



The New Reality of Mobility in Brazil

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The New Reality of Mobility in Brazil

Masao Ukon, Regis Nieto, Eduardo Canabarro

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SUMMARY

THE 21ST CENTURY BROUGHT changes to the automotive and mobility industries, where major players are century-old companies that have preserved their dominance for decades. In 2010, Tesla went public on NASDAQ - the first IPO of a US automaker since Ford Motor Company in 1956 - with the goal of making electric cars a reality. In 2013, Avis - one of the largest car rental groups in the world - bought ZipCar, an American hourly car rental company, for over \$ 500 million. In 2019, Uber - a transportation platform that does not manufacture a single vehicle, but enables the transportation of millions of passengers around the world - went public in the United States, and today rivals the centenary automotive companies in market capitalization.

It is undeniable that a transformation is underway in the mobility industry. Technological advances and the rapid expansion of connectivity have drastically changed the transportation context in many countries. These advances have also been one of the driving factors to accelerate changes in consumer behavior.

Given this scenario, BCG sought to investigate how Brazil fits into this context of rapid change. To that end, we designed and conducted a survey of 1,501 people to understand their attitudes and preferences regarding mobility options. We will discuss the results of this survey in the following pages, along with potential implications for different players in the mobility industry.

RIDE HAILING IN BRAZIL

RIDE HAILING (I.E., URBAN car sharing) is definitely one of the most relevant phenomena in the mobility industry in this century. Between gaining ground since Uber's founding (March 2009 in the United States) and being enabled by the massification of smartphones and increased connectivity, ride sharing has expanded rapidly and is now a reality in almost every single country across the globe. Even with global coverage, this movement is still incipient: in 2017, only 3% of all miles traveled in urban locations were attributed to ride hailing, according to the Center for Mobility Innovation – BCG's group dedicated to studying the transformation of the transportation and mobility industry. This percentage is expected to increase quite rapidly, reaching about 18% by 2035 - i.e., for every 5 kilometers traveled in urban locations, ride sharing should account for approximately 1 kilometer. In cities with high population density - a relevant requirement for the adoption of shared mobility - this percentage may be even higher, potentially surpassing 30%.

We follow the same trend in Brazil. Our country is a very important market for the world's leading ride hailing platforms. According to Uber's IPO prospectus, we are one of the largest markets for the company, second only to the United States. As a country, Brazil has at least 6 characteristics that are highly conducive to increased ride hailing penetration:

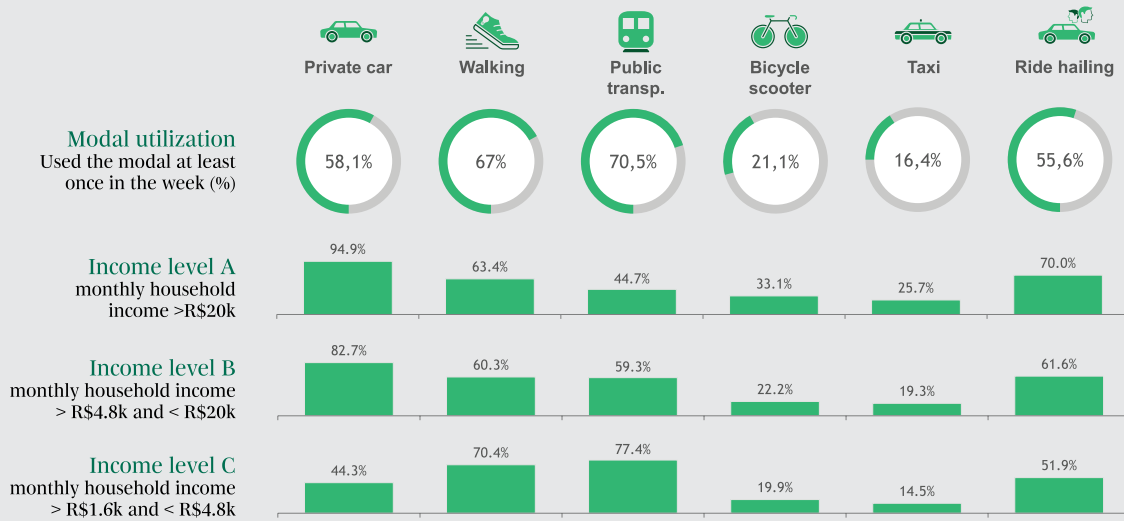
1. Population highly concentrated in few urban regions – Brazil has 5,570 municipalities, out of which only 324 (5.8% of them) have more than 100,000 inhabitants. Despite representing a small absolute number, they concentrate almost 60% of the Brazilian population. This is relevant because high population density tends to decrease the idle time of shared resources, which is critical for shared mobility solutions to expand and make sense from an economic standpoint.

