' entry, while Inrix (2016) find no effects in London.

The case of Santiago[52] is analyzed in detail in section 3.4.3. According to the results, the platforms seem to induce fewer trips, although 39.2% of users indicate that they would have traveled by taxi, 37.6% in public transport, and 15.9% in private cars.[53]

Table 3.5 Substitution of trips made via ridesourcing.

Table 3.5 Substitution of trips made via ridesourcing. Reference	Rayle et al (2016)	Henao (2017)	Tirachini (2017)	Fundación Chile (2018)
City	San Francisco	Denver	Santiago	Santiago
Country	USA	USA	Chile	Chile
Taxi	36	9,6	40,7	32,4
Public transport	31	22,2	32,5	34,5

[51]It refers to the last section between an intermediate point and the final destination point of a trip. It usually presents important challenges for planners or transport/logistics managers regarding minimizing costs, increasing efficiency, coordinating between modes and the necessary infrastructure.

[52] Percentages based on mentions. The survey was multiple choice.

[53] In the CNP survey (2018), users could indicate more than one alternative concerning how the trips would have been made, so the normalization of the responses is not appropriate since they do not correspond to the percentage of trips that would have been made by this means.

Private car	6	32,8	12,1	13,2
Bicycle	2	11,9(*)	1,3	0,6
Walk	7	-	2,4	0,7
Other modes	10	11,3	5,6	14,1
Would not have travelled	8	12,2	5,4	4,5
Total (%)	100	100	100	100
Ridesourcing in combination with other modes	N/i	5,5	S/i	3,9
Sample size	313	308	1.474	1.311

(*) In Henao (2017), the 11.9% rate represents the joint replacement of walking and cycling. Source: National Productivity Commission. Results in percentages. N / i = No information

After analyzing several cities in the USA, Hall et al. (2017) conclude that the effect on public transport is ambiguous: although the platform is a traveling alternative (adverse effect), it also increases the reach to public transportation (positive impact). The study shows that the arrival of Uber to smaller cities reduces the number of passengers on public transport (5.7%), while in larger cities; the passenger numbers increase (0.8%). The increase in a standard deviation in the use (penetration) of Uber reduces the number of passengers in public transport in the smaller cities by 0.5% but increases them in larger cities by 1.8%. For a summary of the various investigations mentioned, see Table 3.6.

Table 3.6. Studies on congestion and VKT concerning ridesourcing platforms.

Authors	Findings and/or description of the investigation
Henao (2017)	Estimates an increase of 84.6% in VKT by ridesourcing in Denver based on 308 trips handled by the author.
Hall et al (2017)	Consider that ridesourcing platforms can solve the “last mile” problem for both transport services and ridesourcing platforms are complementary rather than substitutes.
Li et al. (2016)	Estimate using annual traffic data in urban areas of the United States. Findings show that Uber’s entrance is associated with congestion reduction in metropolitan areas. Although in peak hours and specific areas (financial or commercial districts), the use of platforms can increase congestion. They suggest that ridesourcing platforms can potentially reduce car ownership, increase the occupancy rate through sharing a trip, and postpone trips at peak times (for the dynamic rate). The effect of ridesourcing (Uber) and shared ridesourcing (UberPool) cannot be separated. The results do not preclude that in some periods and areas within cities (peak hours in financial or commercial districts) the use of platforms may increase congestion.

Clewlow & Mishra (2017)	They estimate an average 6% reduction in public transport use due to ridesourcing in seven large US cities.[54] Bus and light rail transit lost demand, while suburban rail travel increased. Ridesourcing platforms are likely to increase VKT in the largest US cities, because 49% to 61% of ridesourcing trips would not have been made, or would have been done walking, cycling or by public transport. They cannot estimate the net change in VKT.
Office of Mayor (2016)	Ridesourcing services do not seriously increase the traffic congestion in the central business district.
Alpha & Beta (2017)	Ridesourcing services can contribute to efforts to reduce congestion by improving car sharing and supporting public transportation on multimodal trips. Shared ridesourcing and ridesourcing generate combination opportunities with other transport modes.
Inrix (2016)	Ridesourcing platforms in London did not add more congestion.
Ngo (2015)	Incomplete evidence on whether platforms increase or reduce VKT and congestion.
OECD/ITF (2016)	Ridesourcing platforms represent only a small fraction of the total traveled kilometers so there is no sense making a specific policy if not all vehicles (that generate congestion) are included. Ridesourcing platforms' impact on congestion may be relevant according to certain areas and schedules.
Schaller Consulting (2017)	In New York, the number of trips increased 15% and the VKT increased 36% from 2013 to 2017, due to longer trips and lower utilization rate, (number of taxis and platform vehicles increased 60%). Platform drivers travel empty in congested streets, and spend an average of 11 unoccupied minutes versus 8 minutes yellow taxis.
Tirachini & Gómez-Lobo (2017)	Ridesourcing platforms increase the VKT (if the average car occupation is less than 2 passengers per vehicle (pax / vehicle)[55]), because many trips are induced and replace public transport. VKT is reduced if the occupation increases to 3 (pax / vehicles)), by shared vehicle modes. They acknowledge that results could be conservative since the model assumes that as users change their mode, the bus and taxi supply is adjusted to the new demand conditions. If they are not met, they can further increase VKT and congestion. If the bus supply decreases, there will be a negative impact not only on ridesourcing efficiency, but also on the equity impacts of these new mobility technologies.

Source: National Productivity Commission. Note: Except for Alpha & Beta (2017), these studies are independent and were not financed by transport platforms.

Finding 3.20: Globally, the evidence regarding ridesourcing platforms impact on congestion and pollution is mixed. The most common conclusion is that ridesourcing increases the vehicle-kilometers traveled. The higher the utilization rate and passengers transported by vehicles, the higher the probability that congestion and pollution will decrease.

Finding 3.21: The evidence regarding ridesourcing platforms' impact on collective public transport (train, bus, subway metro) is also mixed and depends on the existing services. Several

[54] Boston, Chicago, Los Angeles, Nueva York, San Francisco, Seattle and Washington D.C.

[55] See Annex Figure A.3.4. on the probability of reducing VKT for different occupation rates of ridesourcing platforms with shared trips.

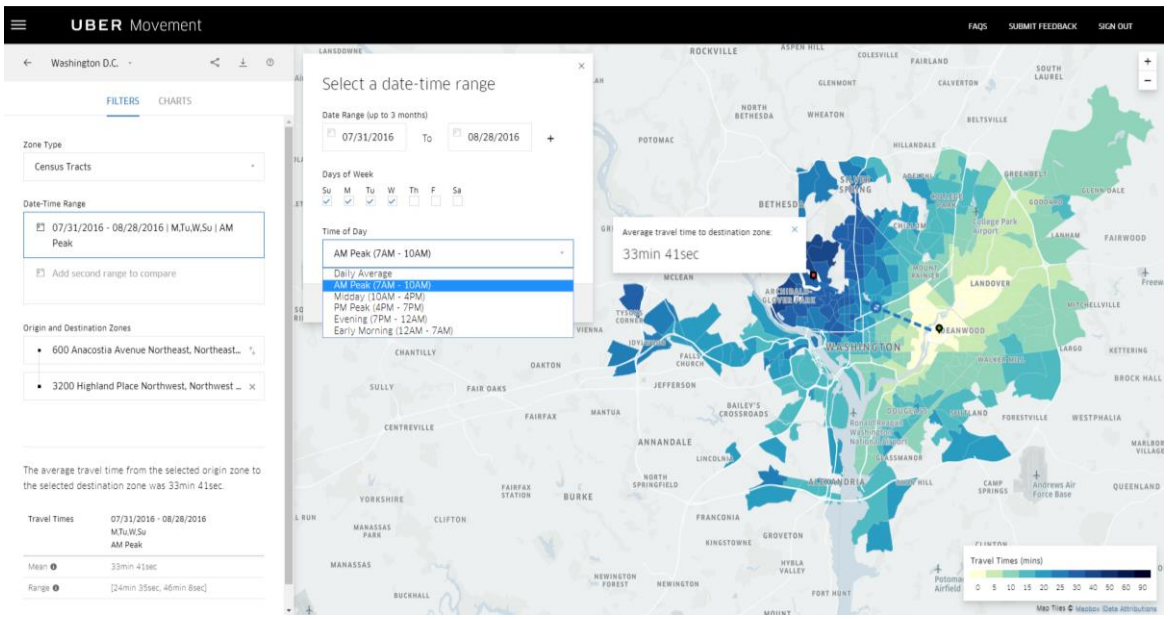
authors have shown that ridesourcing substitutes public transport in urban areas, but that it also complements them in suburban trips.

3.3.6.6 Data

Transport platforms have the capacity to collect and process huge volumes of highly relevant information on market mobility, urban planning, etc. This information is not only valuable for transport platforms, but also car manufacturers, and other companies that deduce consumption patterns and identify business opportunities with travel information. The information is also relevant for the authority since travel and route data for urban planning processes, infrastructure, and transport projects is critical. There has been a conflict between the platforms and the authorities of several cities regarding this point, for there is no clarity on how much of this data could be used for designing public policies, or for controlling the platforms. A controversy has arisen over the ownership and use of data, and on this information as a public good, which would be of great value to governments. Companies have been very reluctant to share the data, partly in defense of passenger and driver privacy, but above all, because of the value of this information to companies.

Uber created the Uber Movement platform that provides free information on the average transfer times based on recent data in some cities, collected via the drivers' GPS. The platform has an interactive map and allows downloading data,[56] and measuring the impact of alternative routes, new highways, expansion of public service, change of street direction, among other things. Figure 3.7 illustrates the online platform with the different tools described above.

Figure 3.7 Uber Movement in Washington.



Source: Uber Movement

[56] On the data that the platform allows downloading: (i) **Origin to all destinations**: This data set includes the aggregate average and the range from the start zone to all other zones. (ii) **Daily Time Series**: For the initially selected zone of the destination zone, this data set includes averages and ranges for all day, rush hour in the morning, noon, and rush hours in the afternoon, evening and early morning. (iii) **All data**: By selecting bimesters, there is a download option with different levels of aggregation: per hour (every day, only working days or only weekends), weekly or monthly hour (every day or only working days).

3.4. Ridesourcing in Chile

This section describes the main ridesourcing platforms that operate in Chile and characterizes its users (passengers and drivers). Platform vehicle efficiency regarding taxis is also analyzed.

3.4.1 Main Platforms

Uber

Created in the USA In 2009, Uber is present in over 70 countries and 400 cities. As a platform, it offers different services. UberX is both the most popular and inexpensive transport service. It also offers high-end cars and shared ridesourcing. Several of these modalities are available in Chile (see Annex Table A.3.7). The platform has a price adjustment algorithm- "dynamic rate" -which, according to demand and supply, adjusts the price by making the most expensive trips in periods of high demand relative to the amount.

The platforms' business model is illustrated in Figure 3.4a. The headquarters is responsible for the organizational and systems infrastructure of the company, human resources, technological development, research, marketing, and sales strategy (OECD, 2018).

Uber arrived in Chile in January 2014 with the UberBLACK service. By June 2015, it introduced UberSUV and UberX services. In July 2016, they began accepting cash as a payment method, and payments through a PayPal account. Uber calculates the price before starting the trip, considering tolls, the request fee, and the dynamic rate. The values (without dynamic rate) in Santiago (March 2018) are $ 220 per kilometer, $ 80 per minute and a base rate of $ 450.[57]

As of November 2017 the platform covered 90% of the country's urban areas (Valencia, 2017), and by September 2018 it was operative in 25 cities such as: Alto Hospicio, Antofagasta, Arica, Calama, Copiapó, Coquimbo, Gran Valparaíso, Gran Concepción, Santiago, Iquique, La Serena, Osorno, Ovalle, Puerto Montt, Punta Arenas, Rancagua, Talca, Temuco and Valdivia, among other cities. Uber is constituted in Chile as an intermediary and not as a transport company, so it does not employ drivers or own any vehicles.[58] As of September 2018, there are 80,000 drivers and over 2 million active users in Chile.

To be an Uber driver, you must: possess a Chilean driver's license (class B or A), be 21 years old, deliver a background certificate with no more than 30 days of issuance, and the driver's resume. Drivers are trained on how to use the Uber Driver app through tutorial videos, so there is no interaction between Uber and its drivers, and the registration process as a driver is expedited and virtual. The driver must have a bank account to receive payments. The platform's commission as intermediary ranges from 25% to 28% (March 2018), although some drivers report that the active commission may exceed 29.1% (March 2018) without a dynamic fee, due to the request fee (which is not affected by the dynamic rate multiplier and is fixed by distance). Drivers must maintain an average grade of 4.7 or higher (from a scale of 1 to 5). As of September 2018, Uber reports an average grade of 4.8 for Chile (Uber 2018). Besides, the minimum travel acceptance

[57] The minimum rate corresponds to $ 1,200, and the cancellation fee is $ 1,100. The request fee corresponds approximately 5.8% of the value of the trip without request fee. This rate was increased in Santiago on February 22, 2018. This increase was controversial for Uber did not notify in advance via email or through other media: the new rates were published on their website on the same day of the increase.

[58] This is the platform's most controversial issue, and it has sparked a global debate. A court ruling from the European Court of Justice declared Uber a transport company in December 2017, so the same requirements of a taxi company apply to Uber.

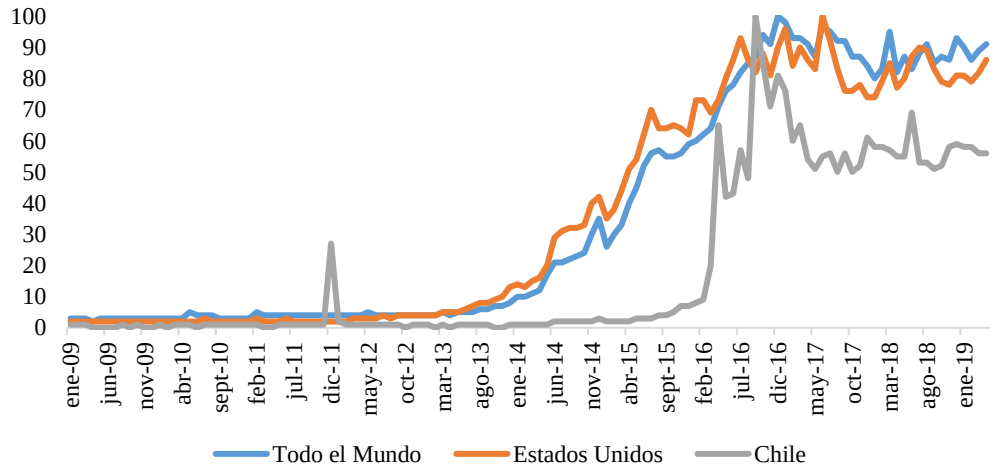
rate[59] that drivers must keep is 85%, and the maximum cancellation rate[60] is 10%. As of March 2018, Uber reports having 70 thousand drivers, where 30% dedicates more than 40 hours per week to driving (Gutiérrez, 2018).

Vehicle requirements are: 10 years from the vehicle registration date indicated on the registration certificate (car license), four doors, air conditioning, double airbag, white license plate, it may be a Sedan, Hatchback or City-car, with an engine of at least 1.1 cc, the compulsory insurance (SOAP), driving license and a valid vehicle technical inspection certificate.[61]

There are no cosmetic or model requirements, and cars can be SUV, Sedan, Hatchback or City-car. This is not only beneficial for the consumer who has a greater variety offer, it also allows to optimize with respect to standardized requirements that otherwise add costs and externalities, for example the use of large cars to mobilize a single passenger. [62]

Uber points out that passenger and third party insurance is granted through the insurer SURA (Uber, 2017), which covers civil liability for third parties and passengers, and personal accidents for occupants (including medical expenses, accidental death, and disability). Coverage begins the moment the Uber driver accepts the trip request and ends when the last passenger gets out of the vehicle. Uber points out that the insurance covers medical assistance in case of traffic accidents, medical assistance for personal accidents and payment for total and permanent disability caused by an accident in a trip requested with the Uber app. Additionally, Uber reimburses all fines for "Illicit transport of passengers."

Figura 3.8. Google Trends graph, Word: Uber: All the world, Usa, Chile and the city of Santiago Chile

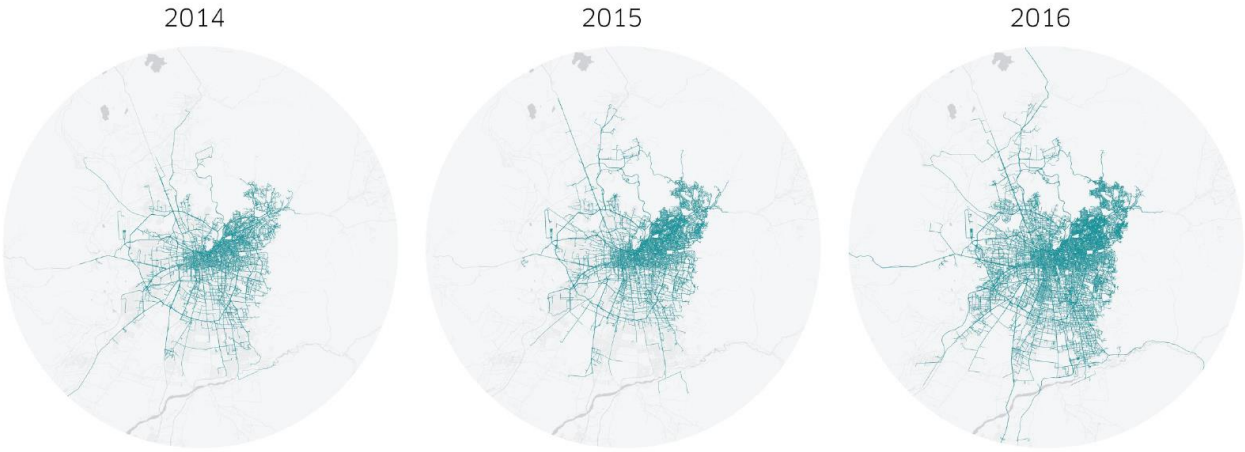


Source: National Productivity Commission based on downloaded data from Google Trends (https://trends.google.es)

[59] Indicator of not accepted trips on the total offered.
[60] This indicator shows the number of requests accepted and subsequently rejected.
[61] To see specific models accepted in each category and other features, check https://www.uber.com/es-CL/drive/santiago/vehicle-requirements/ Retrieved in November 2017.
[62] For example, if a passenger travels alone and without luggage, they can ask for a small car (city-car), whereas if they require trunk or passenger space, they may request a larger car.

