Flexibilization and precarization of working conditions and labor relations in the perspective of app-based drivers

Received 1 August 2021
Revised 17 December 2021
Accepted 4 March 2022

Jeová Torres Silva Júnior
Centre for Applied Social Sciences, Federal University of Cariri, Juazeiro do Norte, Brazil
Jailson Santana Carneiro
Graduate School of Management (PPGA), Federal University of Paraíba (UFPB), João Pessoa, Brazil and Academic Unit of Serra Talhada (UAST), Federal Rural University of Pernambuco (UFRPE), Serra Talhada, Brazil, and
Patrick Wendell Barbosa Lessa and Carlos Leandro Soares Vieira
Centre for Applied Social Sciences, Federal University of Cariri, Juazeiro do Norte, Brazil

Abstract

Purpose – The challenges of the growth of the sharing economy are becoming more and more noticeable and urgent, especially concerning labor relations (e.g. uberization). The purpose of this paper is to understand what app-based drivers think of working conditions and labor relations.

Design/methodology/approach – The research was carried out in three stages: bibliographical and documental research, and two empirical research, a quantitative one with the application of a questionnaire in a sample of 54 respondents and another qualitative one using an interview script with ten drivers. For data analysis, the abductive method and the content analysis technique were used.

Findings – The results reveal they have an exhausting labor routine, by checking that they work more hours per week than those who have a formal job. They are driven mainly by the extra income and flexibility that digital platforms of the sector of shared private transportation can offer, although the costs intrinsic to the activity often affect their revenues significantly.

Research limitations/implications – The number of answers from women was very small, which hinders the analysis of the potential specificities of women app-based drivers. Future studies could focus on this public for a more precise analysis, to bring the discussion on gender to the working context of app-based drivers.

The authors acknowledge: the Department of Research, Graduate Studies and Innovation (PRPI) of the Federal University of Cariri (UFCA, Brazil) for the support in infrastructure, funding, and grants, through the Call n. 08/2019/PRPI Support for Research Projects - Funding; (ii) the Cearense Foundation for Scientific and Technological Development Support (FUNCAP, Brazil) for the support of research grants, through the Call PIICT/CNPq/FUNCAP/UFCA n. 01/2020/PRPI; and (iii) the National Council for Scientific and Technological Development (CNPq, Brazil) for funding the research through the Call MCTIC/CNPq n. 28/2018 Universal - Track A, whose results of the theoretical studies and data analysis are presented in this paper.

Revista de Gestão
Vol. 29 No. 3, 2022
pp. 267-286
Emerald Publishing Limited
e-ISSN: 2177-8736
p-ISSN: 1809-2276
DOI 10.1108/REGE-08-2021-0153

Practical implications – The authors' intention with the research reports was to make them relevant, leading to effective policies concerning working conditions and labor relations in the sharing economy, and to stimulate other surveys to understand the activity of an app-based driver of shared private transportation.
Originality/value – The authors' research and this article contribute to the discussion on new work relationships, motivations and (dis)satisfaction with the activity, from the perspective of app-based drivers.

Keywords Uberization, Flexibilization of work, Precarization of work, App-based drivers, Platform workers, Sharing economy

Paper type Research paper

1. Introduction

Sharing economy is the economic phenomenon that stands on a new business model, consisting of shared access to goods or services through free or paid transactions, by means of physical or digital networks (Gansky, 2010; Cantera & Vaquero, 2012; Schor, 2014; Christensen, Raynor, & McDonald, 2015; Hamari, Sjöklint, & Ukkonen, 2015; Slee, 2015; Carelli, 2017; Acquier, Daudigeos, & Pinkse, 2017; Petrini, Freitas, & Silveira, 2017; Gerhard, Silva Júnior, & Câmara, 2019). In the sharing economy, small enterprises and startups emerged as applications and digital platforms that have become large corporations, and from them raised a "new" mass of workers influenced by a set of ideas on flexibility in working conditions and relations, and an opportunity to increase their sources of income (Rifkin, 2011).

The sector of shared private transportation is the leader among those with the highest number of sharing economy initiatives, with 24% of total businesses (PricewaterhouseCoopers, 2015). In 2020, Uber, one of the world's corporations in this sector, already had a market value of US$78bn (Cheng, 2020). Farrell and Greig (2016) show that, between 2012 and 2015, about 10.3 million people joined these platforms as workforce, only in the USA. In 2020, workers/service providers of the sharing economy in China were expected to exceed 100 million (Nan, 2017). In the European Union, according to Groen and Maselli (2016), the sum of part-time, temporary and freelancer workers aged 25 years or less increased by 49.8%, between 2006 and 2014. In the UK, Conaty, Bird, and Ross (2016) mentioned that the number of independent workers had expanded to 4.6 million, or 15% of the total workforce. When added together, freelancers in the USA and the European Union reached 162 million people (McKinsey Global Institute, 2016).

In Latin America, phenomena related to the sharing economy have also gained prominence. According to the Banco Interamericano de Desarrollo (2016), Brazil leads the region, with 32% of all sharing economy initiatives. Such data show a global movement of workers from the traditional and formal jobs to work opportunities more flexible and informal, or even precarious. Whether by satisfaction or need, this transition has changed labor relations and deserves investigation for better understanding. Although the sharing economy model has gained the growing adhesion of workers and users in different parts of the world, the challenges regarding its growth are becoming more and more noticeable and urgent.