2. Low quality public transportation systems, with limited capillarity – In many Brazilian urban areas, public transportation systems do not adequately meet the population’s needs, either in terms of capillarity (e.g., non-existent or intermittent coverage of peripheral regions) or quality (e.g., overcrowding, poor conservation, frequent delays). Thus, the relative perception of value for ride hailing services increases substantially.
3. Security problems in major cities – Lack of security has a negative effect on the major transportation options that exist today. From the perception of insecurity and risk of theft when using public transportation - whether inside the vehicle, waiting at stations or stops - to the increased fear of driving and / or parking in large Brazilian cities, security issues in Brazil contribute to the growing popularity of ride hailing platforms.
4. High level of online mobile activity of the population – Brazil is one of the countries where the population most intensely uses social networks, mainly through mobile devices. Our age pyramid - with a higher percentage of young people than in developed countries and, consequently, higher incidence of digital habits and willingness to embrace new technologies - is a relevant factor behind the accelerated adoption of shared mobility.
5. High vehicle cost – The high initial cost associated with acquiring a vehicle encourages maximizing asset utilization to dilute the acquisition cost over the car’s lifetime.
6. High level of unemployment and informal employment – The ride hailing “value proposition” is very attractive for drivers in Brazil, a country with significant informality in the labor market and where unemployment has peaked in recent years. The idea of buying or renting a car and providing in-app transportation services works as a way of finding relief during periods of unemployment and even securing extra income for people with informal jobs.

It is worth mentioning that these are not the only conditions conducive to the acceleration of ride hailing adoption. If they were, we would probably not see the high rate of adoption of these options in developed countries, such as the United States. In Europe, for example, limiting the use of private vehicles in central regions is also an incentive to increase the adoption of shared mobility - as is the limited, and sometimes rather expensive, offer of housing options (e.g., apartments, studios) with parking areas.

Our research reveals a very high level of penetration of ride hailing platforms in Brazil. Figure 1 shows the results of our research conducted in late 2018, with respondents from classes A, B and C.

FIGURE 1 | SHARED MOBILITY PENETRATION IS CLOSE TO THAT OF TRADITIONAL MODALS, FOR ALL INCOME LEVELS



Source: Survey data, BCG analysis

The sample sought to properly mirror the Brazilian population (e.g., minimal representativeness of different age groups, states, gender, etc.). Among our survey respondents, 55.6% of people use shared mobility options at least once a week, which is almost as high as their use of private cars (58.1%). This percentage gets higher as citizens' purchasing power increases, starting at 51.9% in class C and reaching 70% in class A - where shared mobility is already the second most relevant transportation option, just behind private cars.

These numbers are relevant, but not very surprising - especially given the reasons we listed earlier that justify the rapid adoption of this mobility option in Brazil. Interesting, however, is to delve into these numbers to better understand what drives the choices of these users.