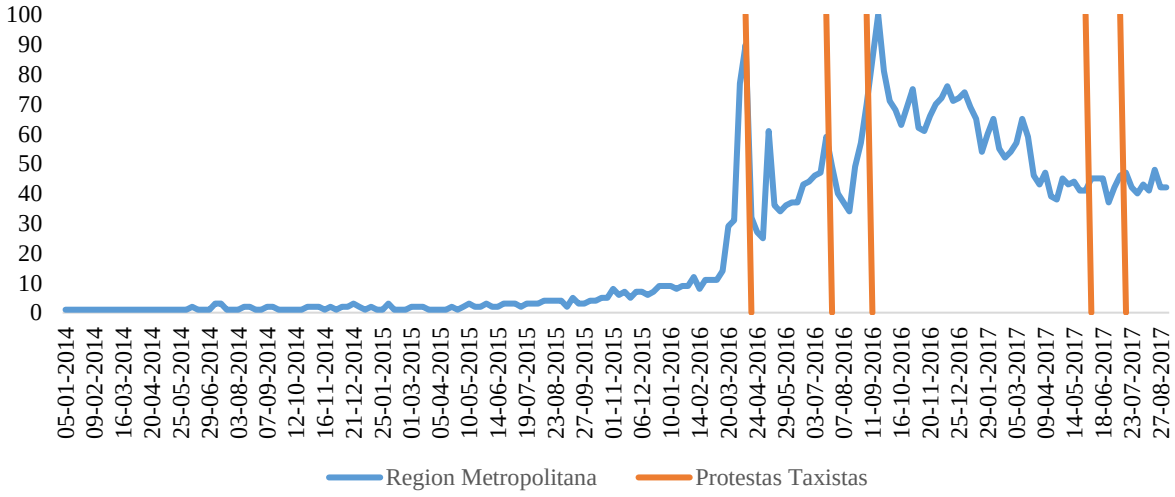
The main ridesourcing platform in Chile is Uber. Figure 3.8 shows Uber's searches on the Internet in Chile, the US and the world. The change in the global trend is evident from mid-2013 when Uber consolidates its international expansion process, although this change occurs in Chile towards mid-2015 with the introduction of UberX. As of January 2016, Internet searches increase, reaching its peak in September2016, when Uber started accepting cash as a payment means in Chile, (see heat map of Santiago, Figure 3.9

Figure 3.9. Uber heat map in Santiago, Chile.



Source: Schaaf (2017)

Figure 3.10. Taxi strikes in the Metropolitan Region (Santiago) and the Uber Word through Google Trends.



Source: National Productivity Commission based on downloaded data from the Google Trends platform (https://trends.google.es)

Cabify

Created in Spain in 2011, Cabify has expanded internationally offering services for corporate clients and private users. The corporate service aims to support companies in the organization of their travel expenses, and helping to monitor the employees' mobility. The service is similar to

that of UberX and competes primarily with taxis and Uber. As of November 2017, Cabify operates in 38 cities in Spain and Portugal, Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Panama, Peru, the Dominican Republic and Uruguay. 80% of its revenues come from Latin America (Jiménez, 2016), and at the beginning of 2016, it had reached more than one million downloads worldwide (Kubota, 2016). In Madrid, Cabify operates different services, including electric cars, traditional taxis, hybrids, or vehicles that meet the low emission standard (EcoTaxi).

Chile was the second country in the world for Cabify, arriving in 2012 and legally establishing itself as a transport company, with operations currently in Santiago, Valparaíso, and Concepción. The drivers pass a selection process that includes psychological and psycho-technical tests, and the cars must necessarily have four insurances (driver, passenger, third party, and an additional per seat).[63] Passengers pay by credit card, debit card, PayPal, and cash.[64]

The driver candidate must submit a valid background certificate (maximum 30 days from the issuance date) have a driver's license class A or B, a driver's resume, a general business license and tax identification number, and photocopy of the identity card. The company gives the approved driver a seat insurance worth 0,8 UF + VAT per year, which is deducted from the driver's payment, according to the contract.[65] Drivers must issue an invoice to receive the amount due, which forces them to pay actual income. Drivers are recommended to have a private passenger transport permit issued by the MTT ("pink card"), regulated by DS80/04 (enabling for the Lite category).[66] Cabify fines drivers with $ 1,000 per rejected trip, which induces higher acceptance. They also have a reservation system, which allows users to schedule a tour in advance. Requirements vary by category, but vehicles from 2008 onwards are prerequisite, and City Cars are not accepted.[67] As of November 2017, Cabify´s commission for intermediation is 25% in the Cabify City modality and 23% in the Cabify Lite modality. As of March 2018, Cabify has 25,500 drivers, with 45% driving full-time (Gutiérrez, 2018). As of September 2018, Cabify announced it had 35,000 partners in Chile, and that there are 2,500 companies using their services, with over 2 million users.[68]

Easy Taxi

Easy Taxi was created in Brazil in 2011, as a platform to connect traditional, executive and tourism taxis. It started in Rio de Janeiro in 2012 and arrived in Chile in 2013.[69] As of September 2017, the platform operates in 120 cities in Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador,

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[63] http://www.24horas.cl/economia/cabify-potencia-su-tarifa-plana-en-todas-las-categorias-2113564

[64] Since February 2018, facilitating the identity card's photograph previously on both sides in the app.

[65] The contract adds: "By virtue of the foregoing, the Driver releases CABIFY from all liability regarding any accident that occurs by any of the vehicles through which it will transport passengers. Notwithstanding the foregoing, it is hereby stated that the value of the passenger's seat insurance may be modified unilaterally by CABIFY, but its price must always be set according to this type of insurance's current market value. Likewise, CABIFY may also unilaterally modify the way in which the insurance price is discounted to the DRIVER, and must always safeguard and ensure that the discount is equitable for all Parties."

[66] https://cabifypartners.zendesk.com/hc/es/articles/213107489-Preguntas-más-frecuentes-Santiago-de-Chile#q7

[67] See Annex Table A.3.8 - Description of some modalities of Cabify, both in the world and in Chile. For CabifyCity, the types of vehicles are Sedan or Hatchback or Station Wagon on the year 2008. For CabifyLite, examples of vehicles are Chevrolet Orlando, Captiva Chevrolet, Hyundai Santa Fe and Kia Sorento. To register a CabifyExecutive in the MTT, a sedan vehicle is required, with a minimum engine of 2.5 cc, and must have at least three meters between axle and axle, from 2012 onwards. Examples of vehicles are Chrysler 300C, MB Class S, BMW 7 Series and Kia Quoris. Finally, for CabifyGroup category, an A2 license is required. Examples of cars are Kia Grand Carnival, Mercedes Benz Vito, SsangYong Stavic 11 seats and Peugeot Expert.

[68] https://www.camara.cl/prensa/noticias_detalle.aspx?prmid=135058

[69] The platform spread throughout the world. As of 2014, it was in Brazil, in Asian and African countries, through partnerships with other companies. In 2016, it decided to refocus on the Latin American market.

Mexico, Peru, and Uruguay. In Chile, it functions in Antofagasta, Iquique, Coquimbo-La Serena, Santiago and Punta Arenas, but several media suggest that it is present in more cities (Rubio, 2017a; Rubio, 2017b).

Easy Taxi offers profiles for passengers and companies and can provide a corporate profile. It offers basic, executive and tourism taxis (Publimetro, 2017), and some vehicles regulated by DS80/04.

Until January 2017, basic taxis used their taximeters, although the application already had an integrated digital taximeter. From that date, all trips are charged according to the integrated digital taximeter.

In January 2017, Easy Taxi enabled the Easy Economy category that operates with private cars or taxis willing to work for a lower rate. The Economy service, which offers a 15% discount on the passenger fare, is available between 09:00 and 17:00 hours, and 20:00 to 06:00 hours (El Heraldo, 2017). As of July 2017, this "private cars" option has been disabled. In all its categories, the platform charges a 15% commission to drivers.

The Easy Taxi platform does a judicial background check to taxi drivers, who must be duly registered as such; the travel card, identity card, and a psychological test are required. There is no public information on the Easy Economy registration process; although the company indicates that, the registration processes are the same for all categories.

In all its categories, the platform charges a 15% commission to drivers. In answering a case to the Tribunal for the Defense of Free Competition, Easy Taxi declared in July 2017 that in the city of Santiago 90% of its drivers are taxi drivers, and 10% are private cars.

In June 2017, Cabify signed a strategic alliance with Easy Taxi, to share its investment base and expand in Latin America (López, 2017; Oliveira, 2017). In January 2018, they officially announced the global merger of both platforms, following the closing of a round of financial injection to expand for US $ 160 million (Rebón, 2018). Technological development including mobility solutions, customer services, and driver partners will also be enhanced. In several countries, individual operations will continue.

Beat

Created in Greece in 2011, BEAT has expanded internationally since 2014 offering transport services to individual users. The service is similar to UberX, and competes directly with other transport platforms, taxis and public transport services. It currently operates in Peru and Colombia and is present in Chile (Santiago) since 2018.

Beat Chile SpA is a joint stock company, the authorized holder or licensee of the Application. For the IRS, the company is a smaller Pro-Pyme contributor. Current economic activities registered are "funds and investment companies and similar financial entities" and other business support services. Beat declares to be a technology company, and fulfill its tax obligations as such,[70] and, similar to Uber, is not constituted as a transport company.

Candidates for drivers must download the application and follow the instructions, and there is an online training tutorial. Drivers must be 18 years old, have a Class B or A driver's license, provide tax information (tax address), photocopy of their identity card, and a bank account to receive payments. They must also provide a background certificate with a maximum of 90 days of the

[70] https://www.publimetro.cl/cl/noticias/2018/08/06/christopher-banfield-gerente-general-beat-nos-estamos -espacio.html

date of issuance, and deliver it again every six months.[71] According to the company, the data is checked before the Civil Registry. As of August 2018, the company reports having mobilized more than one million passengers and having 40,000 registered drivers, of whom 8% are women (section 3.4.3).

Beat Chile requires vehicles not older than 4 years, have four doors (vans are not accepted) valid circulation permission and technical reviews, and have the associated insurances (SOAP, Insurance against third parties). Passengers can make payments by credit card or cash.

Beat Chile reports that a 1.7 km, trip in Santiago, lasting 16.5 minutes, costs, on average, $ 3,488. Beat also works with dynamic rates that depend on the level of demand. Tolls are not included in the initial rate, but are included at the end of the trip. Beat states that its rates are 20% cheaper than other platforms, which, in part, would be explained by the lower commission (20%).

Other platforms

SaferTaxi is a taxi platform present in Chile, Argentina, Brazil, and Mexico. There are no monthly fixed costs, and the driver pays a commission for each trip. This application was Easy Taxi´s main competitor prior to the irruption of Uber (2014) and Cabify (2012) in Chile.

"She Drive Us," an exclusive service for women with women-drivers, which began operations in February 2018. Users are required photo, credit card and photocopy of their identity card on both sides to activate their profile. Additionally, the drivers need to initiate a business according to procedures before the Chilean IRS. Regarding the passengers, the drivers may choose whether to take only women or men accompanied by women; however, the latter must end the trip with a woman.

The Chinese-born giant DIDI, Uber's main competitor worldwide, has already announced that in 2019 it will start operations in Santiago.

3.4.2 Users - Passengers

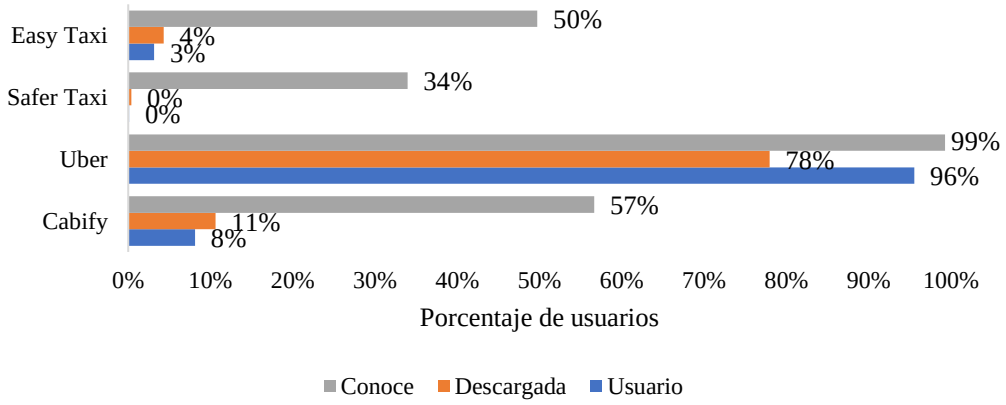
Survey - National Productivity Commission and Fundación Chile (2018)

The National Productivity Commission and Fundación Chile developed a study that included a knowledge and service assessment survey, to evaluate the use of digital transport platforms in Santiago. The survey, with fieldwork conducted by the Microdata Center of the University of Chile, was done in November 2017, and focused on users who had used any of the following platforms: Easy Taxi, Safer Taxi, Uber and Cabify, during the past month. 1,552 users were surveyed through spatial random sampling in the Metropolitan Region (achieving representativeness).

The survey´s results show that 99% of those interviewed know of or have heard of Uber, followed by Cabify (57%), Easy Taxi (50%) and Safer Taxi (34%). 96% used Uber in the last month (see Figure 3.11), followed by Cabify (8%), Easy Taxi (3%) and Safer Taxi (0.1%).

[71] https://www.autofact.cl/comunidad/beat-conductor-chile

Figure 3.11. Knowledge, availability and users per platforms.



Source: National Productivity Commission.

Those who responded having used at least one platform two or more times in the month had a more extensive questionnaire. Due to the low frequency of taxi platform users (Easy Taxi and Safer Taxi), those who used the Uber or Cabify platforms at least twice in the month (for these effects deemed as frequent users;[72] 1,311 respondents) were used for the characterization of this section. 67.5% of respondents have used at least one platform 2 to 4 times in the last month (low frequency), 32.5% of the respondents 5 to 7 times (average rate), and 10.4% eight or more times (high frequency).

Socio-demographic characterization of frequent users

For all ranges, users report occupying the platform mainly between two to four times a month.[73] However, the group between 18 and 29 years old concentrates the highest number of frequent users (30.1%), followed by the 30 to 39 years old the group (21.1%) (See Table 3.7).[74]

Table 3.7. Frequent users ("of the last month") per age and frequency per age span.

Age	N(%total)	2 to 4 times	5 to 8 times	8 or more times
18-29 years old	395 (30,1%)	66%	23%	11%
30-39 years old	277 (21,1%)	64%	23%	13%

[72] 85.7% of the users of the survey (n = 1.311 respondents). The distribution of Figure 3.11 does not vary substantially when considering only ridesourcing frequent users, 9.5% have both applications, 72.6% only Uber, 2.3% only Cabify and 15.6% do not have an application at all (someone else requests the trip). 91.1% have used Uber at least twice and have not used Cabify in the last month. In contrast, 3.1% have used Cabify at least twice and has not used Uber in the last month. Therefore, if a user occupies Uber, he will hardly ever use Cabify, and on the other hand, if the user occupies Cabify, he probably occupies Uber.
[73]Since the question was answered through the application, the user reports the highest frequency.
[74] Rayle et al. (2016) find that 92% of users were under 44 in San Francisco.

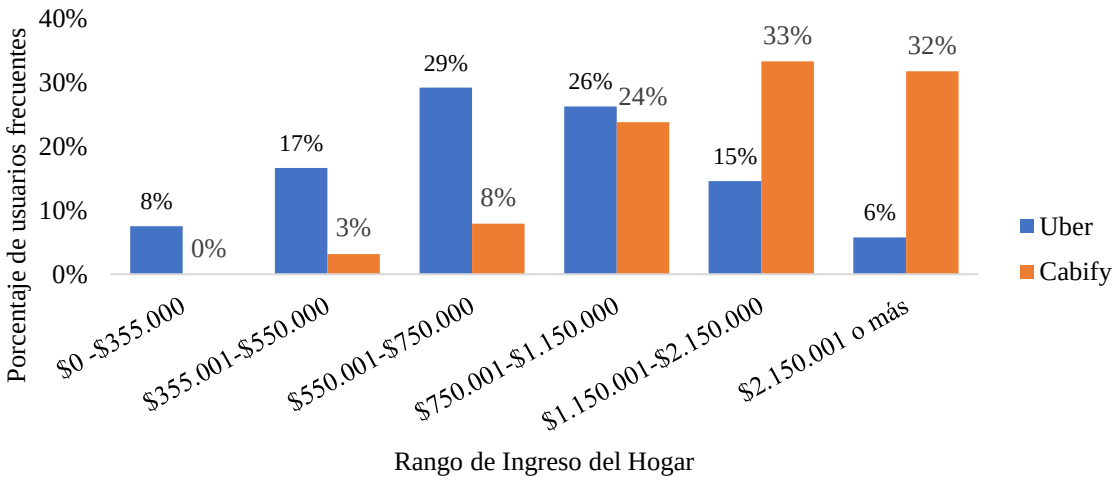
40-49 years old	237 (18,1%)	62%	24%	13%
50-59 years old	260 (19,3%)	74%	19%	7%
+60 years old	142 (10,8%)	75%	20%	5%
Total	1.311	68%	22%	10%

Source: National Productivity Commission.

Of the frequent users, 73.6% are employed (most in a salaried job), 12.3% are students, 5.9% do not study nor is searching for a job, and 5.3% are retired. Most frequent users live in households that have a monthly income range of $ 550,001 to $ 750,000 (28.9%), followed by the segment of $ 750,001 to $ 1,150,000 (24.1%). 76.3% of frequent users homes are in an income segment over $ 550,000, and 21% is in the $ 1,150,000 income section or higher. The data indicate that the median income of the sample is slightly less than $ 750,000, while the median monthly income per household is $ 851,000 in the Metropolitan Region and $ 709,600 in the country (INE, 2017).

Among frequent customers, users of all income ranges employ Uber[75] (attributable to the possibility of paying in cash), although its use is more significant in the $ 550,001 to $ 750,000 (29%) and $ 750,001 to $ 1,150,000 (26 %) income ranges (See Figure 3.12). On the other hand, frequent Cabify users[76] have higher average household income, partly because, at the date of the survey, this platform only accepted debit and credit cards as payment.

Figure 3.12. Frequent user distribution per platforms and household income ranges.



Source: National Productivity Commission

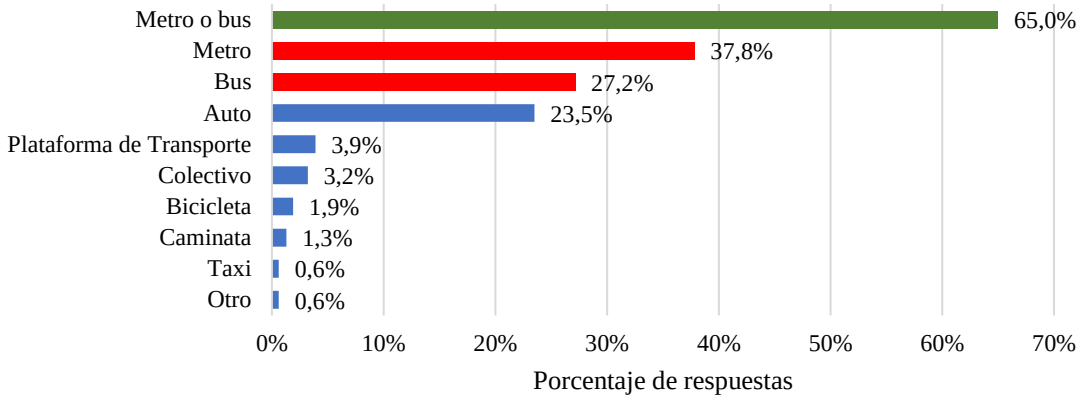
Use habits

Frequent users mainly travel by metro (37.8%), bus (27.2%), and car (23.5%). 68.2% mainly use public and collective transport modes (metro, bus and buses) (see Figure 3.13). With 3.9% of use, the platforms are not the primary transport modes, although they are gaining space and already

[75] 1,266 frequent users prefer Uber which allows making reliable inferences.
[76] 101 frequent users use Cabify so the inference must be made carefully. However, Cabify has less frequent users than Uber.

exceed shared taxi use. Likewise, they are in third place as a secondary means of transportation for those people who travel mainly by metro or bus.