There are critical analyses, for example, about this economic model not including non-commercial initiatives (Schor, 2014); it would consist of a wide range of digital platforms for pseudo-sharing, given their practices and social quality of their sharing (Belk, 2014), and that it still contains an anti-regulation movement in itself (Slee, 2015). In addition, in other studies, the mentioned flexibilization of working in the sharing economy can be considered more as a weakening of labor relations (Schor & Attwood-Charles, 2017; Polkowska, 2019; Capaverde, Medeiros, Antonello, & Rodrigues, 2021), and, paradoxically, even expanded – in some aspects – the control over the workers (Antunes & Filgueiras, 2020). According to Franco and Ferraz (2019), there is a close connection between fragility and control, as a result of the indifference of platforms toward their workers/service providers, since they have limited power of choice, accepting any ride or delivery for achieving, at the end of the day, the financial resources that ensure their survival.

Labor aspects, compatible regulation of relations, benefits and better working conditions are among the claims in the criticism of the forms of work in the sharing economy. The conditions and the way work is practiced led to a new term – uberization. At first, the term relates to the ride-hailing Uber platform, given the way this company associates service providers (drivers) and the relationship it has with them. However, the term has expanded its meaning. The "uberization" of work is defined as a new way to exercise a paid activity, reshaping labor relations (Abílio, 2020), transaction costs (Nurvala, 2015), service provision (Corona-Treviño, 2017) and economic responsibilities (Fleming, 2017).

Lima and Bridi (2019) observe that platforms interconnected with uberization operate by a principle that suggests to service providers that they are their own bosses or "self-entrepreneurs." To these authors, this perspective of entrepreneurship involves the precarization of work relations. Regarding the consequences of uberization on employment, Abílio (2020) observes that one of the main changes is how the relationship between the platform and the "uberized worker" is established, since this worker has no employment bond and no labor guarantees. Here is precisely an issue that led us to design the research. We sought to answer, in this paper, the starting question of the research: *how labor relations resulting from new practices and activities in the sharing economy business model are configured, according to workers' speech?* To get an answer for this question, we sought to hear from workers in the main sector of the sharing economy, the app-based private transportation.

Although not always supported by empirical research, some articles, especially in sociology of labor, have stated that these activities are leading to job precarization and weakening the historical gains of the labor movement. However, these studies did not present what sharing economy workers, as is the case of app-based drivers, thought and perceived directly, regarding their working conditions and relations. Those that we found (Fleming, 2017; Vosgerau & Comar, 2019), before starting our research, were not based on drivers' place of speech. And, among the papers published afterward, most of them focus on drivers that work for the Uber platform (André, Da Silva, & Nascimento, 2019; Moraes, Oliveira, & Accorsi, 2019a, b; Amorim & Moda, 2020; Junge & Tavares, 2020; Lameira & Ribeiro, 2020). Uber is the main platform in this sector, but we observed that several drivers joined other apps, looking for a higher percentage of earnings in their rides. Other recent studies base their analyses on data collected through a single instrument – the questionnaire (Moraes *et al.*, 2019a, b), or interviews (André *et al.*, 2019; Junge & Tavares, 2020; Lameira & Ribeiro, 2020; Vieira, Paiva, Alcântara, & Rezende, 2020; Capaverde *et al.*, 2021). Our research, on the other hand, sought to validate the information achieved through questionnaires and interviews with drivers.

Hence, our study contributes because it has an empirical basis; it does not address only Uber drivers; and it relies on an analysis bias that articulates qualitative and quantitative bases of collection. Thus, we did not simply seek to confirm what the literature on labor law, political economy and sociology of work state on work precarization in this activity. Our research sought to use the literature as a conceptual foundation, but not to be bound by it, and only use the investigated case as an illustration. In an abductive perspective of knowledge building (Haig, 2005; Kovács & Spens, 2005), the results and conclusions we reached had the central perspective of what app-based drivers think and say.

Therefore, our purpose was to understand what app-based drivers think of working conditions and labor relations. Regarding the procedures adopted for data collection, there was an initial stage of bibliographic and documentary search, and then an empirical stage of research with app-based drivers in seven cities in the Northeast Region of Brazil: Fortaleza and Juazeiro do Norte, in Ceará; Natal and Mossoró, in Rio Grande do Norte; João Pessoa, in Paraíba; Recife, in Pernambuco; and Salvador, in Bahia. However, in this article, we only use data from Juazeiro do Norte, where we completed the survey. In the other cities, the COVID-19

pandemic hampered the progression of field research. We expect to finish it by the end of 2021.

2. Theoretical background

The scenario in the first two decades of the 21st century shows that new deep changes are underway in the capitalist system. Owyang, Tran and Silva (2013) observe that, since the beginning of the 2000s, another mode of regulation of the economy has emerged, centered on sharing transactions of goods and services, especially from people to people, and not just from companies to customers. This, in turn, is redefining the relationships between sellers and buyers, consumers and producers, expanding transaction models and affecting relationships, businesses and organizations (Böcker & Meelen, 2017; Frenken & Schor, 2017). These practices are inserted in the mode of economic regulation known as sharing economy.

Gerhard *et al.* (2019) show that this model of economic regulation disclosed by the sharing economy stands on a perspective of wealth creation from shared transactions of goods or services, located on digital platforms and applications or physical places. They redefine the traditional principles of access and ownership (private, public or common), as well as labor, consumption and production relations. A large part of the success of this model based on sharing, renting, lending, reselling, exchanging and donating is due to the generation that is, simultaneously, its main providing, demanding and working public. They are Generation Y, more commonly introduced as Millennials – the generation born between 1981 and 1996 (Dimock, 2019). Regarding the classification of generations, Parker and Igielnik (2020) show that they are subdivided into individuals born between 1946 and 1964, called Baby Boomers; people born between 1965 and 1980, named generation X; generation Y; and generation Z, comprising individuals born after 1996.