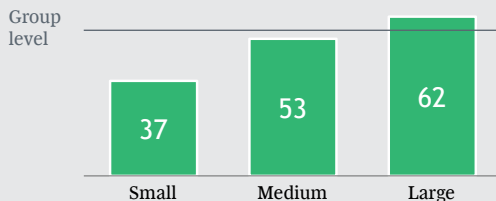
RIDE HAILING USERS IN BRAZIL

Figure 2 breaks down the results to highlight the typical profile of the ride hailing user. Overall, we see the prevalence of shared mobility use in:

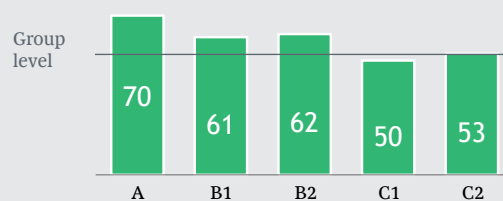
- Residents of large cities where the offer of shared mobility is larger and better communicated (e.g., street banners and signs, TV marketing and targeted advertising). This is undoubtedly the most relevant aspect: ride hailing penetration in large cities reaches 62%, while in small cities it is only 37%.
- Class A and B users who are likely to be less sensitive to the higher cost of this option when compared to public transportation, and typically have less barriers to use some of these platforms (e.g., debit / credit card holders, bank accounts).
- People between 26 and 40 years of age, the intersection between generations with more digital habits and the age range with higher purchasing power and greater odds of being financially independent.
- Mostly women, encouraged by a greater sense of security when compared to public transportation (i.e., 33% of the women participating in our survey totally agreed with the statement “I don’t feel safe using public transportation.”, compared to 24% of men who totally agreed with this statement) and by the lower probability of having a driver’s license (i.e., in our survey, 33% of women said they had no driver’s license versus 16% of men).

FIGURE 2 | RIDE HAILING USERS LIVE IN LARGER CITIES, ARE WEALTHIER AND YOUNGER

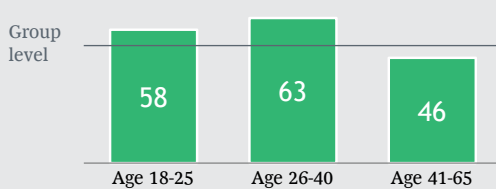
Ride hailing penetration by City profile (%)



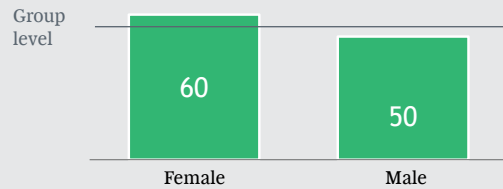
Ride hailing penetration by Income level (%)



Ride hailing penetration by Age group (%)



Ride hailing penetration by Gender (%)



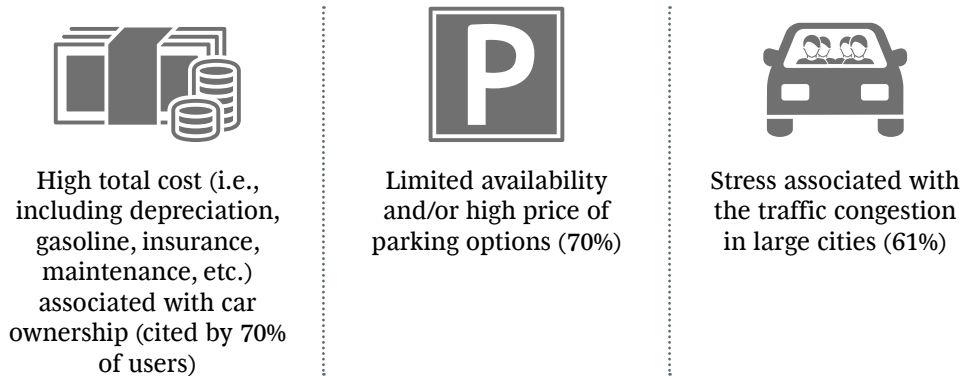
Source: Survey data, BCG analysis

The analysis of these users’ preferences is even more interesting, including how they view the shared mobility option. Our survey asked users about the pain points and advantages of the main alternatives to shared mobility solutions -

public transportation and / or their private vehicles. For public transportation users, the biggest pain points mentioned were:



Regarding private vehicle users, the main points mentioned were:



Similarly, we asked our respondents about the key attributes they associate with shared mobility solutions. As expected, many of the attributes resolve the specific pain points mentioned above - both by public transportation users and by private car users. According to our respondents, the main attributes that characterize ride hailing are:

1

Easy to use and pay for the service (quoted by 75% of users)

2

Possibility to drink and not need to drive (73%)

3

No need to worry about availability and price of parking options (73%)

4

Possibility to share ride costs with others (65%)

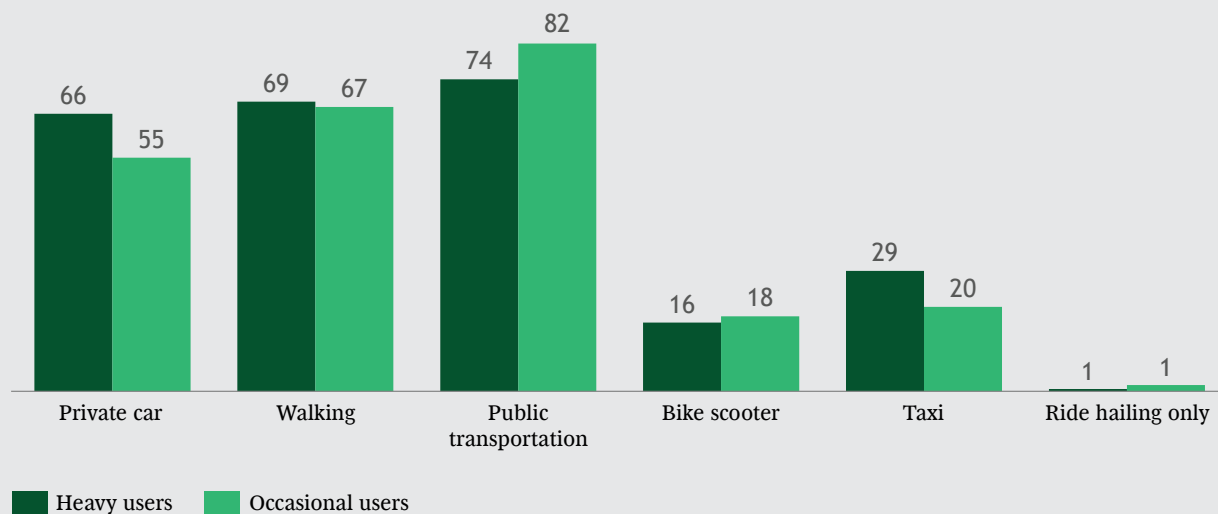
5

Autonomy provided by the service (65%)

However, despite the many positives, ride hailing still occupies a complementary space to other mobility options, with a very low number of exclusive users (i.e., only 1% of users declare themselves as such, meaning that they only use ride hailing as their means of transportation). Figure 3 is enlightening: both among heavy users (those who use ride hailing more than 3 times a week) and occasional users (those using it at least once a week), the option for ride hailing always goes along the use of another modal, showing a high growth potential for this mobility option.

FIGURE 3 | RIDE HAILING COMPLEMENTS THE TRADITIONAL MOBILITY SOLUTIONS

Ride hailing users that also use a different mobility option (%)