Figure 3.13. Main transport modes for ridesourcing platforms, frequent users.



Source: National Productivity Commission.

Metro and bus are the primary transport means for frequent users who do not have cars (53.6%). Of those who own a vehicle (46.4%), the main transportation modes correspond to the car, followed by the metro and the bus. In both groups, transport platforms are third in place as a secondary means of transport (see Table 3.8).

Table 3.8. Main and secondary means of transport according to the availability of a car for frequent users.

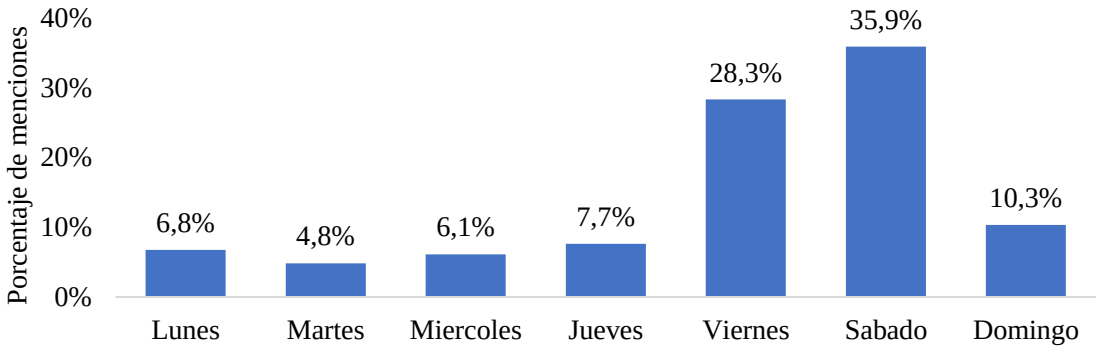
	Does not have a car (53,6%)		Has a car (46,4%)	
Ranking	***Main***	***Secondary***	***Main***	***Secondary***
1°	Metro (50%)	Bus (46%)	Auto (49%)	Metro (31%)
2°	Bus (34%)	Metro (28%)	Metro (24%)	Bus (24%)
3°	Shared taxi (5%)	Transport platform (15%)	Bus (19%)	Transport platform (21%)

Source: National Productivity Commission.

Frequent users mostly use the platforms on Saturdays (35.9%), Fridays (28.3%), and Sundays (10.3%).[77] That is, weekends concentrate 74.6% of the references[78] (see Figure 3.14), which is consistent with the available international evidence, whereby platforms substitute transportation for social and recreational activities, especially those that involve alcohol intake.[79] Trips during the weekend are more frequent in young groups that is between 18 and 39 years old.[80]

[77] Frequent users were asked regarding which days of the week are the most used by each transport platform, with the possibility of naming up to two for each platform used more than twice in the month.
[78] Some percentages may marginally be more than 100 due to the approximations of decimals.
[79] Rayle et al. (2016) in San Francisco found that 48% of trips occurred between Friday and Saturday, lower than the percentage found for Santiago (64.2%).
[80] See Annex Table A.3.9

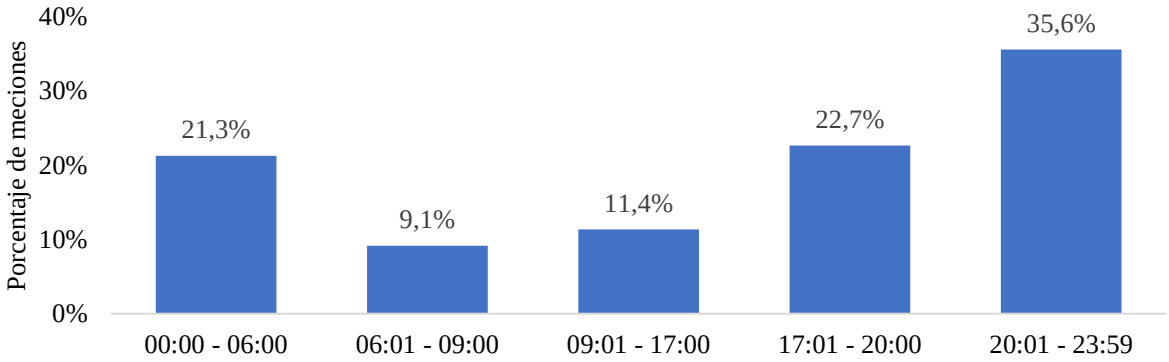
Figure 3.14. Days which ridesourcing platforms are mostly used.



Source: National Productivity Commission.

Platforms are mostly used from 20:01 and 06:00 hours with 56.8% of the mentions (see Figure 3.15). An additional 11.4% use them from 09.01 to 17.00. That is, 69.2% of trips occur during low congestion time, which coincides with Easy Taxi´s low price schedule (with a 15% reduction in prices as *Easy Economy*).[81] Feigon et al. (2016) found similar results for seven cities in the United States, where ridesourcing services are most frequently used for recreation from 10:00 pm to 04:00 am when public transport is less frequent or unavailable. The youngest age group uses them mostly at night (20:01 - 06:00 hrs), while the older age group uses them at 17:00 to 20:00 hours. Gender or income account for no significant differences.

Figure 3.15. Usage of platforms per time blocks (by frequent users).

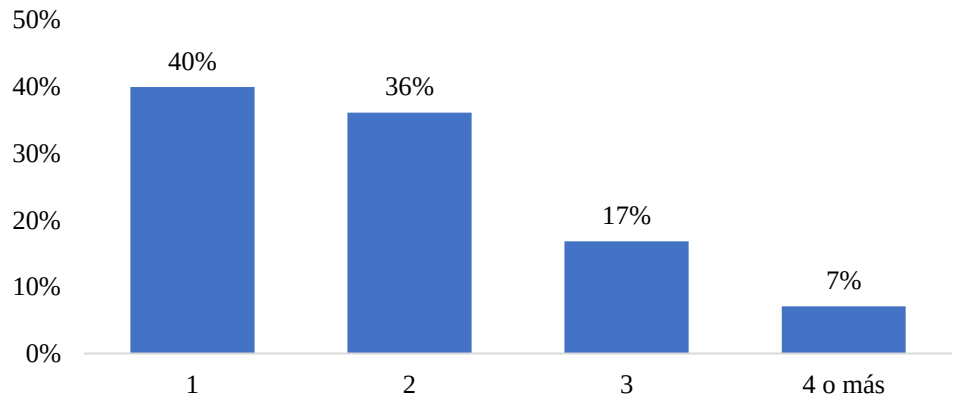


[81]We consulted which time blocks were most frequently used, with the possibility of naming up to two for each platform used more than twice in the month.

Blocks 06.01-9.00 and 17.01-20.00 are of high congestion. Source: National Productivity Commission

Regarding the number of passengers per trip, 40% specified riding alone and 36% with one more person[82] (see Figure 3.16). The occupancy rate is, therefore, of 1.9 people per vehicle[83] (without counting the driver), which is higher than traditional taxis and private cars, which is between 1.3 and 1.5 (Tirachini, 2017a). This rate falls to 1.7 for trips from Monday to Friday, and increases to 1.95 including weekend trips. There are no differences per age groups,[84] however there are differences according to income levels, since the higher the income, the lower the occupancy rate (or a higher probability of traveling alone). Indeed, the occupancy rate per household income range is 2.2 persons per vehicle for lower-income households. ($ 0 to $ 355,000), 2 for the middle range ($ 355,001 to $ 550,000), and 1,8 and 1,7 for the higher ranges ($ 1,150,001 to $ 2,150,000 and $ 2,150,001 or more).

Figure 3.16. Vehicle occupancy (without counting the driver) for frequent ridesourcing platform users.

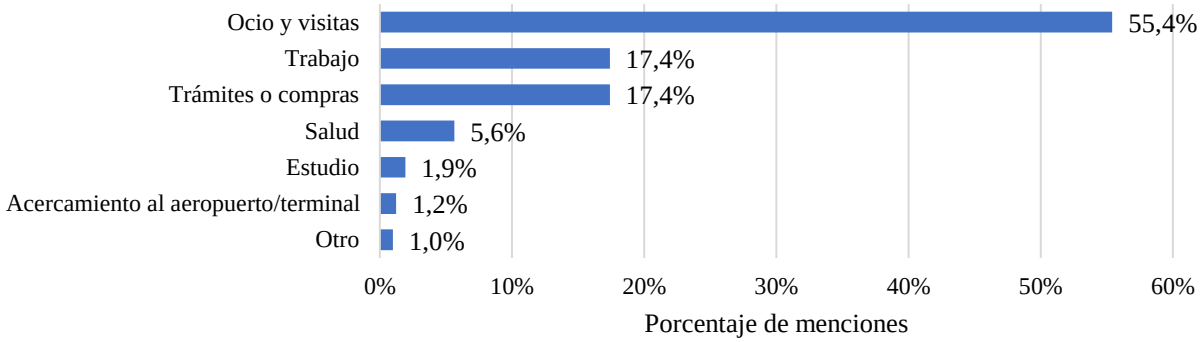


Source: National Productivity Commission

In line with international evidence, frequent users' primary purpose for using platforms is leisure and visits,[85] with 55.4% of mentions (see Figure 3.17) (Feigon et al. (2016) report 54%).). 17% use it to go to work, during the most significant congestion hours in the city, and the same number of people use it to run errands. No relevant differences are found when analyzing by gender, economic activity or income segments; although young people are the ones who most use the platforms for leisure related activities (see Table 3.9).

[82] The survey asked how many additional passengers made the trip, with the possibility of naming an alternative for each platform used more than twice in the month. The average occupancy rate and distribution do not vary if the maximum responded per user is considered.
[83] Since the users' (that travel accompanied) response could be over represented (the inspection paradox) the occupancy rate should be considered as being between 1.5 and 1.9.
[84] Rayle et al. (2016) report that in San Francisco the youngest users tend to travel accompanied
[85] Frequent users were asked regarding the reasons for using ridesourcing platform services, with the possibility of naming up to three.

Figure 3.17. Frequent users' reasons for using platforms.



Source: National Productivity Commission.

Table 3.9. Frequent users' reasons for using platforms.

	Leisure and visits	Work	Errands	Health	Study	Airport or termianl transfer	Othe r
18-29 years	63%	12%	16%	3%	5%	0%	1%
30-39 years	58%	22%	13%	5%	1%	1%	1%
40-49 years	47%	25%	21%	3%	1%	2%	1%
50-59 years	52%	19%	20%	6%	1%	2%	1%
+60 years	53%	7%	19%	18%	0%	1%	2%

Source: National Productivity Commission. Percentage of mentions

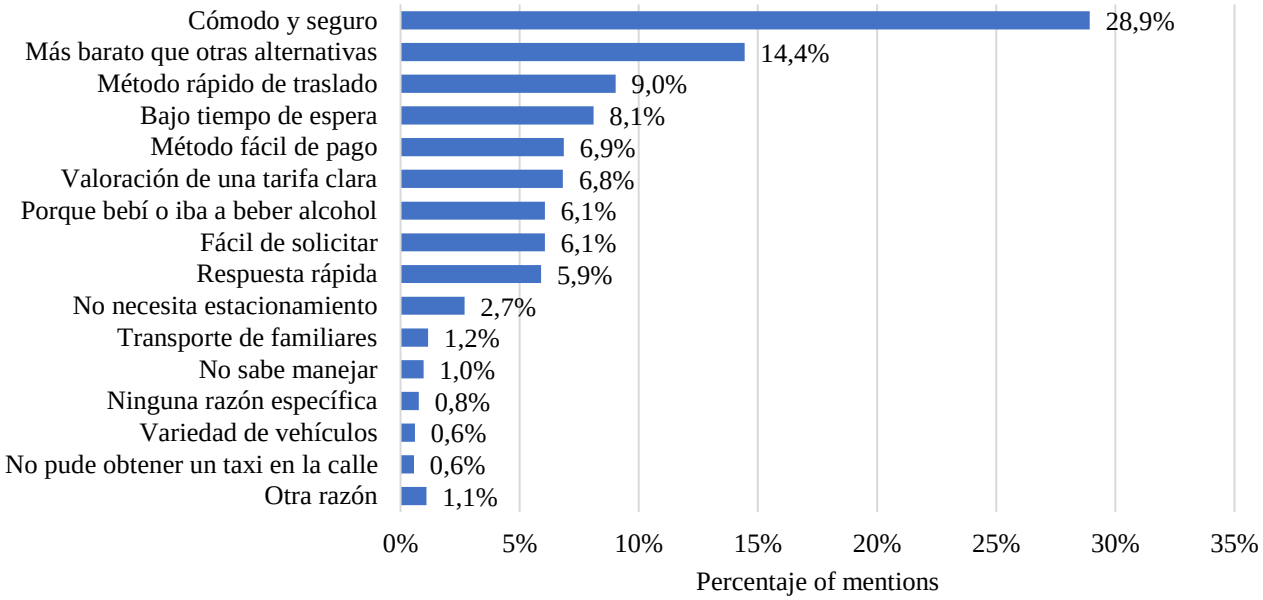
Reasons for use

The main reason that prompts platform use[86] is comfort and safety (28.9% of mentions), followed by price (14.4% of mentions), and transfer speed (9% of mentions) (see Figure 3.18). Internationally, Rayle et al. (2016) find that the main reasons for their use in San Francisco were easy payment method, low waiting time and fast transfer method.[87] There are differences between

[86] We consulted what the two main reasons for using the Uber, Cabify application transport service (app) in the last month were.
[87] What are the two main reasons for using uber / Lyft / Sidecar for this trip?

the reasons for use according to household income range, for example, alcohol intake has more mentions in the higher income ranges.[88]

Figure 3.18. Frequent users' main reasons for using platforms.



Source: National Productivity Commission.

Relationship with other transport modes

It is necessary to understand how platform use complements or substitutes other transport modes, especially the collective public ones such as the metro and bus. 97.8% of frequent users use platforms for point-to-point travel (without combination with other methods and only 3.66% combine it with different modes, including bus or metro.[89] There are no relevant differences according to car ownership, income, or gender. These results are similar to Denver as reported by Henao (2017) where 94.5% indicated that they travel without combining with another mode, and 5.5% indicated that they combine it with another mode. The relevance of these results lies on the differences with Uber studies, which point out that it contributes in the combination with public transport (Alpha & Beta, 2017) or independent studies such as Hall et al. (2017) that find that in

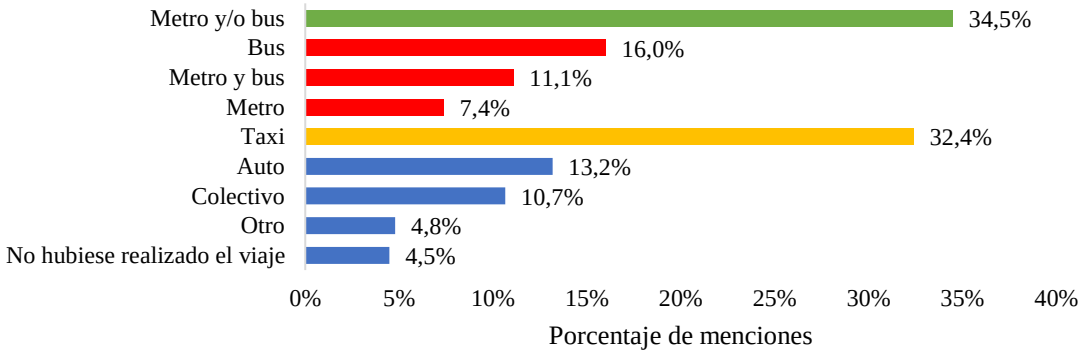
[88] 13% or more of mentions for the range of monthly household income $ 1,150,001 or more. Lower ranges are 6% or less.

[89] The survey asked: "In the last month, on what types of travel have you mainly used the Uber, Cabify, Easy Taxi, Safer Taxi applications?" Users could answer up to two types, 98.2% answered one alternative and 1,75% two. Therefore, the percentages presented are in relation to the percentage of users (1,311) and total more than 100. Double counting of users is avoided when referring to combinations, for example, 3.66% of users report using the platforms in combined trips (48 platform users; 11 bus, 35 subway and 6 otherwise; where 3 responded bus and subway and 1, answered subway and other mode). In that sense, 3.28% indicated metro and / or bus (43 users) and 0.46% with other modes (6 users).

large cities, platform users combine with public transport. These differences may have to do with the particular characteristics of each town, their transport systems and passenger preferences.

A degree of substitution is observed between platforms and the public transport system. 39.2% users specified that they would have traveled by taxi, and 37.5% by metro or bus had they not had the chance to travel via platforms (see Figure 3.19).[90] These findings coincide with those found by Tirachini (2017b), who reported a great substitution of taxis (40%) and public transport (32%).[91] Public transport replacement supposes negative externalities regarding the substitution efficiency, as well as trips that would have been made by bicycle (0.8%) or walking (0.8%). The above is an indication of an increase in the number of vehicle-kilometers, and it is highly unlikely to be compensated by the increase in the substitution efficiency of taxis by ridesourcing, and at peak traffic hours which contribute to congestion.

Figure 3.19. How frequent users would have made their trips if there were no transport platforms.



Source: National Productivity Commission

39.2% of frequent users indicate that they would have traveled in traditional taxis. Basic taxi (without a platform) replacement by more efficient modes contribute to decrease the VKT and traffic in high congestion schedules since taxis spend more time unoccupied and travel at a lower speed.[92] Regarding household income levels, taxi and automobile substitution occurs mainly in high-income households. Metro, bus or collective taxis substitution occurs mainly in users with low and medium income ranges.[93] Internationally, Henao (2017) also finds that the most substantial number of mentions regarding substitution was by public transport in Denver (22.2%), basic taxi being in fifth place after either driving, not having made the trip, bicycle or walking.

Finally, the percentage of induced trips amounts to 4.5%, similar to that observed by Tirachini (2017b) for Santiago, although lower than that reported for Denver by Henao (2017) of 12.2%, and San Francisco, by Rayle et al. (2016) of 8%. Since the percentage of induced journeys is

[90] In the case of Easy Taxi and Safer Taxi, although not comparable due to the low sample, results also point to a greater substitution of basic taxis (without a platform) followed by metro and bus. The question enabled answering more than one alternative, where 80.5% of users answered an alternative, 18.2% chose two, 1.22% chose three and 0.15% chose four.