Each generation has a different way of behaving and analyzing the world. Faced with temporal differences, they adapt themselves according to their context and experiences, and one generation may adapt faster to technological changes than the others (Freitas, Pita, & Alexandre, 2018). This is one reason that explains the integration of Generation Y into the context of the sharing economy. The causes of this affiliation are justified by studies and reports that show how Millennials can provide a future for this model of economic regulation, because: (1) this generation prefers accessing goods or services to meet current needs than to buy and possess them for a long time (Ross, 2014; Montgomery, 2015; Godelnik, 2017); (2) it represents one-fourth of the global population, since 2018 (Tilford, 2018); (3) the mental model of Millennials is more adherent to the context of autonomous, flexible and on-demand work (ADP Research Institute, 2016; Tabcum, 2019); (4) it will become 75% of the world's workforce by 2025 (Tabcum, 2019); and (5) it reached a purchasing power, in 2020, of US$14.0tn (Gapper, 2018). Given the above, we use the generational configuration in our analyses.

In the experiences of the sharing economy, the dominant forms of work are those that, on the one hand, give greater freedom to the worker, while, taking into account the current paradigm and legal framework in the world, provide less or no benefits and labor guarantees. They are known as informal, self-employed, on-demand and freelance workers. Lima, Cavalcante and Costa (2011) state that, between the 1980s and 1990s, informal work had an expansion as an alternative for workers' survival. This movement resulted from both the incapacity of the capitalist system to absorb the active workforce and the absence of public policies to insert workers in the formal market, in a more regulated way.

However, from the 2000s onward, there was a change in this reality, where workers seek non-formal and non-regular relationships, forced by the context. Sasaki (2009) mentions that informal work has also been a choice of workers, not a condition caused only by unemployment or need. This occurs because globalized capitalism is increasingly promoting

new forms of work. This scenario of adhesion of flexible, freelancers and informal workers to the current context of the sharing economy's digital service platforms shaped and spread this new term that distinguishes these workers: uberization (Antunes & Filgueiras, 2020).

From the literature review on uberization, we can summarize that this expression means a new system of organization of labor relations that digital platforms, by relying on sophisticated algorithms, resort to register and use workers/service providers, without characterizing an employment bond. Thus, they do not need to bear the obligations under the current legal frameworks of work. This is happening globally, with individuals adhering to digital platforms, supposedly without a direct subordination, presuming that they will be compensated by the flexibility of working whenever they want, and for different platforms simultaneously (Silva & Cecato, 2017; Lima & Bridi, 2019). Table 1 shows some definitions of uberization from the literature review.

Table 1 shows that in five years, the definition of uberization has changed. It went from praising its economic benefits to highlighting the losses in labor relations, until reaching a more complex concept of a system for reorganizing labor relations, almost inevitable, in the

Authors	Characterization	Emphasis
Nurvala (2015, p. 231)	"The dramatic collapse of transaction costs provided by platforms is a determining factor for the development of Uberization"	Reduction of transaction costs
Fleming (2017, p. 702)	"Business models on demand, freelancer, and what some people call Uberization of the workforce, easily follow the idea that people are responsible for their economic fate"	Extension of work opportunities
Sharam and Bryant (2017, p. 203)	"Uberization or the application of the design of Internet-enabled bilateral correspondence markets, are an emerging disturbance. . . which can overcome long-standing market failures in the supply of products and the productive densification of our cities"	Overcoming market failures
Ticona and Mateescu (2018, p. 01)	"On-demand labor platforms offer a lot of in-person services, from rides to daycare. However, scholars have focused on free rides, leading to a model of 'Uberization' that implies work informalization"	Work informalization
Firmino *et al.* (2019, p. 206)	"Uberization is characterized, among other things, by the precarization of labor relations, since companies present themselves only as technology providers for brokerage services, and do not accept any responsibility for their users-partners as employees"	Precarization of work relations
Antunes and Filgueiras (2020, p. 32)	"Ways of working that expand on digital platforms, whose the traces of concreteness are the expression of exploration of more value and also labor spoliation, by transferring the costs to their workers, who become directly dependent on financing their expenses, which are indispensable for the performance of their labor"	Disguised form of service provision based on the worker's exploration and spoliation
Abílio (2020, p. 111)	"Uberization is a new form of control, management, and organization of work, largely related to work mediated by digital platforms, but not restricted to them"	New form of management and organization of work relations

Table 1.
Definitions of the term uberization in timeline

face of the rise of digital service platforms of the sharing economy. However, despite this more elaborate conceptual adjustment, exposed by Abílio (2020), the discussion on precarization and flexibilization of labor relations in uberization is still striking – and deserves a complementary analysis in this literature review, as well as the impact of labor automation. Therefore, it is important to specify briefly the meaning of precarization and flexibilization, as well as the context that fosters the manifestation of both, from the 2000s on. This delimited time period is necessary, coherent and sufficient to reach the phenomenon that we deal with in this study.

Regarding precarization, Cavalcante (2009) observes that this is not a recent terminology, having appeared since the emergence of capitalist production, where the boss-owner has the machinery and financial capital, and the employee has the strength of his work. When developing a product or service, the owner receives a monetary value, not only from the machinery, but also from the added value resulting from the employee's effort. Besides, there are poor working conditions and reduced or absent labor rights, due to the lack of inspection or even of legislation (Brito, 2000). Furthermore, when we discuss work precarization, we need to establish some aspects that deal with the delimitation of working conditions.

Precarization results from a process of deterioration of working conditions (Leite, 2008). These cover a scope that addresses the physical characteristics of the work environment, the content of the activities performed and the social conditions in which they are done (Costa, Borges, & Barros, 2015). Thus, it is necessary to align this scope with issues of work satisfaction, safety and prevention of occupational risks (Joyce, Pabayo, Critchley, & Bambra, 2010). All this configures work precarization. As for the work flexibilization, according to Oltramari and Piccinini (2006), usually happens when organizations choose de-verticalization, employees' outsourcing, subcontracting, outsourcing of the production process, hiring for a limited time or hiring outside the social security system.