Source: Survey data, BCG analysis

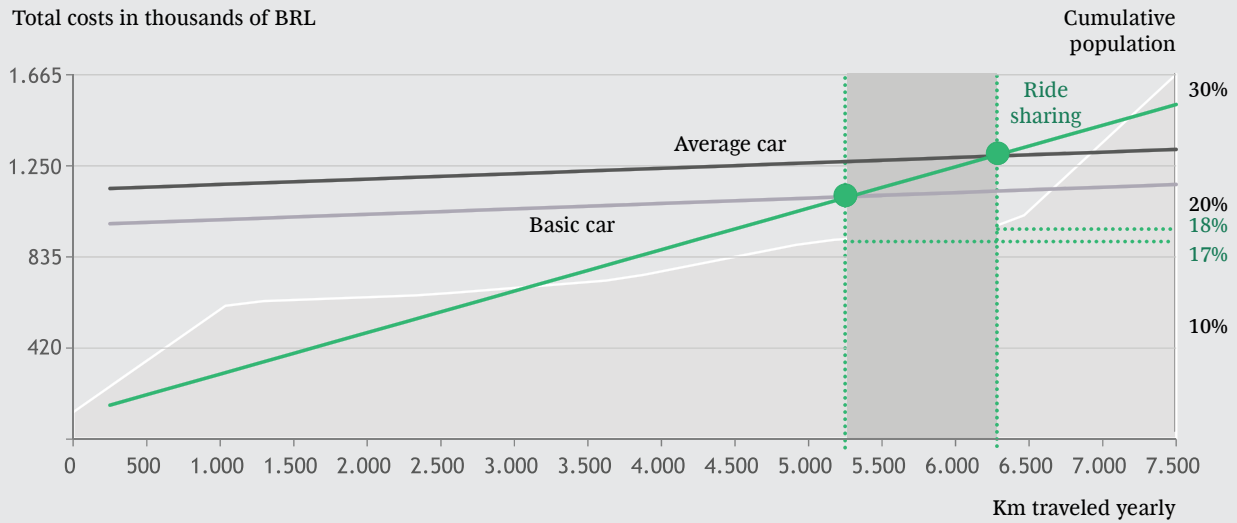
RIDE HAILING DECISION: A PURELY FINANCIAL CHOICE?

GIVEN THE RELEVANT ATTRIBUTES in favor of ride hailing and the low number of unique users, the question remains: does it make economic sense for car owners to abandon their vehicles to exclusively use shared options?

To answer this question, one must first understand how to calculate the total cost of ownership (TCO) of a car. Our model takes into account the car's purchase value, 5-year use and resale value. The resale value is estimated based on annual depreciation assumptions, applied over the period. Utilization costs involve expenses with national taxes, licensing, compulsory insurance, fuel (as a function of average mileage per year), non-compulsory insurance, scheduled maintenance and overhauls, minor repairs and parking expenses. Depending on the car profile, our estimate is that the TCO ranges from R\$ 1,100 (basic car, manual transmission) to R\$ 1,300 per month (car with optional features, automatic transmission) for an approximate mileage of 500 km per month.

Figure 4 shows how this cost evolves according to expected vehicle utilization in kilometers. The light gray and dark gray lines show the TCO evolution of the two car profiles we simulated.