[91] See Annex A.3.11. Online, non-randomized survey, conducted in Santiago to 1,474 Uber users.

[92] Which is further exacerbated by having more competition and spending more time circulating to meet a daily income goal.

[93] See Annex Figure A.3.9. How frequent users would have made the trips if the platforms did not exist according to household income levels.

lower, Tirachini (2017b) finds that 90% of induced trips occur at night, (from 20:00 to 06:00), with lower public transport frequency.

The Destination Survey 2012 shows that most trips in Santiago occur on work days, during morning and afternoon peak hours.[94] According to our survey, 9.1% of the trips occur from 06.00 to 09.00 (morning peak hours), and 22.7% from 17:00 to 20:00 hours (late afternoon hours).[95] That is to say, almost a third of the frequent platform users employ the service at high congestion times. Tirachini (2017b) finds that 42% of journeys replace metro and bus (+ 8% bicycle, walking, and shared taxi) during weekday rush hours, so this group of users would be adding congestion in Santiago.

Finally, the survey also consulted frequent users on a scale of 1 to 7[96] on how relevant it considers the regulation of ridesourcing transport technology platforms services such as Uber and Cabify. 70% considered their regulation relevant (6) or very relevant (7) with an average score of 5.6. Users considered the following aspects as priority for regulation: 1) security and protection to the consumer and labor aspects, 2) taxation, and 3) personal data. The survey consulted those who answered that they were not users of Uber and Cabify, the reasons for their non-use: 1) not necesaary (29%), 2) they are illegal (21%), and 3) not safe (14 %). All of the above highlights the need to implement adequate and efficient regulation for platforms.

***Finding 3.22**:* A characterization of ridesourcing users in Greater Santiago in November 2017 survey gives the following stylized facts:

- Uber is the dominant platform in the market: 95.5% of respondents have used it in the last month.

- 87.5% of ridesourcing platform users are frequent users (at least twice a month). 67.5% of regular users use at least one platform, between two and four times, while 32.5% between five and seven times, and 10.4% nine times or more.

- Frequent users tend to be employed (73.6%) and mainly salaried employees. Likewise, 76.3% live in households with incomes above $ 550,000 corresponding to the median income of the Metropolitan Region.

- The older the user, the lower the prevalence of using ridesourcing platforms.

[94] Due to its geographic and demographic conditions, pollution and road congestion problems in Santiago are a constant matter in public policy discussions. In 2015, travel times increased by an average of 3% over the previous year, and in total, travel times in Santiago increased by 15.8% between 2011 and 2015 (Blanco and Mardones, 2016). TomTom Traffic Index (2017) ranked Santiago as the second most congested city in South America with a congestion level of 43% (led by Rio de Janeiro with 47%), and in 17th place at a global level (led by Mexico City with 66%). According to this index, the extra travel time in Santiago corresponds to 49 minutes a day or 187 hours, equivalent to 7.8 days a year. The level of congestion at peak hours is 73%. On the other hand, air pollution in the capital has aroused particular concern amongst the population, which according to the Third National Environment Survey (Ministry of the Environment, 2017), is the leading environmental problem affecting people from Santiago (38% of mentions). The city is located in a basin, surrounded by mountain ranges, generating wind circulation problems, and therefore obstacles for the dissipation of pollutants that accumulate in the air. It is a global challenge: in some developing countries in Asia, due to time loss, fuel expense and the increase in business costs may signify between 2 and 5% of GDP (ADB, 2012).

[95] Percentage of total mentions of schedules.

[96] Where 1 is not relevant and 7 very relevant.

- The majority of frequent users indicate that their primary modes of mobilization are the metro or the bus (public transport for collective use). In the case of car owner users, the main means of transportation is the car.

- Frequent users use the transport platforms mostly on weekends (74.6%) and mostly at night, from 20:00 to 06:00 hrs. (56.8%), consistent with a lower public transport frequency. Older users tend to use it more during weekdays.

- The occupation rate is 1.9, which is higher than basic non-platform taxis and private cars (1.3 to 1.5). The frequent user tends to travel alone (40%) or with a companion (36%). The higher the household income, the lower the occupancy rate.

- Leisure and visits are the main reason for making a platform-based trip.

- Price is not the only reason why platforms are used: users value comfort, security, and speed.

- 70% consider platform regulation relevant (6) or very relevant (7), with an average score of 5.6.

- The priority areas of regulation for users are security and consumer protection along with labor, followed by taxation and personal data.

Quality of service, security, and rates in Greater Santiago

The Organization of Consumers and Users of Chile (ODECU) evaluated the safety, quality, and prices of basic taxis, Cabify, Easy Taxi and Uber,[97] in the province of Santiago, using five communes as a reference.[98] Occult customers made 18 trips for each service on selected routes. The results of the evaluations are displayed in Table 3.10 and correspond to a scale from 1 to 7.

Table 3.10. Averages obtained from the ODECU (2017) study as occult client observation.

Evaluated aspects	Cabify	Easy Taxi	Basic Taxi	Uber	Average
Greeting	7,0	6,4	4,1	6,6	6,0
Driver's courtesy	6,7	6,2	4,8	6,5	6,0
Driver's personal appearane	6,9	5,9	4,2	5,8	5,7
Compliance or variations with route	6,4	5,8	6,4	6,5	6,3
Safety belt usage of driver	7,0	6,0	5,3	7,0	6,3
Safety belt information for the user	2,7	1,0	1,0	2,6	1,8
Vehicle's external condition	6,9	6,0	5,4	6,5	6,2
Vehicle's internal condition	6,9	5,5	5,6	6,5	6,1
Vehicle's cleanliness	6,9	5,4	5,3	6,3	6,0
Use of exclusive lanes for public transport[99]	6,9	7,0	5,7	6,9	6,7
Use of cell phone during transport	6,1	6,3	6,3	4,5	5,8
Operation speed	6,7	6,4	4,8	6,7	6,2
Safe driving	6,7	6,4	5,1	6,3	6,1
Passenger safety when getting off the vehicle	6,9	6,0	5,2	6,4	6,1

[97]Normal Easy Taxi was used, not Easy Economy.

[98] To access the complete study: http://www.odecu.cl/wp-test/2017/11/estudio-taxis-y-aplicaciones-de-transporte/ Retrieved in November 2017.

[99]It refers to whether, in the case of private vehicles, they comply with the regulations on exclusive lane use.

Average	6,5	5,7	4,9	6,1	5,8

Source: National Productivity Commission based on Table 3 of the ODECU (2017) study.

Regarding safety, the study highlighted the little information and non-existent incentive in the use of the safety belt by the driver towards the user. In the case of Cabify and Uber, only occasionally did the driver request the user to put on the seatbelt. In the basic taxis and Easy Taxi services, this request was non-existent, being qualified with a 1.0 (minimum qualification).

Regarding waiting times, Cabify and Easy Taxi had the most extended waiting times on average, which is attributable to the time spent locating the passenger at the origin, since the GPS occasionally takes a wrong location.

Drivers tend to use the cell phone while driving (in all services). This practice was seen in greater proportion amongst Uber and Cabify drivers who need to locate routes, while Easy Taxi and basic taxi drivers made calls or sent text messages.

Regarding Service and Information to the user, comfort, and service security evaluations, the worst assessed service was that of basic taxis, particularly the driver's personal appearance, initial greeting, and courtesy.

Uber and Cabify drivers are not very familiar with the city and the routes, using GPS navigation very frequently (for example, Waze). Instead, basic taxi drivers exhibited great knowledge of the town, occasionally displaying some opportunistic behaviors by occupying alternative longer routes to increase the trip's cost.

ODECU indicates that Easy Taxi has little control of the vehicles that register in their mobile application and that they do not verify license plates. The limited supply of specialized vehicles that exist in Uber and Cabify (Cabify Baby, Uber Kids, Uber Assist and Uber WAV), increase waiting times for customers with special needs. However, the enablement of a mobility option that did not exist before for this type of passengers is highly valued.

Regarding the vehicle safety, of the 72 vehicles in which the trips were made, there were 33 different models, and, of these, 11 models passed the Latin NCAP tests between 2010 and 2017. Clearly, drivers and users are not aware of how safe the vehicle is, which is a fundamental attribute regarding passenger transport.

3.4.3 Users - Drivers

The National Productivity Commission thanks the Easy Taxi, Uber and Beat platforms for facilitating a characterization survey of their drivers.[100] The former two surveys were done in 2017, and the Beat survey was made in 2018. Concerning Cabify, this request received no answer.

Socio-demographic characterization of drivers

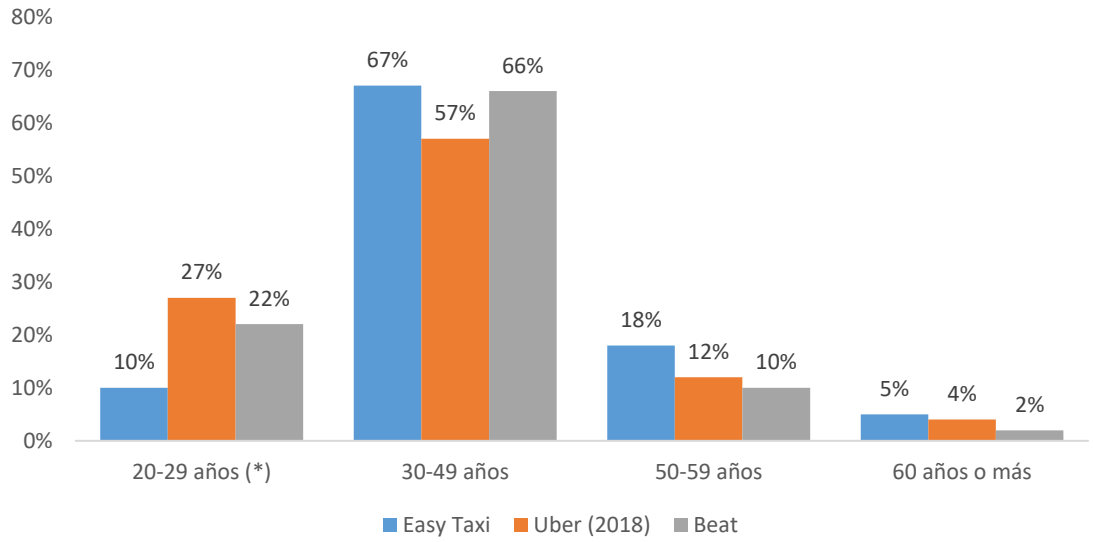
Regarding the drivers' age, there are more young drivers (20-29 years old) on the Uber and Beat platforms than in the Easy Taxi platform. Instead, the latter exhibits a greater proportion of drivers over 50 years old, since most of their drivers are basic taxidrivers. (Figure 3.20). In 2017 Uber in Chile indicated to that 47% of its drivers were between 25 and 35 years old (Millahueique, 2017), and that 7% were over 51 years old. By mid-2018, it indicates that 27% are between 21 and 29 years, 57% between 30 and 49 years, 12% between 50 and 59 years and 4% 60 years or more

[100] Easy taxi and Uber surveys were conducted during November and December 2017, and the Beat survey during October and November 2018. In the case of Easy Taxi and Beat, the information was processed by CNP, whereas, for Uber, only aggregate information (descriptive statistics) was received, corresponding to a subset of the questions sent. The number of drivers surveyed amounts to 1,233 in Easy Taxi, 2530 in Beat and 732 in the case of Uber.

(Uber, 2018). In Easy Taxi, 10% are between 20 and 29 years old, 67% between 30 and 49 years old, 18% between 50 and 59 years old and 5% over 60 years old. In Beat, 22% are between 20 and 29 years old, 66% between 30 and 49 years old, 10% between 50 and 59 years old and 2% over 60 years old.

24% of Beat drivers are economically dependent on their parents or another relative, while 21% of Uber drivers and 19% of Easy Taxi (consistent with the age brackets). 81% Uber drivers, and 88% Easy drivers, and 82% of Beat have children or elderly people who depend economically on them.

Figure 3.20. Distribution of age of the three platforms.



Source: National Productivity Commission. Beat and Easy Taxi information were obtained through the survey, Uber data correspond to Uber (2018). Note (*): In the case of Beat from 18 to 29 years, Easy Taxi 20 to 29 years and Uber (2018) 21 to 29 years.

Regarding Uber drivers, 65% declare having higher education, 28% complete secondary education and 7% incomplete school education. 61% Beat drivers state that they have higher education, 33% complete secondary education, and 6% incomplete school education. Concerning Easy Taxi drivers, 46% state that they have higher education, 43% complete secondary education, and 11% incomplete high school education.

Therefore, Uber and Beat drivers have higher education in greater proportion than those of Easy Taxi. According to US surveys, 72% Uber drivers declared having a higher education degree in 2014 (Benenson Strategy Group, 2015), higher than that found in Chile. Of the respondents, 6% of Easy Taxi drivers are studying, versus 12% of Uber's and 10% of Beat's. The Benenson Strategy Group (2015, 2016) surveys found that 7% and 11% of the Uber drivers were studying in the years 2014 and 2015 respectively in the USA, and that 72% reported having a higher education degree.

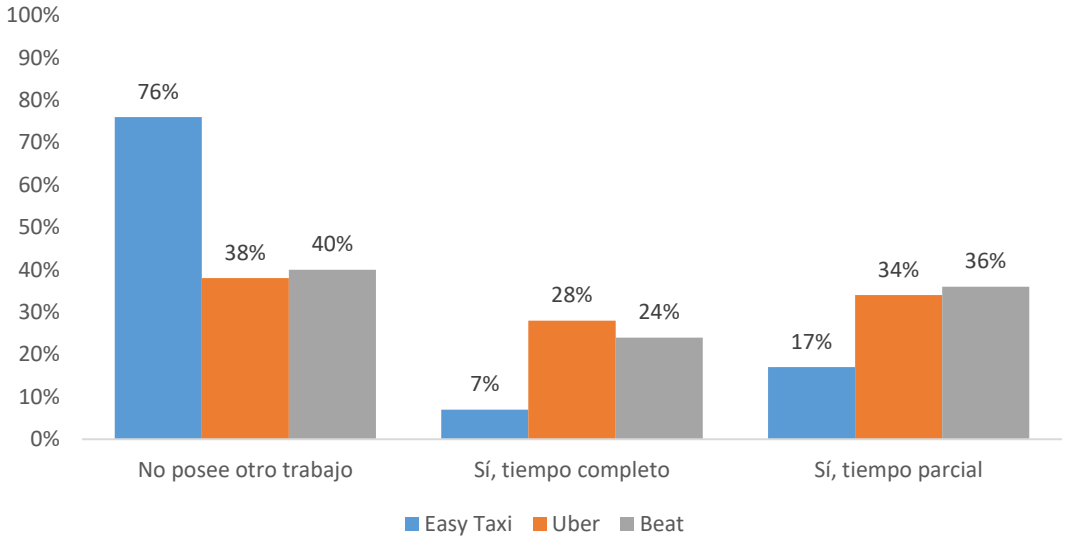
62% of Uber drivers have another activity. 34% of Uber drivers point out that they drive part-time and 28% full-time (see Figure 3.21).

38% declare not having another job, close to the 30% who work over 40 hours as mentioned in the press in March 2018 (Gutiérrez, 2018). 76% of Easy Taxi drivers point out that they have no other activity. 24% of Uber drivers have another business, and 7% say that this is full time and

17% part-time. 60% of Beat drivers have another activity. 36% work part time and 24% say it is full time.

40% of Beat drivers say they do not have another job, close to 44% who say they work 30 hours or more while driving on a transport platform (around 47% said they drive on more than one platform). The contrast is significant: almost two-thirds of Uber and Beat drivers have another activity, while nearly three-quarters of Easy drivers are entirely dedicated to it. In the case of Uber or Beat, this is consistent with the work flexibility and the ease of becoming a driver, while in the case of Easy taxi it is due to the bias of its affiliates, mostly authorized taxi drivers. It is important to note that 47% of respondents drive for more than one platform.

Figure 3.21. Additional job, apart from driving.



Source: National Productivity Commission.

The survey consulted the employment situation before being a platform driver. 82.4% of the Easy Taxi drivers were full-time workers (dependent or independent) previously, and 10.1% were part-time workers.[101] 15% indicated that they worked as taxi drivers supported by another application before being in Easy Taxi, and 85% that they were taxi drivers without a platform.

Of the Uber drivers, 45% were full-time dependent workers and 11% were part-time, 20% were unemployed (actively seeking employment), and 16% were self-employed. 34% of Uber drivers had previously worked in transport. Students, retirees, and homeowners represent 8% as a whole.

Of Beat's drivers, 37% used to be full-time dependent workers and 10% were part-time dependent workers, 17% were unemployed, and 29% were independent workers. Student, retirees and homeowners represent 5% of the drivers. 66% of the drivers had worked in transport before, 68% had worked in another passenger transport platform (45% of the total of respondents) and 18% in basic taxi and / or executive taxi without a platform (11% of the total).

[101] See Annex Table A.3.13

According to our survey and some administrative data, foreign or female drivers are a minority on all three platforms, with 4%[102] and 8%[103] respectively of Uber drivers; 3% and 2% of Easy Taxi drivers; and 8% in both cases of Beat drivers. [104] Uber conducted a survey in twenty cities in the US[105], and found that 14% of drivers were women in 2014, and 19% in 2015 (Benenson Strategy Group, 2015 and 2016), a trend contrary to that observed in Chile.

Regarding the possession of a professional driver's license (Class A license), Uber (2018) states that 18% of its drivers have it. 23% of Beat drivers has a professional license, 21% with at least an A1, A2 or A3 license and 9% have A4 and / or A5 licenses (trucks).

Driving hours and income

Uber reported (March 2018) that the average driver works 18 hours a week, half their drivers (55%) drive less than 10 hours a week (67% in January 2017, according to Millahueique, 2017)), and 30% work over 40 hours per week (Gutiérrez, 2018).[106] These numbers agree with the international evidence. In the United Kingdom, 33% is active over 40 hours a week and 16% less than 10 hours, while 2.6% register over than 70 hours and 0.8% more than 80 hours.[107] In Australia, an UberX driver drives on average 19 hours a week (Deloitte, 2016), and in the US 51% between 1-15 hours, and 30% between 16-34 hours a week (Hall & Krueger, 2015).

35% of Beat drivers state they work less than 10 hours on the platform. 22% from 10 to 22 hours, 13% from 22 to 30 hours, 13% from 30 to 45 hours and 17%, over 45 hours. Considering the total hours that they drive on platforms, 23%Beat drivers drive between 0 to 10 hours; 20% between 10 to 22 hours; 14% from 22 to 30 hours: 17% from 30 to 45 hours and 27% over 45 hours.

60.3% Easy Taxi drivers[108] declare to work 45 or more hours a week as taxi drivers, 12.8% drive between 30 and 45 hours, 4.7% between 22 to 30 hours, 10.5% between 10 and 22 hours and 11.7% less than 10 hours. In all time ranges, taxi drivers make intensive use of the platform: at least 64% state driving with the platform the same total driving time range per week.