From a contextual point of view, Antunes (2018) shows that the productive restructuring of capital that started in the 1970s formed the basis of precariousness and flexibility of labor in the world, from the 2000s on. In this decade, the global economy became subordinate to the financial capital, leading companies to guide their goals in maximizing their profits by increasing productivity through cost reduction and automation. Workers have come to perform under the pressure of increased productivity; to use time efficiently; the elimination of labor guarantees; the dismantling of unions; and a growing demand for flexible work contracts (Antunes, 2018).

The 2008 financial crisis increased the structural labor crisis and raised unemployment rates with the expansion of precariousness and flexibilization of working conditions and labor relations (Basso, 2018; Antunes & Filgueiras, 2020). On the one hand, the precariousness of labor was supported by the increase of informal workers, underemployment and unregulated forms of labor. On the other hand, as Antunes (2018) shows, work flexibilization laid on the revision of labor rights, increase in outsourcing, subcontracting, temporary employment and other forms of intermittent, seasonal on-demand works.

From the conceptual characterization and from this context, it is possible to relate flexibilization and precarious working conditions with the definitions of uberization shown in Table 1. Some authors say that, in the uberization model, there is work precarization (Firmino, Cardoso, & Evangelista, 2019; Lima & Bridi, 2019). On the other hand, other authors mention the benefits of flexibility, with the power of choice extended to the worker (Ticona & Mateescu, 2018), and reflect on the influence of this model on self-entrepreneurs (Fleming, 2017). Going beyond this, there are also authors who note that uberization in the sharing economy became an alternative for the lack of formal jobs and the need to get an income, which leads workers to provide services through the platforms (Lima & Bridi, 2019; Abílio, 2020).

However, Abílio (2020) emphasizes that flexibilization exempts platforms from complying with current labor regulations. Lima and Bridi (2019) also observe how uberization can bring difficulties for workers who provide services through digital platforms. These platforms have the potential to gather thousands of workers and the power to cancel the relationship at any time, without being legally challenged, since the contracts between platforms and workers do not involve an employment bond.

Regarding this platforms' power of control over workers, Amorim and Moda (2020) highlight that the algorithmic management existing in digital platforms can create infinite insights for companies, since data are generated in any activity carried out in the online environment. Such data produce information for each action taken by both service providers and the users who enjoy them. According to Pasquale (2015), the essentiality of technological development that uses algorithms lies precisely in the ability to better achieve, store, process and use data. And in the case of digital platforms that follow the uberization of work, data and algorithms are being used not only to manage the service provided, but also as a means of supervising, monitoring and punishing workers (Carelli, 2017; Leme, 2020).

3. Methodological procedures

A questionnaire and semi-structured interviews with app-based drivers were the two main instruments for collecting data. To build the questionnaire, we carried out a bibliographical survey delimited by keywords (working conditions, work relations, work flexibilization) in the Scopus database, in the areas of management, economics, sociology and psychology. Two of the identified articles (Borges *et al.*, 2013; Borges, Alves-Filho, Costa, & Falcão, 2015) were fundamental in defining the dimensions of the questionnaire, as well as the categories and registration units in the interviews' analysis: legal regime; incentive system; workplace, safety and health; control and autonomy; process and violence.

In the dimension of the legal regime, the focus was to know more about the legal and contractual aspects. This dimension helps mainly to check how drivers see themselves in a situation of freelancers or employees, as well as to get their view on the contract stability. The aspects of the incentive system's dimension sought to show the receipt, understanding and satisfaction of drivers regarding income, extra earnings, benefits and assistance. In the dimension of workplace, health and safety, the intention was to identify how drivers see the physical and material conditions of their work environment, also addressing risk factors and ergonomics. For the dimension of control and autonomy, it was essential to understand their view on the characteristics of the activities' content, the possibility of choosing the work pace and the level of the platform's control in the execution and choice of activities. Finally, regarding the dimension of work process and violence, the emphasis was to understand the role of the driver in determining the method and criteria for organizing the work process, the networks and relationships formed and if they had ever experienced harassment or assault, due to the activity.

In addition to establishing variables for composing each of these dimensions, we defined the social and demographic variables to include in the questionnaire. When we began this research, there were no published studies with instruments especially designed to assess the working conditions and the labor relations of app-based drivers. After all, there are some characteristics inherent to the working conditions of these drivers. Thus, we had to adjust questionnaires already validated, to assess working conditions in other types of business, sector and organizational model.

Also with the aim of improving the questionnaire, we visited the offices of two app-based transportation companies in Juazeiro do Norte, but both denied taking part in the study, or giving any information related to the drivers. Therefore, we chose to take a preliminary interview with a driver, to understand better the reality of his work. This information resulted

in adding new questions to the questionnaire (items related to safety, health and control). Then, we carried out the questionnaires pre-test, face-to-face, with two drivers. After these adjustments, we put the instrument on the SurveyMonkey platform to start data collection, which took place between August 2019 and March 2020, in the case of Juazeiro do Norte.

Initially, we chose to use the service as customers, and apply the questionnaire during the ride. Given the low number of respondents, we tried to identify app-based drivers to answer the questionnaire online and pass it on to their colleagues (snowball technique), as it is common for drivers to participate in groups of message exchange by App. Thus, we achieved 85 responses. After a preliminary analysis, we excluded 31 questionnaires not completely filled, thus remaining 54 valid ones, which we arranged on a spreadsheet for labeling and creation of new variables (e.g. through the age we could identify the corresponding generation of the drivers).