FIGURE 4 | SHARED MOBILITY IS ALREADY MORE COST EFFECTIVE FOR ROUGHLY 20% OF THE POPULATION VS. OWNING A CAR



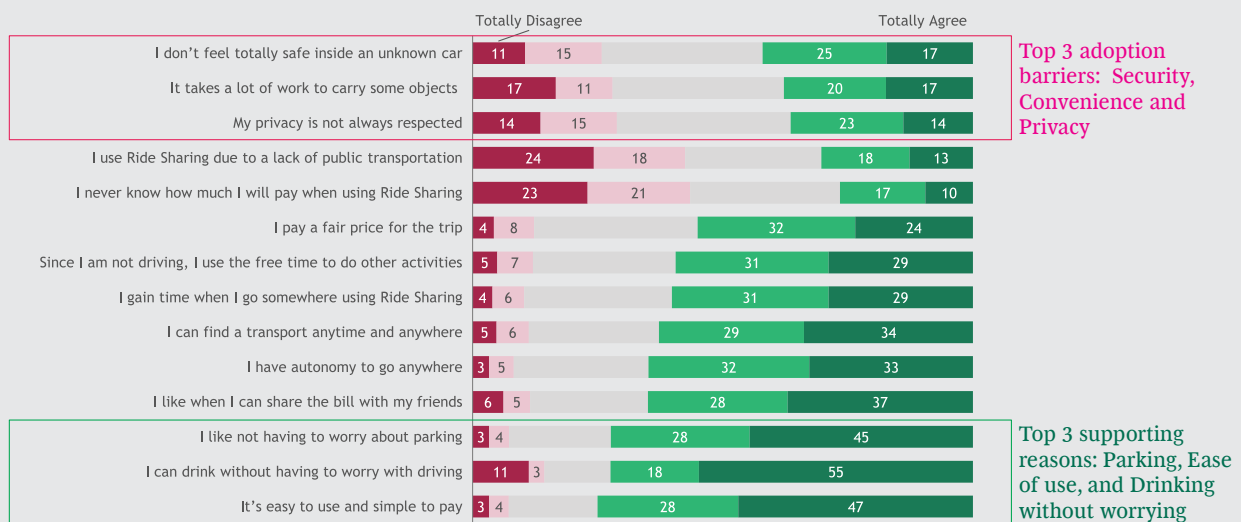
Source: BCG analysis

In Figure 4, we also include an estimate of equivalent “TCO” – for using ride hailing to travel the same distance. The light green line shows this evolution. The clear conclusion is that for those who travel less than 5,000 kilometers a year (in the case of the more basic car) or less than 6,000 kilometers a year (for the more sophisticated car), it makes more sense, purely from an economical point of view, to let go of the private car and use ride hailing. In our survey, about 15-20% of respondents find themselves in this situation - a relevant portion of the population.

UTILIZATION BARRIERS AND ATTITUDINAL CHALLENGES

The reality is that the decision to replace the car by ride hailing depends on multiple dimensions beyond the economic and financial equation. Just as the value proposition is recognized and consistent - as we illustrated earlier in this article in the top 5 attributes that characterize ride hailing - so are adoption barriers. The four biggest barriers identified were (i) not feeling entirely safe inside someone else's car (cited by 42% of respondents); (ii) difficulty in carrying certain objects and / or the hassle of using the service with large volumes, such as strollers or large suitcases (37%); and (iii) the fact that many drivers don't respect the passenger's privacy (37%). Uncertainty about the value of the ride also appears as the fifth major reason (27%), given price fluctuations according to the relationship between driver supply and passenger demand. Figure 5 shows consumers' perception of ride hailing, highlighting both the positive and negative aspects.

FIGURE 5 | OVERALL, THE ASPECTS OF SECURITY, CONVENIENCE AND PRIVACY ARE THE TOP 3 POTENTIAL BARRIERS TO CUSTOMERS ADOPTING RIDE SHARING EXCLUSIVELY



Source: Pesquisa quantitativa; Análise BCG

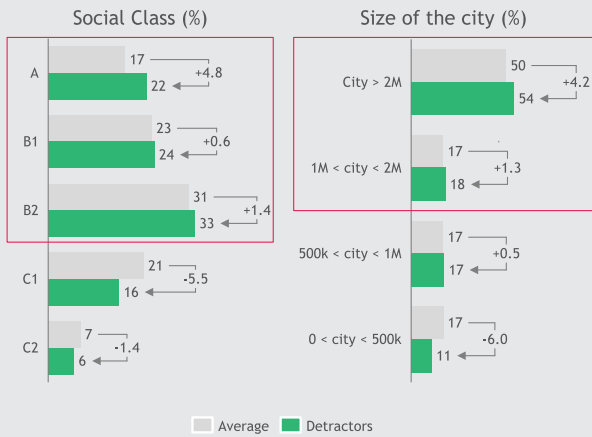
However, Figure 5 still leaves one question unanswered: for each respondent individually, does ride hailing have - on average - more positives or negatives? To try to answer this question, we look at the total set of perceptions for each consumer to map out any quite positive consistencies (e.g., a respondent who, in addition to agreeing with the typically positive points, disagrees or does not recognize

the existence of negative points) or rather negative ones (e.g., a respondent who, in addition to agreeing with the negatives, also disagrees or does not recognize the positives). The analysis of these “extremes” led us to user-type profiles: “promoters” and “detractors”.