28% of Uber drivers say that it is their only income, 15% their main income, and for 57% it is a supplement to their primary income. 30% of Beat drivers state it is their only source of income, for 15% their main income and for 56% a complement to the main income, so the results do not differ from those reported by the survey of Uber a year before (see Table 3.11).[109] For 39% of Easy Taxi drivers, this income is their only revenue. For 20%, it is their main income (they have

[102] Information reported in the survey.
[103] Data reported by Uber in the Public Works, Transportation and Telecommunications Commission of the Chamber of Deputies in September 2018.
[104] See Annex A.3.12 for a summary of demographic statistics of driver surveys.
[105] 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
[106] Uber (2018) points out that 73% of their drivers spend less than 15 hours connected, 18% are connected between 15 and 30 hours in a week, 7% between 30 and 45 hours and 2% 45 hours or more. These data are substantially different from those answered as working hours in March 2018.
[107] The caveat is also made that the connection time does not equal the driving time. Source: http://empleosustentable.cl/productividad/uber-quiere-evitar-conductores-trabajen-70-horas-la-semana/
[108] In this analysis, 1178 answers validly issued were used, because 55 taxi drivers had inconsistencies regarding their working hours as taxi drivers in Easy Taxi.
[109] This is consistent with the fact that 38% is driving full-time in Uber and 62% have other part-time or full-time employment.

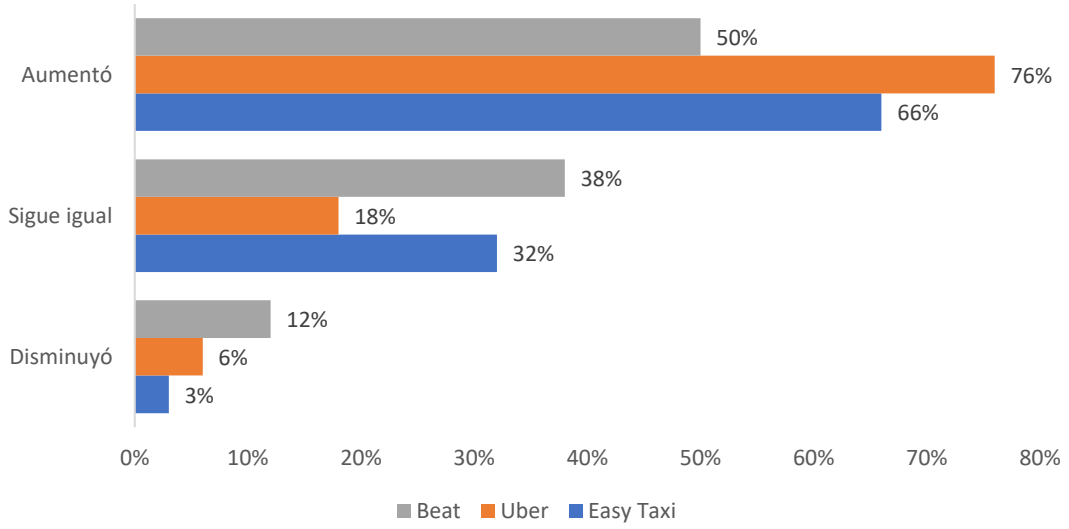
at least a secondary income), and for 41% it is a supplement to their primary income.[110] Regarding income perception, 76% of Uber drivers, 50% Beat drivers and 66% of Easy Taxi drivers consider that it increased upon joining a platform.

Table 3.11. What does the income perceived as a taxi driver or Uber driver represent?

	Easy Taxi111	Uber	Beat
Only income	39%	28%	30%
Main Income	20%	15%	15%
Supplementary Income	41%	57%	56%

Source: National Productivity Commission

Figure 3.22. Do you consider that your income through a transport platform increased, remains the same or decreased?

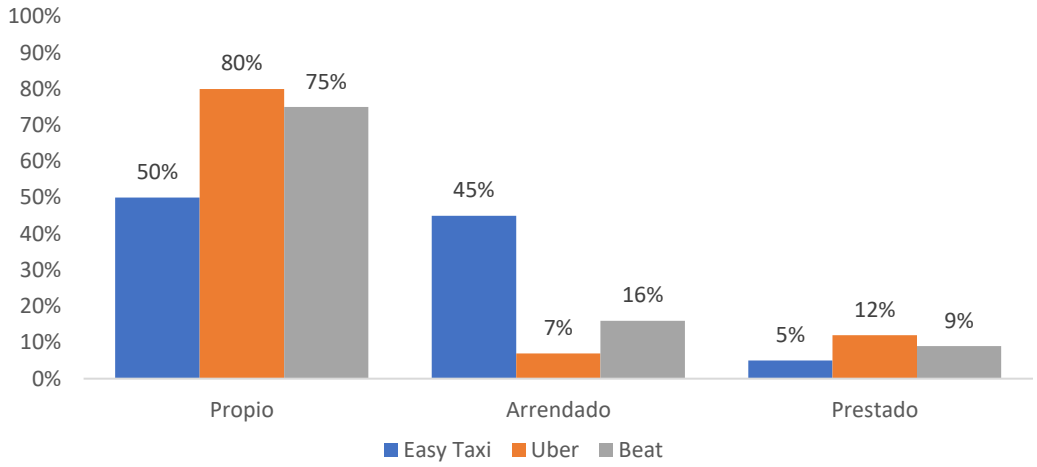


Source: National Productivity Commission.

Regarding the vehicle, 50% of Easy Taxi drivers state they own the car, 45% declare that it is leased, and the 5% borrowed (see Figure 3.22). 80% of Uber drivers drive their vehicle, 12% borrowed, and 7% leased. 75% of the Beat drivers own their car, 16% state it is leased, and 9% that it is lent. Of the Uber drivers with their car (80%), 43% reported having bought the car to drive on the platform (34% of the total number of drivers). Likewise, of the Beat drivers who indicate that the car is their own (75%), 42% bought it to drive it on a transport platform.

Figure 3.23. Is the vehicle that the driver drives owned, leased or borrowed?

[110] This seems inconsistent with the fact that 76% of Easy's drivers are full-time drivers (24% have another job) but could be attributable to the fact that many taxi drivers own one or more taxis, which they lease to other drivers.
[111] Income as taxi driver.



Source: National Productivity Commission.

39% of Easy Taxi drivers state they earn over $ 1000.000 monthly as platform driver and taxi driver (see Table 3.12). On the other hand, we estimate that Easy drivers who do not have another job earn (gross) monthly on average $ 879.512. Those that have another part-time job, $ 781,643; and those who have another full-time job, $ 601,190. With the same estimate for Beat drivers, 6% declare earning over $ 250,001 gross per week as Beat driver (17% as platform driver). Beat drivers who do not have other jobs (earn (gross) monthly on average $ 666,966. Those who have another part-time job, $ 552,183; and those who have another full time job, $ 407,355.

With the same analysis, but separating for worked hours a week, where an average Beat driver works over 30 hours a week as full time, has a gross income of $ 820,912 monthly. As a part time driver with 10 to 30 hours a week, the gross income average would be $ 413,826; and as an occasional driver, 0 to 10 would be $ 275,524. Regarding Easy taxi, the average gross income is $ 921,962, 10-30 hours a week would be $ 648,485, and less than 10 hours is $ 618,841.

Table 3.12. Easy Taxi drivers by gross income range weekly as taxi driver and platform driver.

Ingreso bruto semanal (sin descontar gastos)	Easy Taxi	Solo Beat	Beat y otras plataformas si corresponde
0 - 50.000 pesos	12%	37%	21%
50.001 - 100.000 pesos	12%	30%	26%
100.001 - 150.000 pesos	12%	17%	19%
150.001. - 250.000 pesos	25%	10%	17%
250.001. - 350.000 pesos	19%	4%	11%
Más de 350.000 pesos	20%	2%	6%

Source: National Productivity Commission

Regarding Uber drivers, on a scale of 1 to 5, 50% would recommend driving with Uber with grade 5, and 40% with grade 4 or 3 (average of 4.1). 67% of Beat drivers recommend working on the platform and 96% of drivers recommend working with Easy Taxi.

Reasons for use

The main reasons mentioned for being an Uber driver are having a higher income (53%), flexible hours (45%), and generating revenue while looking for a job (27%[112]). Beat drivers state that they generate higher income in their free time (21,7%), flexible hours (21,5%) and increasing revenue (18,7%). The reasons mentioned by Easy Taxi drivers is greater safety (49%), allows capturing more customers (37%),[113] and thirdly, greater control over income (12%).[114]

64% Uber drivers and 55% Beat drivers state taking advantage of some personal journey.

Substitution

Drivers of the three platforms were asked as to which option they would take if they could not drive anymore with the platforms (Table 3.13). 1% of Easy Taxi drivers said they would not work, 7% would be dedicated to their other activity, 10% would seek employment in another sector, and 82% would still be a taxi driver. Regarding Uber drivers, 5% would not work, 45% would be dedicated to their other activity, 31% would seek employment in another sector, and 19% would find jobs in transportation.

Table 3.13. What would you do if there were no possibility of driving using a transport platform in Chile?

	Easy Taxi	Uber	Beat
Would not work	1%	5%	1%
I would do my other activity (current job or studies)	7%	45%	45%
Would look for a job in another sector	10%	31%	26%
Would still be a taxi driver	82%	-	-
Would look for a job in the transport sector	-	19%	27%

Source: National Productivity Commission.

Box 3.2 Drivers in more than one platform: Beat driver survey:

In November 2018, the Chilean Productivity Commission requested Beat to do a survey. Results showed that 47% of the drivers state they work on more than one platform. Of these, 73% works in only one additional, 23% in 2, and 4% in 3 or more platforms. 90% drive in Uber, 32% in Cabify, 2% in She Drive us and 3% in Easy Taxi. 7% drive in another platform.

Of these drivers 15% drive at least 10 hours a week, 16% from 10 to 22 hours, 15% from 22 to 30 hours, 20% from 30 to 45 hours and 34% from 45 hours. 28% of these drivers earn over 250,000 weekly.

Finding 3.23: A characterization of ridesourcing Easy Taxi and Uber drivers in Chile delivers the following stylized facts:

- Platform drivers are usually men and Chileans. Over half of them have higher education studies or are currently studying. Uber drivers are younger and are part-time employees

[112] The two main reasons were asked for, therefore adding up to more than a hundred
[113] Moreover, therefore, spend less time without passengers in the vehicle, increasing the capacity utilization rate.
[114] The two main reasons were asked for, therefore adding up to more than a hundred.

compared to Easy Taxi drivers. A third of the Uber drivers previously worked in the transport sector.

- The available evidence suggests that Easy Taxi drivers work more hours per week than Uber drivers do. This is consistent with Uber drivers reporting that their driving hours are a supplement to income (57%) and that they have another full-time or part-time job (62%).

- Transport platform drivers mostly consider that when driving with the platform their income increased (76% in Uber, 66% in Easy). This is expected in the case of Uber since it is mainly a complement to the income, but it reveals the efficiency and the increase in potential revenues offered by the platforms for drivers.

- 50% of Easy Taxi drivers declare that they drive their own vehicle (are owners of a taxi medallion) while 50% lease. On the other hand, most Uber drivers own or borrow their car (92%) and a few rents (8%).

- There are multiple reasons why drivers decide to use platforms. Regarding Uber, higher revenues and time flexibility are the main reasons, while in Easy Taxi, safety and the increase in revenues due to a higher number of passengers.

- In case of not being able to drive via platforms, Easy Taxi drivers would do the same activity (82% would still be a taxi driver). Uber and Beat drivers would be mainly dedicated to their other business or studies (45%) and would seek employment in another sector (31% Uber vs 26% Beat). Beat drivers, in second place, would find jobs in transportation (27% vs. 19% Beat drivers).

3.4.4 Efficiency: Technology and Regulation[115]

A crucial part of the debate regarding ridesourcing platforms that do not operate with taxis refers to the lower fare charged per trip. In this section, we study the cost structure of the provision of the point-to-point transport service, analyzing whether the differences between traditional taxis and ridesourcing platforms are due to technology, or to the fact that they operate outside the regulation.[116] The methodology compares a basic taxi (without a platform) with a ridesourcing platform vehicle (for example EasyTaxi, Uber or Cabify).

Technology Factor

Technology improves the cutilization rate of the car, which allows a lower expense per use and greater speed when traveling since they do not circulate looking for passengers like taxis.[117] Both elements imply savings for drivers. Additionally, the less time required to produce that same trip also involves savings, which is also comparable in monetary terms and increases the income per hour worked.

For car use expense and time estimation, the number of kilometers that drivers must travel, with and without passengers[118] is considered to perform an average trip of 3 kilometers (CIS, 2005).

[115] This section is based on Bennett and Zahler (2018).
[116] A third factor would be that the ridesourcing platforms were dumping, in other words, if the commission charged to the drivers (20% to 30% of the effective tariff when considering the platform fee) was less than the total platform operating cost. We do not have the necessary information to estimate this factor. The drivers' income should cover their costs, otherwise, they would not participate in the platform
[117] At higher speeds, gasoline costs are lower up to approximately 65 km/hr, a range in which we assume taxi drivers and drivers travel most of the time. This relationship is reversed at higher speeds.
[118] The total kilometers are calculated as 3km / utilization rate. If the utilization rate is 50%, then it is 6km.

The costs are estimated based on three utilization rates: 30%, 40% and 50% for taxis without a platform, and a utilization rate[119] of 60% for ridesourcing platforms drivers.[120] Three average speeds for taxis are also considered: 18 km/hr, 21 km/hr and 24 km/hr, and 30 km/hr for drivers of ridesourcing platforms.[121] This implies a total of nine comparison scenarios with respect to the benchmark, defined as an average speed of 30 km/hr and 60% utilization rates.

For vehicle use, expenses per kilometer traveled, the gas consumption, change of engine oil, change of brake pads, change of tires, and others are considered.[122] For practical purposes, the estimation is made in gasoline expense at different speeds (see Table 3.14) together with vehicle use expenses (see Table 3.15). These costs yield an estimate of the vehicle use expense per kilometer traveled. The vehicle-use expenditure per average trip is obtained by multiplying by 3km (of the trip) on the utilization rate.[123]

Table 3.14. Gasoline expense per traveled Km, at the different considered speeds

Speed	Expense per Km
18 km/h	80,3
21 km/h	73,6
24 km/h	68,6
30 km/h	61,7

Source: Bennett and Zahler (2018) based on the Department for Transport UK (2017), National Energy Commission (2017)

Table 3.15. Expenditure for the use of the vehicle per km traveled (excluding gasoline).

	Expense ($)	Expense frequency (in Km)	Average expense per km
Change of motor oil	20.000	10.000	2,0
Change of brake pads	33.000	15.000	2,2
Tire change	70.000	50.000	1,4
Other vehicle expenses	281.000	20.000	14,1
Monthly total			19,7

[119] There is no consensus regarding the capacity utilization rate of taxis and ridesourcing. In 2011 and 2013 a measurement of different modes of transport was carried out in Santiago (SECTRA, 2013), verifying that between 45% and 58% of them did not carry any passengers, yielding a real occupation rate between 0 , 6 and 0.7 per vehicle (Tirachini, 2017a), very close to that indicated by Cramer and Krueger (2016) for Boston.

[120] A study commissioned by the MTT in 2005 to formulate the taxation policy for taxis presented a 31.3% utilization rate (CIS, 2005) equivalent to saying that taxi drivers travel 2.2km without a passenger for each km driven transporting one. Given that there are no estimates for Chile or data available for the platforms, Bennett and Zahler (2018) consider Cramer and Krueger (2015) average as the baseline scenario. (The UberX utilization rate in Seattle and Los Angeles was 64.2% and 55.4%. in platforms 39,1% and 40.7% in taxis.

[121] There is no consensus regarding average speed, but the evidence is consistent with the fact that on average, taxis circulate slower than private vehicles. The scenarios correspond to speeds of 40%, 30% and 20% lower than the 30km / hr that private vehicles travel, speed which is homologated to platform drivers for the benchmark.

[122] The fuel expense is estimated based on consumed liters at the average speed for each case, and are obtained from the Department of Transport UK (2017). The price of a liter of gasoline is estimated at $ 749 and is obtained from the National Energy Commission (2017), considering 95 octane gasoline observed in the 50% of the cheapest gas stations in the Metropolitan Region.

[123] (3 / utilization rate) * is calculated ((expense per km (gasoline) | speed) +19.07) where 19,07 corresponds to the total of the average expense per kilometer.

Source: Bennett and Zahler (2018)

Table 3.16 shows the cost per vehicle used per km traveled with a passenger for a taxi in the nine selected scenarios. This includes the expense for vehicle use while traveling kms looking for the next passenger. The cost fluctuates between $ 530 and $ 1,000, with an average of $ 735. In the benchmark that considers a car on platform (30km / hr and 60% utilization rate), and the cost is $ 407.

Table 3.16. Expense per taxi vehicle-use, average trip.

	Taxis (without platforms) Utilization rate	30%	40%	50%
Average speed (Km/h)	18 km/h	$1.000	$750	$600
	21 km/h	$933	$699	$560
	24 km/h	$883	$662	$530

Source: Bennett and Zahler (2018)

The average trip considered in this analysis is three kms, which means a taxi fare of $ 2,250.[124] According to this, the highest expense for vehicle use is a percentage of the average trip fare. The difference in the average cost of the nine taxi drivers' scenarios ($ 735) with the transportation platform benchmark ($ 407) is $ 328, equivalent to 15% of the fare. That is, a traditional taxi has an 85% efficiency concerning the benchmark, and this is due to the technology factor. The greatest expense for vehicle use (cost) incurred by taxi drivers expressed as a percentage of the fare they charge (in relation to the use expense of drivers of ridesourcing platforms) fluctuates between 26% and 5% for the nine scenarios, so the relative efficiency varies between 74% and 95% (see Table 3.17).[125] That is, the higher the vehicle utilization rate and the higher the average speed (both thanks to the technology), the closer to the 100% efficiency of the benchmark considered, and therefore, taxis display lower efficiency differences regarding platform cars .

Table 3.17. Efficiency of taxi drivers relative to platform drivers with a vehicle with 60% of use and 30 km/hr of speed (for less expense in-vehicle use).

	Taxi drivers (without platforms) Utilization rate	30%	40%	50%
Average speed (Km/h)	18 km/h	74%	85%	91%
	21 km/h	77%	87%	93%
	24 km/h	79%	89%	95%

Source: Bennett and Zahler (2018)

The lower expense per use is not the only saving induced by technology, the shorter time spent to make that trip must also be considered. For this, the journey's time is calculated,[126] which varies between 15 and 33 minutes, with a benchmark of 10 minutes.[127] The percentage savings in time in each of the nine scenarios is valued monetarily[128] according to the taxi driver's opportunity cost

[124] Starting with $ 300 and $ 130 for every 200 meters traveled.
[125] These figures underestimate the cost of vehicle use - and therefore underestimate the cost savings of drivers of ridesourcing platforms, as detailed below - because that figure does not include the additional cost of the car's depreciation per km traveled that occurs independently of depreciation by the mere passage of time. There is no information regarding this parameter, and its exclusion implies a conservative calculation.
[126] In minutes and is calculated as 60x (3km / utilization rate) / speed
[127] See Annex Table A.3.14.
[128] For example (21.4 minutes - 10 minutes) / 21.4 minutes for the average scenario (of the nine scenarios).