There was no source with the official registration of active app-based drivers in the city. We got estimates from interviewed city drivers that this number, by the end of 2020, was approximately 4,000 active app-based drivers. Regardless of the difficulty of sizing this universe, the sample size achieved with the questionnaires – for the type of analysis and responses we sought – was relevant and sufficient, as explained by Israel (1992) and Dillman, Smyth, and Christian (2014).

Considering that the research problem was complex and involved a large number of variables, we followed an abductive approach (Haig, 2005), which consists of exploring the data set to extract information and compare with theory, as many times as necessary. The purpose was not to confirm or refute the hypothesis (as in the hypothetico-deductive model), but to raise evidence on the object of study, to better understand it (Kovács & Spens, 2005). Thus, to achieve that, we organized the data in a business intelligence (BI) software.

The use of this type of tool is a way to make the proposal of the abductive method operational, in addition to providing stronger results for the applied social sciences (Carneiro, 2018). Through this software, we extracted the means for the quantitative variables and the frequencies for the social and demographic variables, in addition to crossing them. Furthermore, considering the theoretical framework on the differences between generations, we crossed the "generation" variable with some quantitative variables to check potential intergenerational differences between the drivers.

Finally, aiming, on the one hand, to validate the information from the questionnaire and, on the other, to deepen them with complementary qualitative data, we also carried out interviews with app-based drivers. We designed a semi-structured interview script, and interviewed ten drivers between August and December 2020. Table 2 summarizes the respondents' profile. For treating the interviewees' reports, we used the content analysis technique, according to Bardin (2011). The categorization and delimitation of the registration

Table 2.
Summary of interviewees' profile

Code	Generation (age)	Gender	Civil state	Active driver	Time in activity
M1	*Millennials* (39)	Female	Divorced	Yes	20 months
H1	*Millennials* (39)	Male	Married	Yes	18 months
H2	*Millennials* (41)	Male	Married	Yes	12 months
H3	*Millennials* (35)	Male	Single	Yes	30 months
H4	Generation Z (23)	Male	Married	Yes	24 months
H5	*Millennials* (27)	Male	Married	No	05 months
H6	*Millennials* (28)	Male	Married	Yes	30 months
H7	Generation X (41)	Male	Married	No	11 months
H8	*Millennials* (30)	Male	Single	Yes	03 months
H9	*Millennials* (38)	Male	Married	Yes	15 months

units used in the content analysis of the interviews are supported by the same dimensions and variables established for building the questionnaire. This was done to allow a more rigorous analytical deepening of the crossing between the interviews' results and the data achieved from the questionnaires.

Therefore, we identified the registration units through a thematic focus, and which had links with those dimensions. For example, in the dimension of the legal regime, we highlighted mainly the elements on the freelancer vs employee status, the formalization of the employment relationship and the activity's stability. In the dimension of the incentive system, we valued the excerpts on earnings, expenses, benefits and satisfaction with the activity. For the dimension of the workplace, health and safety, we considered comments on health care and the risks inherent in the workspace. From the control and autonomy dimension, we captured the excerpts on the submission to the digital management system that controls, directs and evaluates the activity, and the level of confidence that drivers have in it. In the dimension of the work process and violence, we highlighted what was exposed, regarding the execution of the activity, and mainly cases of physical or verbal aggression and moral or sexual harassment.

To finish this section on the research methodological procedures, it is relevant to explain that the abductive method allows the use of several techniques and of other methods that, combined, strengthen the proposal presented by the abductive method. Thus, we chose the interaction of the content analysis, which acts as a support mechanism for the abductive proposal, as well as for the quantitative analysis using BI software. Therefore, it is a broader way of achieving explanations on the phenomenon or object under analysis (Haig, 2005).

4. Results, data analysis and discussion

In this section, we present the results and discussions on the research, distributed in two subsections. In the first, we make a description of the app-based driver's profile and his/her relationship with the activity by using the social variables. In the second subsection, we present a "bivariate" analysis between the variable "generation" and the dimensions of working conditions and relations of the investigated audience: legal regime; incentive system; control and autonomy; process and violence. We emphasize that the abductive approach produced results that go beyond what was possible to analyze here, given the limitation of the text size. Thus, we show the most relevant results according to the proposed objective, built from the articulation between the questionnaire's quantitative data and the qualitative information from the interviews.

4.1 Characterization of the app-based drivers profile

We initially show social and demographic data. Considering the sample, the mean age is 31 years old. When adjusting the classification by generation, the drivers mainly comprise Baby Boomers (1.85%), Millennials (64.81%), Generation X (11.11%) and Generation Z (22.22%). Men comprise most of app-based drivers (92.60%). As for the level of education, there is a balance between drivers with higher education (40.74%) – in progress or completed – and with high school (38.88%).

In turn, the ten interviewees are close to the average profile of app-based drivers captured by the questionnaires. The profile is similar in terms of gender, average age, generation, education, marital status and number of children. These similar aspects between the profile of questionnaire respondents and interviewed subjects were relevant for the validation we did by crossing drivers' data obtained through the two collection instruments. A relevant fact that strengthens the knowledge that interviewees have on their activity is that 60% of them had been working for more than 12 months as app-based drivers. The drivers that answered

the questionnaire with more than 12 months in the activity also represent the expressive percentage of 45.80%. These social and demographic features reinforce important aspects of these investigated drivers. Next, we address other components more directed to the activity of app-based drivers, as Table 3 shows.

According to the Organization for Economic Cooperation and Development (OECD) in its 2018 survey, the average weekly working hours of formal workers in Brazil was 39.5 h. This was the lowest level in the historical series, which in 2001 indicated 42.7 h per week. The app-based driver's weekly work in Juazeiro do Norte is higher than the average for formal workers, considering the information in Table 3. Moraes *et al.* (2019a) obtained similar results in a study with app-based drivers in the city of São Paulo.