Figure 6 provides more information about the demographics of each of these groups. In general, promoters have a larger proportion of Class A and B citizens, typically residents of large, densely populated cities, while detractors have a higher class C participation and typically live in smaller cities with low population density.

FIGURE 6 | PROFILE OF PROMOTERS AND DETRACTORS IS DISTINCT

Promoters: A and B social classes and larger cities



Detractors: higher penetration of C and D social classes and smaller cities



Source: Automotive Quantitative Survey; BCG Analysis

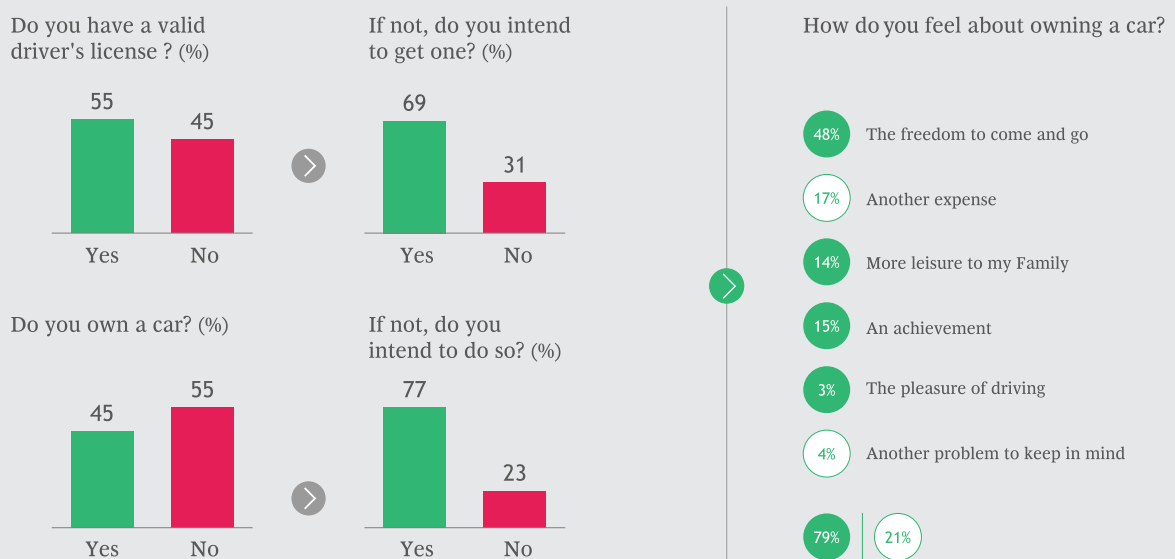
It is important to point out that detractors do not necessarily have a negative opinion, in the strict sense of the word, about ride hailing services: they simply see less value in the attributes offered and overvalue the negative aspects that are typically recognized by all users. The identification of this segmentation is relevant for one reason: this attitudinal pattern most likely has more influence on the decision to use ride hailing exclusively and to no longer own a car than any economic equations. In interviews we conducted, some respondents who fit the promoter group said they would even be willing to pay a “premium” for the positive attributes that, in their opinion, are the most characteristic of the service. For these people, even though owning a car could be cheaper, opting for the exclusive use of ride hailing might make sense. Similarly - but in the opposite direction - for detractors, even though ride hailing exclusively makes more economic sense, the option of selling their cars is not even considered.

THE “TRADITIONAL OWNERSHIP” OF THE CAR AND ALTERNATIVE MODELS

CALCULATIONS OF THE TOTAL cost of ownership of a car, when analyzed in conjunction with the population’s mobility profile, indicate - as we have already cited in this article - that for 15% to 20% of people it would be economically more advantageous to use only shared mobility solutions than to rely on a private vehicle. This assumes similar or increased TCO (e.g., increase of vehicle’s price, increase of insurance costs, steeper depreciation, etc.).

However, an immediate impact of the rise in mobility alternatives such as ride hailing is the significant change in perception and the aspirational aspect of car ownership. For a long time, buying one’s own car meant - and it can be said that for a good portion of the population it still means - the realization of a dream. New generations do not necessarily make this association. Figure 7 is quite interesting.