(a reserve salary of $ 450,000[129]), multiplying the percentage savings in time (eg, 54% by 450,000) and then expressing that amount as a percentage of the taxi drivers' total fares (gross monthly income).[130] According to this, the lower expense per time varies between 12% and 25%, so the relative efficiency ranges between 75% and 88% (see Table 3.17).

Table 3.18. Taxi drivers' relative efficiency of in relation to a platform vehicle with 60% utilization and 30 km/hr speed (for less time).

	Taxi drivers (without platforms) Utilization rate	30%	40%	50%
Average speed (Km/h)	18 km/h	75%	78%	82%
	21 km/h	77%	81%	85%
	24 km/h	78%	83%	88%

Source: Bennett and Zahler (2018)

Adding the costs by technological factor (less vehicle use and less time), a platform driver traveling at 30 km / hr with a utilization rate of 60% generates a 52%saving compared to a taxi that goes at 18 km / hr and has a utilization rate of 30% (Table 3.18): Savings vary between 52% and 17%. The relative efficiency of the basic taxi is 66% on average, compared to the benchmark, varying between 48% and 83% in the 9 scenarios. A taxi that participates in a platform could increase its utilization rate to 60%, and escalate its transit speed, generating the consequent cost savings due to greater efficiency.

Table 3.19. Efficiency relative to a platform vehicle with 60% utilization and 30 km / hr speed (lower vehicle expense and time)

	Taxi drivers (without platforms) Utilization rate	30%	40%	50%
Average speed (Km/h)	18 km/h	48%	63%	73%
	21 km/h	53%	68%	78%
	24 km/h	57%	72%	83%

Source: Bennett and Zahler (2018)

Cost of Regulation

To calculate the regulation factor costs, the procedures and the costs that this imposes on taxi drivers are considered. There are three types of costs associated with regulation: general compliance costs, medallion cost, and tax payment.

The general regulatory costs include the taximeter cost, the vehicular technical revision, the professional driver's license, among others (see Table 3.19). Regarding the taxi medallion needed to operate, we can consider the price of a monthly lease to December 2017, which Bennett and

[129] This amount corresponds approximately to the net income that results from considering a gross income of $ 1,250,000 and the estimate of the taxi driver's monthly costs, including the economic cost of the vehicle's immobilized capital.

[130] A gross monthly income of $ 1,250,000 is estimated based on current rates, data on worked hours, and kilometers traveled reported in CIS (2005). Additionally, taxis that work with a platform must have the commission or fixed amount (per trip or monthly) deducted, as established by the platform. In the case of ridesourcing drivers, the commission is not deducted from the gross income, since the platform pays the driver once the commission has been withheld

Zahler (2018b) estimate at $ 115,000 per month.[131] The medallion itself had no cost for those who received it from the Government for the first time. However, costs appear when medallions are transferred. Among the taxi drivers, there are those who received the free medallion (but expect to sell it), who bought it and had already paid it, and those who bought it and are still paying the investment.

The difference between the monthly costs for the taxi driver's regulatory expenses and the digital platform driver is approximately $ 24,738, equivalent to 2% of a taxi driver's monthly income (see Tables 3.20 and 3.21).[132] If the medallion's rent is considered, the difference amounts to $ 139,738 monthly, equivalent to 11.2% of the monthly income of a taxi driver.

Table 3.20. Monthly cost comparison for regulatory expenses (excluding medallion) for taxi drivers and their equivalent for platform drivers.

Expense description	Taxis	Ridesourcing Drivers
Taximeter[133]	2.421	0
Vehicular technical revision	2.550	1.275
SOAP insurance	1.667	417
Car insurance	50.000	35.000
Certificate of the vehicle [134]	4.363	4.363
Driver's licence[135]	5.208	417
Total	66.209	41.472

Source: National Productivity Commission based on Bennett and Zahler (2018)

Table 3.21. Regulatory cost differences for taxi drivers and ridesourcing drivers.

[131]A taxi's rent in the secondary market implies the lease of both the vehicle and the medallion. Bennett and Zahler (2018b) estimate the rental price of taxis and medallion based on rent notices ($ 444,709). They then subtract the monthly cost of the vehicle (economic cost of capital, plus the cost of car use-insurance, revisions, maintenance - plus a return for the lessor, equivalent to $ 329,327). The difference between both constitutes the estimate of the price of the medallion rent ($ 115,382) and corresponds to the extra monthly profit that the medallion owners obtain thanks to it.

[132] Ratio between the differences of the monthly costs for regulatory expenses of the taxi driver with the digital platform driver, on the income of the gross monthly taxi driver of $ 1,250,000.

[133] Corresponds to the economic cost calculated as 60x (3km / rate) / speed. In the difference it would be: 181.209 - 41.472 = 139.738; then 139,737 / 1,250,000 = 11.2%. The taximeter value is equal to $ 100,000, and has a 5-year shelf-life, with a residual value of $ 0 considering a real discount rate equivalent to 17% per year.

[134]Source: IRS. Corresponds to the average circulation permit value of all 6-year-old Tiida models.

[135] Information collected at municipalities, interviews with taxi drivers and driving schools. It includes the course required for taxi drivers' license. It considers that the taxi drivers' license lasts 6 years and the platform drivers' license 4 years.

Higher cost for taxi drivers (difference between taxi driver costs and ridesourcing drivers)	66.209 - 41.472 = 24.738
Estimation of the percentage that represents regulatory cost for the appraised gross salary of a taxi driver	24.738/1.250.000 = 2%

Source: Source: National Productivity Commission based on Bennett and Zahler (2018)

Regarding tax, most taxi drivers use the presumed income system, so the taxable net income on which the first category tax is applied (25% per year 2018), corresponds to 10% of the 70% of the vehicle's current value.[136] Using a 2016 Nissan Tiida vehicle taxi as an example, with a tax assessment of $ 6,300,000, 10% of the 70% appraisal would be $ 441,000. Therefore, the first category tax would correspond to 25% of this value, which is $ 110,250 annually or $ 9.188 monthly. The first category tax constitutes a credit against the respective supplementary global tax, with the right to repayment in case such credit exceeds this tax.

A ridesourcing platform driver that issues an invoice (for example, Cabify drivers) is taxed by Global Complementary Tax, whereby he subtracts 30% of the gross income received, as a necessary expense to produce the rent and generate its tax base. A full-time driver with gross income of $ 1,250,000 per month, has a monthly taxable income of $ 875,000 ($ 10,500,000 per year), and is taxed 4% on the amount exceeding the exempt section ($ 3,018,354) for an annual tax of $ 120,734 ($ 10,061 monthly). In short, taxation represents a slightly lower cost (approximately $ 1,000) for taxi drivers than for independent workers who declare their income, compared to the same gross monthly income.

Synthesis

In summary, technology explains the price advantage that platform vehicles have over traditional taxis, and not the absence of regulation. Technology allows an average platform car to face costs a third lower than a conventional taxi (between 17% and 52%). Instead, savings of an average (non-regulated) platform car fluctuates between 2% and 11.2%.[137] That is, the low rates of platform cars are derived from a competitive advantage based on technology, and to a lesser extent due to their non-regulated nature.

***Finding 3.24*:** The competitive capacity of ridesourcing platform vehicles derives mainly from technology, not from the absence of regulation. The technology allows cost savings between 17% and 52% of a taxi driver's gross monthly income while avoiding regulatory costs saves 2%. When considering the rent of a taxi medallion, the savings are 11.2%.

3.5 Regulation of transport platforms

As with other platforms, transport platforms in general and ridesourcing in particular challenge many of the regulations that govern the industry, specifically those of the taxi market. The challenge to these norms does not diminish their appeal to consumers, who have revealed a high preference for these unregulated services, over traditional regulated ones. This preference extends beyond the cost savings for the lowest prices. It includes safety and convenience, which suggests that the platform mechanisms (for example, those for evaluating the service use or the integrated digital taximeter) are more effective than the regulations that seek to protect the consumer and correct faults that affect the transport market in the traditional world. Given that the technological evolution will mark the obsolescence of current regulations in force, due to the combination of

[136] The IRS publishes the tax assessment of light vehicles for the annual of taxa calculation.
[137] If the gross monthly income of taxi drivers is considered $ 1,000,000, then it varies from 2,5% to 13,9%.

efficiency and safeguard mechanisms for consumers,[138] doubts are raised concerning the pertinence of the sector's current provision, and regarding the appropriate policies to regulate the new industry (Shaheen et al., 2017).

In the taxi market, as in any low competition market, the entry of new and more efficient parties benefit consumers but affects the incumbents' income. The consumers' reaction has been, globally, of acceptance and massive adoption. Taxis and other transport means have responded with rejection, sometimes reaching surprising levels of violence. Governments reactions have oscillated between prohibition and permissiveness, restricting total or partial functioning, limiting modalities, segmenting schedules or sectors, or applying specific taxes.

With better services and prices, technology allows platforms to meet the needs of citizens and raise their welfare. However, the question remains whether this increase in individual well-being is at the cost of negative externalities at the social level generated by higher congestion. Any inefficient regulation will act as an entry barrier for innovation and the diffusion of new technologies, although history suggests that in the face of disruptive events it is better to deal with changes early and not create dams that momentarily contain them, but are condemned to give in into the future with more severe effects. Regulatory improvements can be implemented in the transport sector, the fundamental ones being platform regularization and technology incorporation to the traditional industry, and in the control activities. A starting point is DS212/92 and DS80/04 of the Ministry of Transport and Telecommunications that regulate public and private passenger transport services and do not contemplate the potential of current technology, limiting the use of platforms. Modifying these decrees and/or having a new law are part of the possible implementations, and a law project is already currently in discussion in Congress.

There is an excellent opportunity to take advantage of, enhance the positive effects of the platforms, and minimize the negative effects. Transport platforms have the potential to provide new services to intermodal systems in cities, complementing current transport means with flexibility and efficiency. In the process, they have the capacity to provide a large amount of information that does not exist today or the means to obtain it in an alternative way. Part of the ridesourcing platforms' success is attributable to the ability of technology to create digital mechanisms that solve part of the failures that in the past justified the taxi regulation, and that should be reviewed currently. In fact, our efficiency analysis shows that taxis travel more kilometers, move fewer passengers per trip, and therefore cause more traffic and pollution than platform vehicles.

However, there are precedents that the platforms may also be adding more vehicular traffic and pollution when replacing trips that otherwise were either induced or would have been made via public transport. Adequate regulation can level these externalities and other public policy objectives such as security.

Considering consumer welfare, there is a need to improve the traditional taxis' efficiency so that they can compete with the platforms, and not force the platforms to operate as regular taxis or prohibit them. Taxis can also be part of the mobility alternatives of a city, but their future existence depends on their adoption of technology, and the ability to compete effectively with the platforms. The first step in this direction is to provide all taxis with an interconnected taximeter (which, also, should be geo-referenced to provide information to the State), or encourage their registration to the various existing platforms, to raise their effective utilization rate. This will provide the consumer with reliable information regarding the expected price and a travel route option.

[138] The regulatory debates are accompanied by court rulings that delimit the regulatory possibilities. In December 2017, the Court of Justice of the European Union ruled that Uber is a transport service provider of s (and not an intermediary) and should be regulated by the European Union as a taxi company.

Recommendation 3.1: Enhance the use of new technologies and the platform service, legally recognizing its importance, to increase welfare, efficiency and collect data for the design of mobility policies.

Recommendation 3.2: Mandate the use of new technologies and platforms in traditional and shared taxis. For example, incorporating the use of interconnected taximeter and georeferencing devices.

3.5.1 Competition

The market access requirements for passenger transport, especially taxis, restrict competition (medallion restriction, service standardization, and rate setting). The widespread use of ridesourcing platforms breaks this balance by increasing supply and demand while introducing variety and new services. Although these platforms are today a source of competition, it is necessary to monitor their market power, both over drivers (e.g., to prevent them from offering services elsewhere), and over consumers (e.g., taking advantage of information availability on individual behavior).[139]

Basic taxis have two exclusive advantages: they can be stopped and boarded on the street, and they are entitled to use the exclusive public collective transport lanes. These characteristics distinguish them from platform vehicles, which cannot capture customers who have not booked in advance or pick up clients with whom a pre-service agreement has not been generated (such as the platform where passenger and driver information is exchanged), nor use the exclusive routes. This advantage assures the taxis higher utilization rate when traveling through the main avenues, which at the same time explains their low presence in furthermost areas of the city.

Transportation platforms increase competition, and offer new alternatives to consumers, so their operation should be allowed, including the options of sharing trips and vehicles, (transparently) adjusting the rate according to supply and demand, and allowing all payment modes.

Taxis will be able to face this competition thanks to their exclusive right to pick up passengers on the street and by way of increasing their use incorporating available technology and improving their service.

In addition to adopting the technology indicated in the previous subsection, this requires regulatory adjustments, for example, to grant taxi drivers greater price freedom. Indeed, taxi drivers who use Easy Taxi are willing to provide the Easy Economy service (available between 09:00 and 17:00 hrs and between 20:00 and 06:00 hrs) with 15% cheaper rates. The regulation could consider giving fare freedom to traditional taxis to compete via prices at times of lower demand whenever they operate within a platform.

Recommendation 3.3: Allow ridesourcing drivers (taxis or other vehicles) to operate without time restriction, without limitation in payment modes, and with free tariffs.

3.5.2 Consumer Protection and Security

As any vehicle authorized to circulate, the cars that operate on platforms have third party insurance coverage for accidents through the Compulsory Personal Accident Insurance (SOAP in

[139] For example, analyzing the possibilities of forcing a meta-platform (grouping all), tender for one or two platforms, among others.

spanish[140]). The SOAP also covers the driver and passengers if the accident involves another vehicle. Traditional taxis pay a higher cost SOAP, given their higher exposure levels. Some drivers have personal insurances that cover the car.

It is in the interest of platform users (drivers and passengers) and society as a whole to cover efficiently automobile accident risks. Platforms are encouraged to have these insurances, to avoid judicial proceedings in case of accidents, and for the users' sense of security.[141] In the US, platform vehicles' policies are mandatory and distinguish three phases with different levels of coverage: 1) the driver is connected to the platform but has not been assigned a trip, 2) the driver has an assigned trip and is directed to pick up a passenger, and 3) the driver is transporting a passenger to the destination. The last two have the most significant coverage.

As of November 2017, Uber indicates that in Chile, SURA general insurance company with civil liability coverage insures their passengers and drivers for third parties and passengers, and for personal accidents that affect the occupants including medical expenses, accidental death, and disability. This coverage begins when the driver accepts the request for a trip and ends when the last passenger gets out of the vehicle.[142] There is no information on the coverage level of this insurance. In June 2017, Cabify indicated it provides a seat insurance (insurance for passengers) for up to 900 UF for its passengers, and, drivers are charged for it annually and in a single installment.[143] On the Easy Taxi platform, taxi drivers are required to have the current insurance required by law (for example, the SOAP). For this study, the service terms and web pages of Uber and Cabify were reviewed, no complete information on the insurances mentioned above was found, which shows a lower level of transparency and clarity than necessary since the coverage, amount and details should be available by users.

As described before, the platforms' competitive advantage is given by the efficiency that the technology grants, and not by the non-compliance with the regulations of the taxi sector. Therefore, establishing minimum-security requirements for platform users will not affect the cost per trip. Even though it will undoubtedly imply an entry barrier to drivers, the safety levels desired for travelers in a service like this merits it, vouched by the international experience. At the same time, the minimum requirements between traditional taxis and platform vehicles will converge, eliminating the grievance of unfair competition.

There is a series of minimum safety elements, which include requirements for both drivers and vehicles. It is reasonable to demand requirements from platform drivers that will be carrying strangers on public roads frequently. The user experience evaluation offered by the platforms allow us to anticipate a driver's level of service (treatment and kindness) but does not provide information on their ability to respond to dangerous events or maneuvers on public roads, so user evaluation is not reliable evidence for this requirement. With this in mind, professional licenses must be required,[144] and driver's personal background check must be mandatory. Regarding vehicle requirements (e.g., number of vehicular technical revision, vehicle age, brakes, number of doors and belts), those that apply to traditional taxis should also be extended to ridesourcing

[140] For the SOAP purposes, the type and use of the insured vehicle affects the risk and scope of a possible loss, which translates into differences in the price of this insurance. However, the SOAP Law does not include classifications or differences regarding the type or use of the insured vehicle.

[141] This obligation is justified by the need to ensure coverage of possible material and personal damages that may be suffered by third parties.

[142] https://www.uber.com/es-CL/newsroom/seguros-para-todos-los-viajes-de-uber-en-chile/

[143] http://www2.latercera.com/noticia/cabify-pruebas-2017/

[144] To our best knowledge, all compared legislations require this. Additionally, in the particular case of Chile, the normal driver's license (class B) is relatively lax compared to developed countries (e.g., Canada and Australia).

vehicles, but not the cosmetic requirements or of services that homogenize the service (e.g., two-seat rows, cars with trunk, etc.).

Recommendation 3.4: Require platforms to have accident insurance that protects passengers, drivers, and third parties for their vehicles. The contracted SOAP must consider the higher risk of operating in passenger transport. Likewise, platforms must provide civil liability insurance to drivers who are involved in an accident. It is desirable that the policies distinguish according to the phase of the transportation process.

Recommendation 3.5: Require drivers and platform vehicles to comply with the same safety requirements that apply to traditional taxis, including the driver's professional license and vehicle safety requirements (seniority, vehicular technical revision, brakes, belts, etc.).)

***Recommendation 3.6*:** Except for compliance with safety standards, not to require platform vehicles cosmetic or model requirements that limit the variety.

***Recommendation 3.7*:** Platforms should ensure that drivers comply with safety standards and requirements, as well as with insurance contracts, and monitor their validity before enabling them. Breaches of this obligation should trigger fines on platforms and drivers.

3.5.3 Labor

The contractual relationship of those who offer services through the platforms and the platforms themselves, and on the dependent or independent status of workers, are part of a current global debate. A priori, in Chile, taxi drivers are self-employed workers, a category that would be extended to those of platforms, as stipulated in the adhesion contract by which drivers "hire" the software service to the platforms.

As independent workers, platform drivers organize their work schedule, generating two large groups of drivers: full-time drivers and those with part-time or of occasional participation. Among the latter, there are those who have other jobs and complement income as drivers, and others who are drivers but are also students, entrepreneurs, seasonal workers, pensioners, housewives, part-time workers, etc.

In Chile, a full-time driver can reach a gross income of around $ 1,000,000,[145] or approximately three and a half minimum wages, located in the 93rd percentile of the population's salary according to CASEN 2015.[146] However, if the driver provided the only income in a household of four people, the gross income of $ 1,000,000 is equivalent to $ 250,000 per capita, being located in the 64th percentile of household income according to CASEN 2015.[147] Given the above, in our country there is less concern regarding the precariousness of the driver´s work, rather, it seems a good income option.