In our case, we have 59.26% of drivers working more than 40 h a week, with 25.92% working more than 61 h a week in the activity. Regarding the activity performance on weekends and holidays, 70.37% of the drivers often work all these days (Saturdays, Sundays and holidays). If we consider each of these three days separately, the percentage rises, and at least 81.48% of the drivers work on one of these days. This information is validated in the speech of interviewee H9 when he pointed out his daily work period: "I usually work 12 hours a day, from Monday to Friday, ... from 6 a.m. to 6 p.m. ... On weekends it is even longer. About 15, 16 hours of work. There is usually more demand for rides and they are better paid. ... but I try to work every day" (H9, December 14, 2020).

When analyzing the reasons for working as an app-based driver, the main ones were flexible hours (66.66%) and the opportunity to earn an extra income (57.41%). The lack of opportunity, mentioned by 44.44% of the drivers, ranked third among the motivations. In a more detailed analysis, of the 66.66% of respondents that marked flexibility, one-third also mentioned the lack of work opportunities, and two-third the interest in achieving extra income. Among the 44.44% who marked the lack of opportunities, a little more than half said that extra income was also a motivation.

The speech of one interviewee confirms the flexibility and the chance to receive extra income as priorities for app-based drivers to enter this activity: "the initial idea was to have a source of income, but without taking so much of my time, not to stress me so much" (H6, December 01, 2020). However, as discussed above, there are controversies about the flexibility intended by the worker. As much as there is "freedom" to work wherever and whenever they want, the workers' compensation in the sharing economy's digital service platforms is

Variable	Frequency	%
Hours worked per week		
Up to 40 h	22	40.74%
Above 40 h	32	59.26%
Performance in holidays and weekends[a]		
Saturdays	48	88.88%
Sundays	45	83.33%
Holidays	44	81.48%
Does not work on these days	4	7.40%
Motivations[a]		
Time flexibility	36	66.66%
Lack of job opportunity	24	44.44%
Extra income	31	57.41%
Easy to use the application	18	33.33%

Note(s): [a]The sum of the percentages exceeds 100%, because drivers could choose more than one option

Table 3.
Variables for characterizing the activity of app-based driver

strongly linked to fluctuations in demand. In addition, algorithmic management is capable of managing a high number of workers in real time, thus reducing flexibility, which increases "capital control over the work process" (Amorim & Moda, 2020, p. 62).

Table 4 introduces data for a more precise analysis of the income variable, which was broken down in two: gross income as an app-based driver and net income from this activity minus costs (fuel, insurance and vehicle maintenance, driver's food, among others).

According to Table 4, for 72.22%, the activity of app-based driver is their main source of income. A result higher than that found by Moraes *et al.* (2019a), in São Paulo, which was 57%. With regard to the gross income from this activity, the majority was concentrated in the range above BRL2,500.00 (53.71%). However, when asked about their net income, there was a distribution among lower income groups, the main one being up to BRL1,000.00 (29.62%). Of the 53.71% of respondents with gross income above BRL2,500.00, only 9.25% remained in the same range for net income. In other words, the expenses or investments made to continue in this activity compromised a good part of their income. This characteristic of gross income decrease due to costs and other expenses was already observed in the USA (Zoepf, Chen, Adu, & Pozo, 2018), Australia (Stanford, 2018) and France (Clairouin, Bettinelli, Bellanger, & Schirer, 2017).

There is a significant impact of regular expenses in the activity (e.g. fuel, vehicle maintenance, driver's meals, among others) that reduces drivers' earnings. In addition, there is a compulsory deduction in the driver's gross income that is the platforms fare, one of the main objections of drivers and that was reported by interviewees, such as H4: "Sometimes, in some rides, I get frustrated, . . . the trip was, let's say, BRL 25.00, . . . I do the course and . . . I only retain BRL 15.00. . .. Then the passenger pays BRL 25.00. . . . I could have earned another BRL 10.00, but Uber took all those BRL 10.00" (H4, August 31, 2020).

4.2 Cross-analysis

This subsection presents four of the seven dimensions of the questionnaire, crossed with the variable "generation." This cutout occurred for two reasons: first, because the crossings with

Variable	Frequency	%
Activity as main source of income		
Yes	39	72.22%
No	15	27.78%
Gross income (as app-based driver)		
Up to BRL1,000.00	7	12.96%
Between BRL1,000.01 and BRL1,500.00	5	9.26%
Between BRL1,500.01 and BRL2,000.00	8	14.81%
Between BRL2,000.01 and BRL2,500.00	5	9.26%
Above BRL2,500.00	29	53.71%
Net income (as app-based driver, less expenses with the activity)		
Up to BRL1,000.00	16	29.62%
Between BRL1,000.01 and BRL1,500.00	14	25.93%
Between BRL1,500.01 and BRL2,000.00	14	25.93%
Between BRL2,000.01 and BRL2,500.00	5	9.26%
Above BRL2,500.00	5	9.26%

Note(s): BRL is the international code to represent the currency "Brazilian real (R$)," according to ISO 4217. The ISO 4217 is an international standard that defines three-letter codes for currencies established by the International Organization for Standardization (ISO)

Table 4.
App-based drivers' income

this variable presented the most outstanding results when compared to the others through the abductive method, and second, due to the limitation of pages that does not allow us to expose all results and analyses. As for the "generation" variable, only one respondent belonged to the Baby Boomers generation; therefore, we did not consider this range, due to sub-representation and comparison issues.

The first dimension analyzed is the legal regime. For each item, we highlight the highest and lowest mean for comparison purposes, as shown in Table 5.