FIGURE 7 | A RELEVANT SEGMENT DO NOT INTEND TO ACQUIRE A CAR, EVEN THOUGH CAR OWNERSHIP STILLS A STRONG ASPIRATION



Source: Survey data, BCG analysis

It shows how a significant portion of our respondents has no ambition or desire to become a driver (i.e., 31% of people without a driver's license don't even consider getting one - representing about 15% of the total respondents to our survey). Similarly, about 23% of those who do not own a car do not want to buy one either. This represents just over 10% of the total survey respondents. Similarly, although the overall perception associated with car ownership is positive (i.e., 48% of respondents associate it with the freedom to come and go, anytime and anywhere), 1 in 5 people consider the car a problem - either due to the high costs associated with owning it or the inconvenience that driving a car itself generates (e.g., difficulty in parking, wasted time driving in heavy traffic, etc.).

Given this scenario, it seems fair to say that ride hailing in Brazil was a phenomenon that opened doors to other means of transportation - or even to a new model of vehicle "ownership". Today, monthly or yearly car rental agreements - where users pay a monthly or annual fee and has a vehicle at their disposal, without having to worry about various aspects associated with car ownership, such as scheduling maintenance, buying insurance, licensing, etc. - have gained relevance, showing that the perception of the population has migrated to view the car as a service, and no longer as an asset. In addition, hourly car sharing and car rental applications have grown in the country and may occupy a relevant place in the menu of options that citizens have. The trend is that increasing options, along with the ongoing cultural change, will continue to weaken the traditional car ownership model - as one person can use multiple solutions, each best suited to his or her life stage and main purpose at the moment.

WHAT IS NEXT?

ONGOING CHANGES IN THE way people make decisions related to mobility may catalyze other substantial changes that this industry is likely to experience over the coming decades. As “shared” cars become more relevant - with more and more people using ride hailing options and more miles of travel being “intermediated” by these platforms - the business case of electric cars is starting to get more positive. A study published by BCG in 2018, entitled “The Electric Car Tipping Point”, ranks the increased relevance of shared mobility as one of the major driving forces for the dissemination of electric cars. With the higher autonomy of electric vehicles (i.e., the ability to travel longer distances without recharging) and the lower cost of batteries, the total cost of ownership of electric cars should be more attractive, especially for owners who travel greater distances on a recurring basis (e.g., taxi drivers, ride hailing platform drivers). Therefore, markets where ride hailing penetration is high tend to become promising regions for faster adoption of electric vehicles, but other important variables (e.g., station availability, recharge ratio between the cost of electricity and fossil fuels, regulation) obviously need to be considered. Similarly, the pursuit of autonomous driving (i.e., driverless cars) also gains traction by increasing ride hailing penetration as a lever to increase the supply of vehicles, which depends on the supply of drivers, and to keep the price of the service affordable.

The interdependent aspect of the changes cited in the previous paragraph leads us to believe that the speed of transformation in this industry tends to accelerate - making it imperative for different players to prepare to quickly react to a new reality in the mobility industry.

About the Authors

Masao Ukon is managing director and partner in BCG's São Paulo office. You may contact him by email at ukon.masao@bcg.com.

Regis Nieto is managing director and partner in BCG's São Paulo office. You may contact him by email at nieto.regis@bcg.com.

Eduardo Canabarro is principal in BCG's São Paulo office. You may contact him by email at canabarro.eduardo@bcg.com.

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For Further Reading

Boston Consulting Group has published reports and articles on related subjects that may be of interest to senior executives. Examples include those listed here.

On-Demand Transit Can Unlock Urban Mobility

an article by Boston Consulting Group, November 2019

The Leaders in Urban Mobility Will Be Regional, Not Global

an article by Boston Consulting Group, October 2019

Seeking Perpetual Motion with Mobility as a Service

an article by Boston Consulting Group, March 2019

Where to Profit as Tech Transforms Mobility

an article by Boston Consulting Group, August 2018

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