3.5.4 Taxation

[145] According to Bennett and Zahler (2018), it should be achievable by working 45 hours with a utilization rate of 50% and 30 km/hr average speed of circulation.
[146] Calculated according to work income. It includes dependent and independent workers.
[147] Household income considers income from work and other incomes (e.g., capital). For this study, only the driver's income is considered within the home.

The income that comes both from platforms and the drivers that operate through them must be taxed according to the legislation. However, the platform's legal organization affects the final payment, creates differences between platforms, and drivers tend to evade paying income taxes due to opacity in the income received. Such distinctions will depend on the company constitution (in Chile or abroad) and whether it is defined as a brokerage service provider for which it charges a commercial commission (for example, Uber) or as a transport company (for example, Cabify).

The platforms that provide intermediation services and are either incorporated in Chile or develop their activity in the country through a Permanent Establishment (EP) are taxpayers of either First Category Tax (IPC) or Additional Tax as appropriate and VAT for the income obtained product of the collection of a mercantile commission.

The OECD Model of Double tax agreements (DTAs) links the EP with a physical concept, defining it as a fixed business place, including headquarters, branches, offices, factories, mines, etc. (Art. 5). Likewise, the Chilean law (article 58 N ° 1 of the Income Tax Act) does not define the EP but establishes examples of EP associated with branches, offices, agents, or representatives. These definitions have tax consequences concerning the three taxes as mentioned above, allowing companies incorporated abroad not to pay taxes in Chile, even though the activity is done in Chile. Forcing companies to register in the country with a Permanent Establishment would solve the problem.

Given its constitution, Uber does not pay taxes in Chile (legally). Uber B.V. provides intermediation services in the Netherlands where Uber B.V. receives the payments of the trips made in Chile,[148] returning a percentage to the driver and leaves the commission to itself. The subsidiary Uber Chile Spa[149] only provides logistic support and dissemination services. Uber Chile SpA does not own, operate, license, or is responsible for the application, nor does it develop passenger transport, so it could be granted that it is an EP of the parent company.[150] In summary, Uber's "travel intermediation" services in Chile are provided from abroad, without Permanent Establishment in Chile.

The above implies that the company does not pay First Category Tax in Chile (ratified by the IRS).[151] Besides, it does not pay for the Additional Tax (35%), despite being affected, since the Income Tax Act expressly waives this tax's payment when the benefit comes from a "mercantile commission."[152]

Finally, the commission received by Uber B.V. is deemed commercial, since it derives from a brokerage service (intermediation), and therefore it would affect the VAT payment in Chile.

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[148] In the case of cash payment, drivers owe the platform (if they only make cash trips) and must pay this commission through another channel.

[149] The social objective is: "*The provision and support to related companies in the provision of transport services through mobile devices and the internet; the provision of administrative, technical, financial, economic and management services to other individuals or companies; and the acquisition, alienation, administration, investment and exploitation of movable and immovable property, including patents, trademarks, licenses, permits and any other industrial property right.* " Source: Registered in pages 20,550 number 13,531 in the Santiago Real Estate and Commercial Registry, 2013.

[150] The foregoing does not prevent the state from taxing Uber Chile SpA regarding the different services it provides in the country (other than the platform).

[151] Meanwhile, Uber Chile SpA does not own, operate, license, or is responsible for the platform, nor does it develop passenger transport, and only provides the platform logistical support and diffusion services, and pays its taxes for this support operation.

[152] Art. 59, paragraph 4 of the Law on Income Tax states that "remuneration for services rendered abroad is affected by an Additional Tax. However, they will be exempt from this tax's commissions, "The respective operations and their characteristics must be reported to the Internal Revenue Service in the manner and terms determined by resolution."

However, Art 12 No. 7 of the Income Tax Act exempts those services subject to the Additional Tax from VAT payment.

Unlike Uber, Cabify is defined as a transport company and is incorporated in Chile through Maxi Mobility Chile II SpA, a legal person from the collection and transport business.[153] Its corporate purpose defines it as a transport company; however, it does not possess vehicles and enters into contracts for the provision of services with its drivers, who issue VAT-exempt tickets as independent workers.

According to Cabify's terms of reference, the company also charges the driver a commission[154] for its intermediation[155] that fluctuates between 23% and 25% of the charged fee. Thus, Cabify's tax regarding the commission is:

a) Income Tax. As the company is incorporated in Chile, it is subject to the general taxation regime, that is, with First Category and Global Complementary Tax, for the income obtained from the transportation service it provides. Due to the volume of its operation, it does not fall under the presumed income regime.

b) VAT. Cabify would be a VAT taxpayer if the service provided were intermediation for which it receives a commission, according to article 20 No. 3 (trade income in particular brokerage). However, if the company generates income as a "passenger transport company" (final paragraph of Article 166 of the Commercial Code) and not as an intermediary, these revenues are exempt from VAT as established in Article 13 No. 3 of the D.L. No. 825.

Recommendation 3.8: Apply the principle of "benefit transfer " so that transport platforms pay tax in Chile (as First Category and VAT for brokerage) through a Permanent Establishment due to economic presence.

Depending on the definition of the company's business, platform drivers must pay taxes for the income received. Drivers who own their vehicles and who personally use them for the transport of passengers are First Category taxpayers (by default, when there is no express regime defined, as in this case).[156] Alternatively, this activity can benefit from a special tax regime of "Presumed

[153] The terms and conditions of the company establish the following: "These General Conditions of Use regulate the use of the CABIFY computer platform (hereinafter, the "Platform") and the website www.cabify.cl (hereinafter, the" Web Site "), either with its current name or with any other name that may appear in the future, both the application and the website mentioned above are the property of Maxi Mobility Chile II SpA, legal person of the collection and transport persona del giro de recaudación y transportes "

[154] On its website, its collection is referred to as that of a commission, but it is not clear. https://cabifypartners.zendesk.com/hc/es/articles/213107489-Preguntas-m%C3%A1s-frecuentes-Santiago-de-Chile#q5 Retrieved on 09/07/2017.

[155] The terms and conditions of the company state, "Maxi Mobility acts as an intermediary in its name in the provision of transport services to the User. The provision of transport services that are contracted through the Platform and the Service developed by Maxi Mobility will be the exclusive responsibility of the drivers. " This conflicts with the current form of taxation as a "transport company." https://cabify.com/chile/terms Retrieved on 09/07/2017.

[156] The passenger transport business' tax obligations, regarding these taxpayers, are the following: 1) declare First Category Tax on Income Form 22, 2) Make Provisional Monthly Payments (PPM), equivalent to 0.3 % on the current market value of the vehicles, through the Form 29 of Monthly Declaration and Simultaneous Payment, and 3) Issue invoices or VAT-exempt tickets, when applicable, by registering them in the Auxiliary Book of Purchases and Sales.

income of Transports,"[157] and in such case, it is not compelled to keep a complete accounting.[158] However, most ridesourcing platforms drivers are not entitled to this type of regime, for they are natural persons, not organized in the manner required by law, and must, therefore, pay taxes under the general scheme. Finally, the driver can be a contributor of the Complementary Global Tax, in case he issues invoices as an independent worker, as in the case of Cabify. Technology allows knowing with certainty the drivers' income level, although as shown in section 3.4.4 the difference in taxation between taxis (presumed) and ridesourcing drivers (fees) is marginal.

The passenger transport service is not subject to VAT, and as such this tax should not affect the charge for transport services provided within the platforms.

Recommendation 3.9: Drivers should be taxed for the income received through one of the alternatives in force as the case may be: as a first category taxpayer (alternatively presumed income) or complementary global (invoice of independent worker) contribution.

3.5.5 Congestion

Congestion, related to the use of low-occupancy motorized vehicles is a problem that affects everyone. Ideally, it should be regulated as an urban mobility problem, and not according to each type of mobilization. There are three main ways to deal with congestion: capacity (increasing infrastructure), quantity (permits and / or vehicle restrictions) and pricing. Generally, encouraging the use of more efficient mobility systems and space use (metro, buses, bicycle, and walking) accompany these measures.

Increases in road capacity are usually short-term solutions because they do not discourage vehicle use; in fact, they may even induce greater space demand.[159] On the other hand, quantity regulations mainly consist in the imposition of permits (for vehicle ownership), which have an expiry date. Price regulation consists of charging users a fee, so that they may internalize congestion's social costs. The most common manner is through road pricing, with an established restriction zone, whereby a toll is charged for entering and leaving (example: London and Stockholm). In the light of new technologies such as GNSS (Global Navigation Satellite System), it is possible to charge according to traveled distance, time, location and vehicle type, as planned by Singapore for 2020. This mechanism would allow internalizing the congestion cost and vehicle use in a personalized fashion, charging the exact cost of congestion.

This dynamic pricing is the best choice, which identifies the impact of each trip, taking advantage of the fact that the technology allows the verification of the exact time and distance traveled per trip, including the start and end zone, route, and service time. The rate can be adapted according to the congestion level, differentiating spatially, temporally, defining the most expensive trips

[157] The total sales or annual net income of the first category cannot exceed 5,000 UF. Taxpayers who initiate activities in the land transport activity of third-party cargo or passengers may join the presumed income regime within the term of Article 68 of the Tax Code at the beginning of their activities, provided that their actual capital does not exceed 10,000 UF.

[158] These taxpayers may also choose to take advantage of the taxation regime contemplated in letter A) of article 14 ter of the Income Tax Act, as long as they comply with the conditions that such norm regulates. Such is the case of 1) Natural Persons acting as Individual Entrepreneurs; 2) Individual Limited Liability Companies; and c) The Communities, Cooperatives, Companies of Persons and Corporations by Shares, conformed only by natural persons.

[159] It can be argued that it temporarily postpones it, since improving the roads could increase the demand for the use of private cars due to shorter travel times. On the other hand, parking can be reduced, giving space to exclusive bus routes, bike lanes, or enlarging sidewalks, especially in areas of high congestion.

according to schedules, and congested areas (Tirachini & Gómez-Lobo, 2017).[160] It could also distinguish between a car individually used and a shared trip (shared ridesourcing), charging lower rates for shared trips. This model´s challenge lies in the tax authority's control mechanisms, which would not be feasible without the active platforms' support or an integrated system ("metaplataform").

Platform travel pricing is already in use at places such as Mexico City,[161] Chicago, Sao Paulo, Toronto and other cities, where ridesourcing platforms pay a per-trip fee. Transport platforms In Sao Paulo[162] must pay for street use through a minimum tariff equivalent to CLP $ 20 per kilometer traveled (Flint, 2017).[163] The fee can be modified (prices have been adjusted once since its creation) considering factors such as environmental impact, traffic congestion, and infrastructure maintenance spending, among others. Almost a year after the policy was established, estimates indicate that an annual collection of around US $ 15 million is possible (Flint, 2017).

As a second best, it is possible to restrict the circulation only to ridesourcing platform vehicles. But given an eventual compliance with other standards and regulations, there would be no reason to limit the quotas of vehicles on the platforms if congestion and pollution is internalized by passengers and drivers, for example by means of a dynamic rate. Instead, the quantitative limitation of the offer will bring a new quasi-monopolistic figure similar to that of traditional taxis.

Recommendation 3.10*:* Internalize congestion effects through charging the platform vehicles a variable rate applied according to the hours and areas effectively congested (e.g., the fee would be zero at night times and in specific areas).

Shared trips on Ridesourcing platforms

The higher the utilization and occupancy rate, the higher the probability that traffic and congestion decrease. Shared ridesourcing (UberPool) operate as a dynamic collective, grouping passengers who are headed in the same direction and charging a lower rate than if the trip were made in non-shared vehicles. These ridesourcing platforms can potentially increase the utilization rate (time with at least one passenger in the car) but also the occupation rate (number of passengers) relative to a standard ridesourcing vehicle. Since the system is used in a limited number of cities and no independent analysis of its impact has been done, little is known. It can help reduce the effects on VKT of platform vehicles, but like all private transport vehicles, it is still less efficient than bus or metro.

The shared system´s success lies in the network effects since a significant density of users is required for the algorithm to optimize the route with more than one passenger. In fact, shared ridesourcing has proven to be a service of low adoption, and relatively scarce, in proportion, wherever it has been implemented. For example, in New York, 20% of trips are shared, and this

[160] If the rates were significantly higher for people who want to travel through a congested area and lower for everyone else, then two things would happen. First, the demand for automobiles would naturally change in the desired direction. Inevitably, the supply would also: drivers without passengers would move away from the congested nucleus, towards areas of low congestion that offer a greater probability of collecting a passenger. Source: Salmon (2018).

[161] 1.5% per trip made. Uber reported that it had contributed US $ 10 million in two and a half years.

[162] See Decree No. 56.981 (2016) of the São Paulo Prefeitura. This city has serious congestion problems, located the seventh place in the region, according to the TomTom Traffic index (2017).

[163] Equivalent to R $ 0.10 per km traveled. There is a standing committee that meets regularly to determine if the congestion charge should be modified (Flint, 2017). Moreover, in the process, the city also obtains some unprocessed data that can help with the mobility policy (Flint, 2017).

proportion decreases to less than 10% in the hours of greatest congestion (Schaller Consulting, 2018).

CNP and Fundación Chile (2018) estimated in 1.9 the occupation rate of ridesourcing platforms for Santiago, higher than the rate of private cars (1.3 to 1.4) and of taxis (1.4 to 1, 5), but less than that of shared taxis (2.2 to 3.5) (Tirachini, 2017, SECTRA, 2013). Moreover, Gómez-Lobo and Tirachini (2017) estimate that an occupancy rate of 3.5 gives an 85% probability of reducing the VKT in Santiago while 1.9 has a 0% probability of having the same effect. The above, suggests authorizing and facilitating platform shared trips, by, for example, applying lower dynamic tax rates.

Recommendation 3.11: Promote shared trips on transport platforms, including those of ridesourcing.

3.5.6 Data

One of the platforms' primary assets is the information generated from the trips (requested, canceled and made). These allow optimizing the algorithms and making the service more efficient, and helps segment users and predict behaviors. Two areas of interest for public policy arise: privacy rights and personal data protection, and data delivery to the regulator for planning purposes (public policies design) and monitoring compliance with regulations.

The current legislation defines norms for personal data storage, use, and transmission. The responsible authorities must ensure that the platforms act in accordance to the law. Without prejudice, the platforms must provide nominated data if a judge determines it in the context of a process due to some criminal or other cause, safeguarding people's legal guarantees.

A topic of growing debate is the possibility that platforms share information with regulators, and those responsible for public policies (for example, housing, transport, etc.). Undoubtedly, this could help in the design and planning of the cities, improve the urban mobility system operation,[164] and develop new services.[165] For example, based on trajectory patterns, schedules, trip origins, and destinations, along with transfer speed, measures could be taken to design bicycle lanes, public transport corridors, or modifying road directions. In urban terms, more information allows better planning, expediting investments, real estate development, internet of things facilities, forecasting and monitoring of pollution, among others.

In the past, public agencies carried out transport studies, costly data collections and modeling exercises for these purposes. Data complementarity between companies and regulators is essential: transport platforms and their data could be an excellent contribution to the development of cities in the future implying savings in surveys and monitoring.[166] Sectors such as mining or finances normally provide information (anonymous and aggregated) to the authorities, appreciative that their use benefits the whole of society and the platforms themselves.[167]

The minimum suggested (unnamed) data the authority should be entitled to request, include:

[164] For example, optimizing public transport routes.
[165] For example, efficiently integrating ridesourcing to public transport.
[166] This value may vary according to the size of the city, its capacity to consider and develop alternative data sources, as well as the need for public interventions to manage an efficient transport network.
[167] In New York, both taxis and Uber made travel information in selected months of 2014 and 2015 public, through the Taxi and Limousine Commission (TLC). The data includes origin, destination, duration and distance of each trip (Schaller Consulting, 2017).

1. The number of active vehicles per platform, the kilometers traveled with and without passengers and the average traveling times during peak and off-peak hours, etc.

2. Car antiquity, fuel type and engine size, to estimate the impact on pollution.

3. Unnamed travel information, including fare charged, duration, origin, destination, route, and schedule (without providing user personal information).

It is impossible to make objective impact measurements for the transport system without data. Although ridesourcing is increasingly a part of the mobility system of Santiago and other cities, and its interaction with the rest of the system is essential to manage the transport assets of the city, the authority can start by obtaining data from governmentally authorized (public transport) vehicles, such as buses, and traditional and shared taxis. The role of the transport authority is to understand the mobility services offered and those required, and today, technological advances grant a unique opportunity for it and should be compulsory to the drivers of these services. Thus, the information generated will help the authority in its management, and making them available, (Open Data), will allow new ventures and innovations to emerge, both in services and platforms. For example, in Finland, the new proposed regulations force data publication[168] as a minimum requirement for new mobility services.

Recommendation 3.12: Require public transport (taxis, buses, and buses) to implement georeferencing devices that allow data collection of kilometers traveled, routes, duration of trips, etc.

Recommendation 3.13: Require transport platforms the delivery of unnamed information of kilometers traveled, routes, schedules, duration, and others that the authority deems necessary for the design of public policies, or for the control of the platforms.

Recommendation 3.14*:* Consolidate information collected from public transport, private transport platforms and other mobility options in an open information platform.

3.5.7 Intermodality

The growing use of ridesourcing platforms generates the need to review their complementarity with other urban mobility options. A transport system with increasing degrees of interconnectivity and intermodality allows better use of public roads and improves the system efficiency as a whole through better planning and information. For example, collective public transport (buses and metro) is efficient in mobilizing more passengers by reducing space, but this efficiency is not accessible in peripheral areas of lower population density or at night. Platforms can complement in these areas.

The way to promote the implementation of intermodality exceeds the scope of this study, but it is clear that the different platforms play a role as an alternative to mobility, and that its connection with other options will help take advantage of its positive effects and mitigate the negative ones.

[168] Application programming interface (API in English) that seeks to facilitate the interaction between applications through codes and specifications. For example, when accessing airline information from an online travel agency, the web page serves the request through a connection with the airline that contains the flight data.

Recommendation 3.15: Integrate transport platforms (ridesourcing, shared cars, shared trips, etc.) into the city's transport system, facilitating its use and promoting intermodality (combination of transport options).

3.6 Conclusions

The transport industry has been shaken by platforms that offer more efficient, safe, varied and inexpensive mobility services. For the most part, users have shown a preference for these services over traditional ones, demonstrating that the regulated sector does not necessarily provide greater security and confidence to citizens. This preference is explained by a set of factors, and not only by lower prices. Aspects related to taxation and labor relations, exacerbated by the rapid escalation and the substantial disruption of established markets, have forced industry and regulators to react. However, the platforms' impact is little understood due to their novelty, and the little information available.