Through data in Table 5, we notice that in Item 1, the overall mean shows an increase in the level of agreement between older and younger respondents. This indicates that Millennials and Generation Z are more aware that they do not have labor rights. With regard to Item 4, the preference for flexible work in the app-based driver activity had a moderate overall mean (3.24). The moderate value of the overall mean for Item 4 is confirmed by the high drivers' motivation being based on flexible hours, as shown in Table 3 of Subsection 4.1. Item 5, which addresses the lack of jobs with signed work cards (formal employment), also had a moderate mean (3.26).

There is also a higher representation of Item 1 when compared to the other items in the overall mean, thus showing that a good part of the drivers are aware of the lack of labor rights in platforms. Interviewee H7 mentions this: "When we got there, it was very clear that there would be no relationship, right? Everything was on us. For example, you are your boss; you go to work if you want. . . When I started working, I already knew that this thing 'I am sick today, I won't be able to go to work. Call Uber and it will pay you' wouldn't work!" (H7, December 01, 2020).

For the next analysis, we consider the generations of respondents and their relationship with the items of the dimension "incentive system and satisfaction," as shown in Table 6.

In Table 6, for Item 1, the mean for Generation X was at a high level (4.00), and Millennials (2.97) and Generation Z (2.75) showed moderate levels. In addition, we also notice a decrease in the mean over the generations. This indicates that newer generations are thinking moderately about leaving the activity of app-based driver in the future. Item 2, in turn, showed a high overall mean (4.17), regarding the fact that working in this activity is crucial for paying their monthly expenses. The high percentage of respondents (72.22%) that have this activity as their main source of income strengthens the result. When considering Item 3, we found that the means are much higher in the three generational ranges, which shows a considerable impact of the costs for keeping the activity; this also happened for the income analysis, in Table 4. Regarding satisfaction with the activity, Item 4 shows that drivers of all generations seem to be moderately satisfied.

Table 5.
Crossing the dimension "legal regime" with generation

Items	Gener. X	*Millennials*	Gener. Z	Overall mean
Item 1. I am aware that I do not have labor rights by working as an app-based driver	3.33	4.14	4.42	4.11
Item 2. I believe I am like an employee of the company that owns the application, the moment I submit to its rules	3.33	3.14	3.58	3.26
Item 3. I would feel better if I were an employee with a work card signed by the company that owns the application	3.00	3.09	3.00	3.06
Item 4. I prefer the flexible work of this app-based driver than have a work card signed by a company	3.00	3.14	3.83	3.28
Item 5. The lack of jobs with a signed work card was a decisive factor for entering this activity	4.50	3.23	2.67	3.25

As highlighted in Item 2, respondents H1and H3 emphasized that they would quit the activity if they were required by some legislation to have a formal working relationship with the companies that own the applications: "I wouldn't accept. I would leave immediately" (H1, September 22, 2020); "No, I wouldn't want to" (H3, September 22, 2020). This shows that, although there is a lack of labor rights, some drivers still keep working for digital platforms, both because of the flexible routine and the possibility of working for different companies. Despite this understanding, we cannot assure that all drivers accept this condition comfortably. Interviewee H6 highlights the interest in a steady income and paid vacations: "If you had a fixed wage... If you were entitled to vacations. At least 15 days of vacation, or 30 days... For example, currently, in order to take vacations, I need to work a little more than usual" (H6, December 01, 2020).

Through Table 7 data, which addresses the control and autonomy dimension, Item 1 reflects the trust in the rules for calculating travel's pay. When analyzing the means, all generations have a low level of agreement. Millennials and Generation Z had 2.20 and 2.67, respectively. In Item 3, Millennials and Generation Z drivers have moderate levels of understanding that customers or users are not theirs, but from the companies/platforms.

In the interviews, the speeches follow two paths and interact with data from the questionnaires presented above. The first addresses the problems faced by drivers with the company/platform, as explained by H4: "At any time, something can happen in the system, because it is not human... It's an algorithm that can make an error and delete the driver and that's it. There's no one to run to" (H4, August 31, 2020). The second path, on the other hand, is a speech of satisfaction, due to the ease of using the platform, both by the driver and by the client: "For example, in terms of support, Uber is the best of all.... It has life insurance... It has accident insurance for both the passenger and the driver.... You can contact support in an easier way and have a satisfactory return, in most cases" (H9, December 14, 2020).

The last dimension, shown in Table 8, refers to the process and violence dimension in the app-based driver activity. The items were in a Likert scale, as the other variables, but were

Items	Gener. X	*Millennials*	Gener. Z	Overall mean
Item 1. Not having guaranteed labor and social security rights makes me think about quitting this activity	4.00	2.97	2.75	3.04
Item 2. Working in this activity is crucial for paying my monthly expenses	3.50	4.29	4.17	4.17
Item 3. The vehicle expenses arising from this activity (fuel, insurance, maintenance and/or rental) have a high impact on my earnings	4.83	4.66	4.58	4.66
Item 4. I am happy to be working as an app-based driver	2.83	3.34	3.42	3.30

Table 6. Crossing the dimension "incentive system and satisfaction" with generation

Items	Gener. X	*Millennials*	Gener. Z	Overall mean
Item 1. I agree with the rules of the company that owns the app for calculating the amount of my pay for the trips	1.33	2.20	2.67	2.21
Item 2. I believe that customers of the company that owns the app do not evaluate correctly the trips	4.67	4.26	4.33	4.32
Item 3. I understand that the customers are from the company that owns the app and not mine	4.33	3.91	3.92	3.96

Table 7. Crossing application system control with generation

Table 8.
Crossing violence with generation

Items	Gener. X	*Millennials*	Gener. Z	Overall mean
Item 1. I have already been physically assaulted by an app company customer during a trip	Yes: 33.33% No: 66.67%	Yes: 20% No: 80%	Yes: 16.67% No: 83.33%	Yes: 20.75% No: 79.25%
Item 2. I have experienced sexual harassment from an app company customer during a trip	Yes: 66.67% No: 33.33%	Yes: 68.57% No: 31.43%	Yes: 75 % No: 25%	Yes: 69.81% No: 30.19%
Item 3. I have already suffered verbal aggression from an app company customer during a trip	Yes: 66.67% No: 33.33%	Yes: 48.57% No: 51.43%	Yes: 50% No: 50%	Yes: 50.94% No: 49.06%

converted to a complete binary scale with options "No" (values 1, 2 and 3 of the Likert scale) and "Yes" (values 4 and 5 of the original scale), as instructed in Costa, Orsini and Carneiro (2018).