This chapter sheds light on the known and expected effects of the platforms, using the available bibliography and primary information obtained for the study. Our main conclusion is that the cost advantage of platform cars is not due to their non-regulated nature, but rather to the efficiency of the fleet management process that technology provides. Indeed, the application of technology and innovation in the sector allows a significant gain in efficiency, thanks to the better allocation of drivers and passengers, which raises the capacity utilization rate of vehicles, reduces the cost for the passenger, and reduces congestion compared to the same number of trips made in traditional taxis. Mechanisms such as interconnected taximeter and online assessments reduce market failures related to incomplete information and increase demand and wellbeing. On the other hand, the calendar flexibility, and relatively high incomes make this an attractive alternative for drivers, which include full-time workers and part-time workers, who complement their parallel activities, studies or free time.

The emergence of these services has encouraged greater competition and variety of services and vehicles, which effectively increase consumer welfare, and raise the mobility in the city, including areas with less traditional transportation services. At the same time, platforms have the potential to generate negative externalities, the main ones being congestion and pollution. The challenge of public policy is to promote positive aspects and reduce negative ones.

The augmented efficiency granted by technology must be exploited, as should the opportunity to correct negative externalities with the minimum cost for the regulator, the regulated and society. Technologies must be promoted throughout the transport industry, including traditional ones, and the use of new platforms authorized, creating a specific regulation for them.

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3.8 Annexes

Table A.3.1. Main regulations related to paid transport services in Chile. Source: National Productivity Commission.

Law or Decree	Description
Law 20.378	Creates a national subsidy for the public transport of passengers.
Law 20.474	Extends the suspension of registration of new vehicles in the taxi service.
Ley 18.696	Establishes rules on passenger transport.
Law 18.490	Establishes the compulsory insurance for personal accidents caused by motorized vehicle circulation.
Supreme Decree 80	Regulates paid private passenger transport. Ministry of Transport and Telecommunications.
Supreme Decree 251	Establishes norms for schools of professional drivers or class A. Ministry of Transport and Telecommunications.
Supreme Decree 212	Regulation of national public passenger transport services. Ministry of Transport and Telecommunications
Supreme Decree 122	Establishing Dimensional and Functional. Requirements for Vehicles that provide Urban Collective Transport Services Ministry of Transport and Telecommunications.
Decree Law No. 1	Traffic Law

Source: National Productivity Commission.

Anexo A.3.2 - Registrations delivered by taxi competitions from 2010 to September 2018.

Region	Basic taxis	Executive taxis	Tourism taxis	Shared taxis	Total
Arica y Parinacota					
Tarapacá	25			125	150
Antofagasta		318	148		466
Atacama	48		39		87
Coquimbo - Serena	39	54			93
Valparaíso		408			408
Rancagua		59			59
Maule	111	73	2	15	201
Bío Bío	14		6	76	96
La Araucanía				18	18
Los Ríos	6				6
Los Lagos	23	482		9	514
Aysén	50			17	67
Magallanes	34		5		39
RM	489	684			1.173
TOTAL	839	2.078	200	260	3.377

Source: Ministry of Transport and telecommunications (2018)

Annex A.3.3. Requirements for taxi (DS212 / Transport).

a) When requesting the incorporation to the National Registry for the first time, vehicles must be under one year old. Age shall be calculated as the difference between the year in which the registration is requested and the year of manufacture (according to the Motor Vehicles Register).

b) It must have a 1.5-liter engine or higher, or have an electric motor (driven exclusively by electric power). It can also be a hybrid vehicle (driven by a hybrid drive chain with at least two different energy converters and two different energy storage systems, for taxis in any of its forms.

It must have a 1.4-liter displacement engine and qualify as a sedan. For vehicles incorporated according to the provisions of Law 20,474, the age requirement indicated in letter a) of the preceding paragraph shall be five years, maximum.

For the purposes of this decree, the engine category of 1.5 liters will include those whose displacement exceeds 1,450 cc. and is less than 1551 cc. In the engine category of 1.4 liters, they will include those whose displacement is between 1,350 cc. and 1,451 cc.

In the case of pure or hybrid electric vehicles, the power for propulsion must be equal to or greater than 70 kw.

c) They must be painted according to this regulation's rules.

d) They must be standard manufacturing models, without adaptations or modifications in their structure. The steering wheel should be located on the vehicle's left side. The substitution of the vehicle's original factory engine for any other not identical to the model and type of the original will lose its character as a standard manufacturing model. Notwithstanding the foregoing, the Ministry of Transportation and Telecommunications may accept that original factory motors be adapted so that they can use Natural Gas or Liquefied Petroleum Gas, if the provisions of supreme decree of the Ministry of Transport and Telecommunications No. 55 of 1998 are complied with.

e) It must have four doors, being "door" only those that allow natural access of people to the vehicle.

f) It must have only two transversal rows of seats.

g) Basic taxis must be equipped with a taximeter wherever its use is compulsory. Tourism and shared taxis will not use a meter. Notwithstanding the foregoing, in the case of tourism taxis, the Ministerial Regional Secretary may authorize the installation of taximeters as a collection mechanism, in which case their use will be optional.

h) It must have a manufacturing or model age that does not exceed 12 years. The manufacturing age is the annotation year in the Registry of Motor Vehicles. This requirement shall not apply to vehicles registered in any Regional Registry other than that of the Metropolitan Region, which

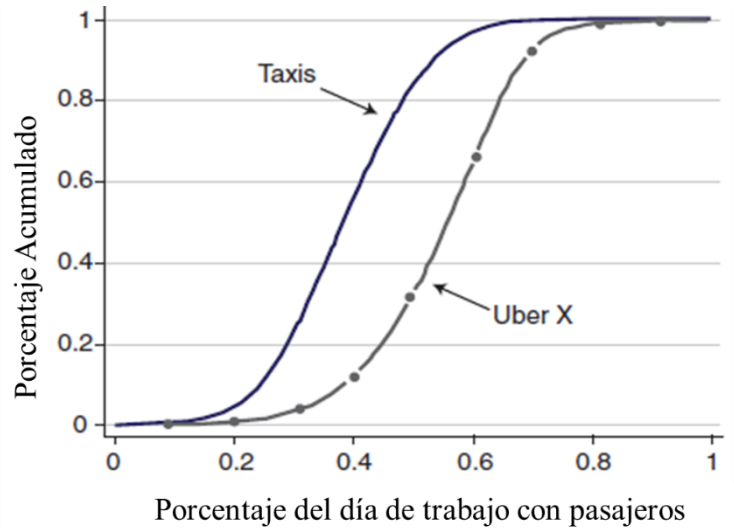
may extend their age up to 15 years, if from the thirteenth year they conduct and approve technical reviews every four months. (DS 212)

Annex A.3.4. Control ability of the Seremitt.

Región	Personal en Terreno
Arica y Parinacota	7
Tarapacá	8
Antofagasta	12
Atacama	7
Coquimbo	11
Valparaíso	23
O'Higgins	11
Maule	14
Bío Bío	23
Araucanía	13
Los Ríos	9
Los Lagos	11
Aysén	5
Magallanes	6
RM	263
Total	**423**

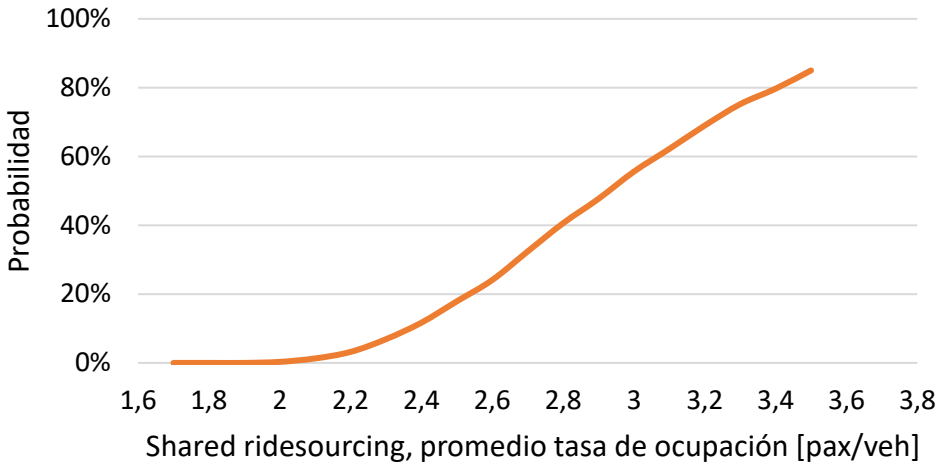
Source: Ministry of Transport and Telecommunications (2018).

Figure A.3.5. Accumulated distribution of the hour worked with a passenger by a Taxi and UberX driver in San Francisco.



Note: Taxi data are from July to October 2013 and Uber data from July to October 2015. Source: Data provided by Uber Techonologies, Inc. and Leah-Martin (2015). Retrieved from Cramer & Krueger

Annex A.3.6. Cumulative probability of reducing the number of kilometers traveled vehicles (VKT) in Santiago due to ridesourcing with shared trips, for different levels of the average vehicle occupancy rate.



Source: Tirachini and Gómez-Lobo (2017)

Annex A.3.7. Description of some Uber in the World and in Chile modalities as of November 2017.

Name	Description	At least one city in Chile
UberBLACK	Executive Service that allows users to request sedan type vehicles at cheaper prices than UberLUX or executive Taxi services.	Yes
UberX	Private transport service that allows users to request vehicles with simpler models than the previous one and with availability up to four passengers.	Yes
UberPOOL	It is the cheapest service in Uber, where the transport service is shared with other passengers that go the same destination (shared ridesharing, car pool service). The system is responsible for finding users that go in the same direction. The rates are divided and the cost is around 50% than an UberX.	No
UberTAXI o UberT	Traditional Taxis Request.	No
UberXL	Private transport service that allows users to request vehicles with availability up to six passengers, and costs more than the UberX.	Yes
UberBICI	Vehicle equipped to carry up to 3 bicycles.	Yes
UberACCESS	***UberASSIST:*** It has UberX driver partners specially trained to meet the	Yes

	needs of users who are elderly or have a disability and / or reduced mobility ***UberWAV:*** *Wheelchair Accessible Vehicles* has cars with access for non-folding wheelchairs, equipped with ramps to transport them.	
UberKIDS	Cars equipped with child seats (one for each car) and trained drivers for installation and assistance. In Chile, it responds to the law requiring mandatory child seats: children must go in an appropriate child restraint system according to their age, size and weight, up to 9 years (or height of 135 centimeters and 33 kilograms of weight).[169]	Yes

Source: National Productivity Commission**.**

Annex A.3.8. Description of some Cabify modalities in the World and in Chile as of November 2017. Source: National Productivity Commission.

Name	Description	At least one city in Chile
LITE	Medium-range vehicles, with semi-formal drivers.	Yes
BABY	Vehicles with a child seat.	Yes
CITY	Cheaper option than the Lite service.	Yes
EXECUTIVE O PLUS	High-end vehicles and formal driver. For 4 passengers.	Yes
GROUP, VAN O SUV	Medium or high-end vehicles with room for 6 passengers.	Yes
PET	Vehicle and driver that allow the transfer of pets with their owner. If the animal is aggressive, it must be muzzled. The user will be responsible if the pet causes any type of damage to the vehicle	No
CAB O TAXI	Request for traditional Taxis.	No
ACCESS	Professional drivers with special training in FAMMA (Federation of Associations of People with Physical and Organic Disability of Madrid) to	No

[169] https://www.conaset.cl/sillas-infantiles/

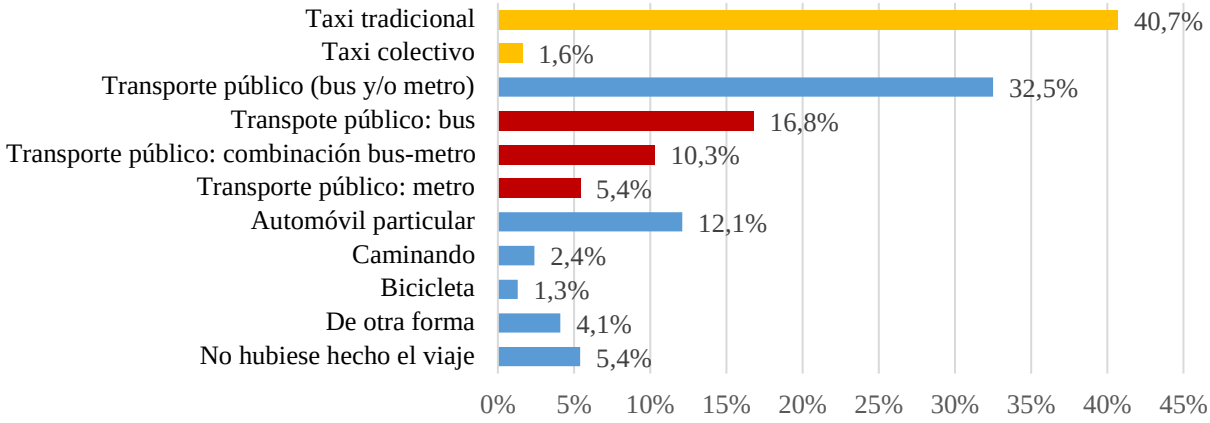
	ensure a comfortable and pleasant journey. Adapted vehicles with up to max. of 4 seats (+ chair) or max.6 seats (without chair). The rates are the same as the Lite category.	
ELECTRIC	Electric vehicle with room for two suitcases and three passengers.	No
ECOTAXI	Hybrid, electric taxis that comply with the euro 6 low standard emissions.	No
CASH	Vehicle that allows payment in cash.	No

Source: National Productivity Commission.

Annex A.3.9. Days in which frequent users use more ridesourcing platforms, distributed by age segments and day grouping from Monday to Thursday and Friday to Sunday. Source: National Productivity Commission. Percentages by mentions.

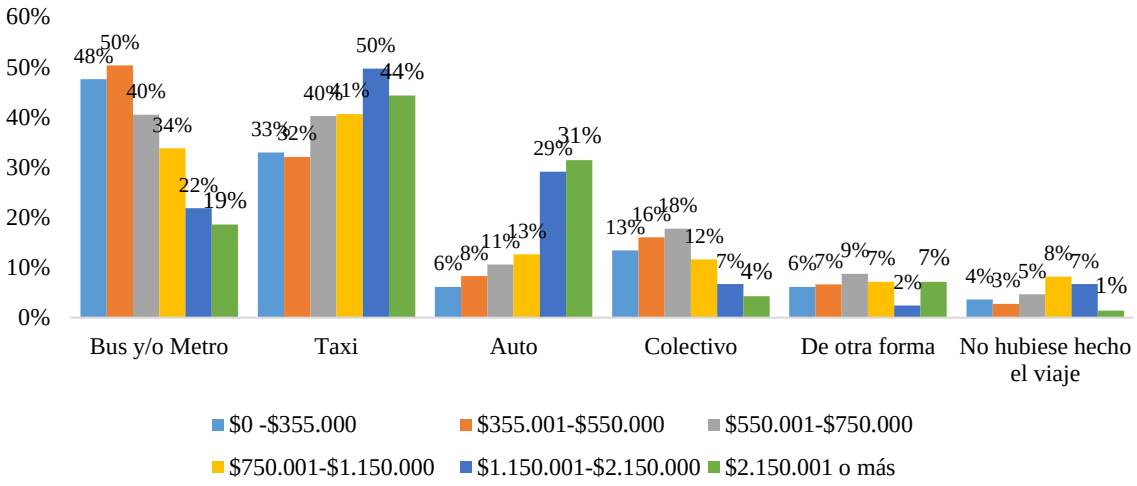
	Monday to Thursday	Friday to Sunday
18-29 years	18,8%	81,2%
30-39 years	23,3%	76,7%
40-49 years	28,8%	71,2%
50-59 years	28,7%	71,3%
+60 years	36,5%	63,5%

Annex A.3.10. How would the trip have been made if the Uber platform were not available?



Source: Tirachini (2017b)

Annex A.3.11. How would frequent users done the trips in the absence of transport platforms by levels of household income.



Source: National Productivity Commission**.**

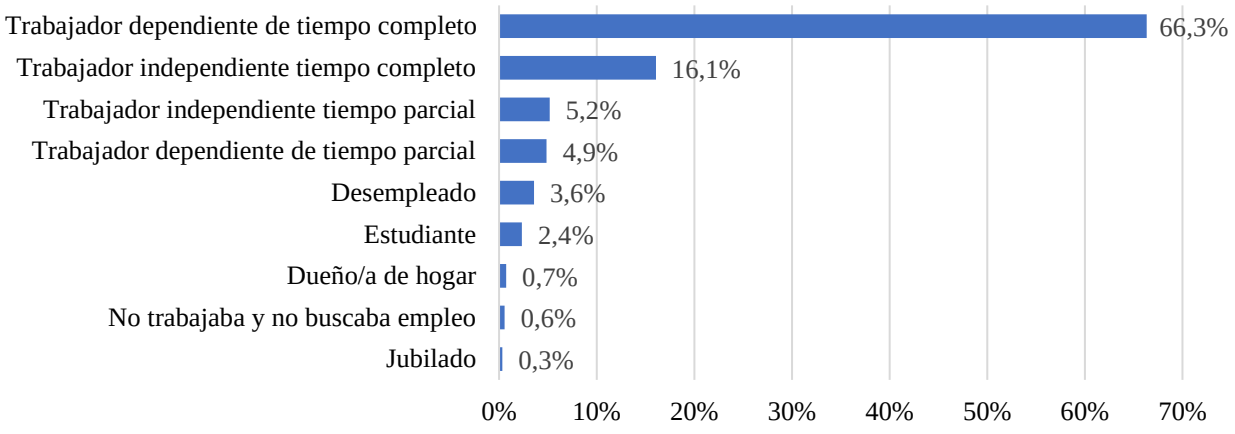
Annex A.3.12. Easy Taxi and Uber drivers' sociodemographic characteristics.

	Easy Taxi (2017)	**Uber (2017)**	**Beat (2018)**
Gender			
Male	98%	91%	92%
Female	2%	9%	8%
Nationality			
Chilean	97%	96%	92%
Foreigner	3%	4%	8%
Is currently studying	6%	12%	10%
Highest educational level			
Middle school or less	1%	1%	1%
Incomplete High school	10%	6%	5%
Complete High School	43%	28%	33%
Professional Institute	16%	20%	20%
Technical Formation Center	18%	18%	14%

University	12%	27%	27%
Economically depends on parents or relative	19%	21%	24%
Has children or elderly people who dependo n them	88%	81%	82%
Belongs to a native or indigenous ethnic group	9%	-	-

Source: National Productivity Commission

Annex A.3.13. Easy Taxi and Uber drivers' sociodemographic characteristics.



Source: National Productivity Commission.

Annex A.3.14. Total minutes required to travel the kilometers needed to complete an average trip (3km).

	Taxis (without platform) Utilization rate	**30%**	**40%**	**50%**
Average speed (Km/h)	18 km/h	33,3 min	25 min	20 min
	21 km/h	28,6 min	21,4 min	17,1 min
	24 km/h	25 min	18,8 min	15 min

Source: Bennett and Zahler (2018) Notes: Included are the minutes driven without a passenger and searching for the next one. The benchmark 30km / hr and 60% utilization rate would take 10 minutes.