Table 8 shows that 20.75% of the drivers have already suffered some type of physical aggression (Item 1) from customers during a trip. For this item, the highest percentage of physically attacked drivers was in Generation X (33.33%). Item 2 stands out in this table, showing that around 70% of the drivers have already suffered sexual harassment in the activity. The results indicate that the disorder is rooted in this work environment. Item 3 refers to verbal aggression by customers during a trip. In this case, half of the drivers confirm it, which is higher among Generation X drivers (66.67%).

Corroborating with Table 8, we found in the statements of part of the interviewees the feeling of insecurity and the possibility of violence – especially verbal and sexual – as something inherent to the activity of app-based driver. The following are speeches by interviewees H3 and H8 about having suffered some type of harassment: "Yes. Verbal already, physical, not yet. They've already tried" (H3, September 22, 2020); "I've suffered sexual harassment. ... discussion too" (H4, August 31, 2020); "No bullying. Sexual, yes. Customers come with awkward conversations, but I cut them immediately and took it as a joke, that's it." (H8, December 14, 2020). In addition, when considering the driver's gender, the risks of suffering violence increase considerably, according to interviewees' reports. As M1 states, "women unfortunately ... are more fragile in this matter, but I never had any problems. So, safety for me is a concern today ..." (M1, November 20, 2020).

Finally, based on what we showed in this section, on results and discussions, we identified that the motivations and working conditions, in the view of the investigated app-based drivers, is close – when looking in an aggregate way – to the context defined in the literature on flexibilization and precarization of labor relations for workers in the sharing economy.

5. Final remarks

The research described in this article aimed to investigate how app-based transportation drivers perceive work conditions and relations in performing their activities. According to the analysis, we can confirm one of the pillars of the research: how relevant the place of speech of app-based drivers was for the results. We proved how exhausting is their labor routine, by checking that they work more hours per week than those who have a formal job. They are driven mainly by the extra income and flexibility that digital platforms of the sector of shared

private transportation can offer, although the costs intrinsic to the activity often affect their revenues significantly.

In addition, through cross-analysis and dividing respondents between Generation X, Millennials and Generation Z, we noticed differences and similarities between them, and how each generation handles the relationships and working conditions of this specific model of activity, in the context of the sharing economy. To some extent, the generational distribution in this research confirms the acceptance of Millennials to become workers of the sharing economy, as mentioned in the introduction and in the theoretical framework of the article.

As for drivers' labor rights, there is a gap in the current Brazilian legal framework to include them. Digital platforms of shared private transportation "contract" the relationship with drivers through a document recognized more for its commercial than for its labor design. It contains clauses that ensure decisions taken unilaterally and without explanations from the platform, and accepted by the drivers (for example, the case of dismissing drivers directly through the company's application). Hence, given the shortage of labor guarantees and the legal recognition of a relationship of subordination, as analyses show, there are questions from drivers and the possibility of strikes, demonstrations and uprisings. These reactions are growing and have become more frequent.

Given the fragility of working conditions and relationships between platforms and workers, we found the need for digital platforms to assess these issues, given that workers' motivations directly affect the quality of the provided service. Hence, our research and this article contribute to the discussion on new work relationships, motivations and (dis) satisfaction with the activity, from the perspective of app-based drivers. Data collected lead to a discussion where a labor regulation for digital platforms, especially in shared private transportation, is confronted with the reality of the expressed interest of drivers for a more flexible working relationship and a model different from a formal job, under the terms of the current Brazilian labor legislation.

In addition, the number of answers from women was very small, which hinders the analysis of the potential specificities of women app-based drivers (harassment, prejudice, double shifts, etc.). However, we did not consider the small number of female drivers identified both in the sample of questionnaires (7.4%) and in the interviews as a problem for this research. In general, the percentage of participation of this audience as app-based driver is very small. Women account for 4.4% of Uber drivers in the State of Ceará, and 6% throughout Brazil (Diário do Nordeste, 2019). Therefore, future studies could focus on this public for a more precise analysis, to bring the discussion on gender to the working context of app-based drivers. Still regarding future studies, although Section 4.2 has related the dimensions to the generations, and made some analyses based on the results of each generation's responses, it is possible to deepen the analysis of the aspects of labor exploration between generations. The data we have allow us to emphasize this approach in another future research paper.

With regard to the contributions of this study, it provides some results and guidance for analyses that help expand the view on the effects of work uberization on shared transportation platforms. By being a study based on two data capture instruments that strengthen each other, it enhances the results of some previous studies (which we discussed in the introduction), which were based on a single technique. In addition, the study focuses on a location of sociocultural reality marked by its socioeconomic specificities, as is the case of Northeastern Brazil, which allows comparative analyses with studies focused on other regions of the country, to understand what singularities and differences exist in application drivers' perception about their work. Likewise, what we present in the results and analyses, from the standpoint of their practical use, can contribute to assist public managers and legislators in the decisions and formulation of public policies, and in a legal framework for private transport platforms and app-based drivers.

In this sense and as a conclusion, our intention was to bring relevant results, analyses and research reports, leading to effective policies on working conditions and labor relations in the sharing economy; to promote the debate on precarization and flexibility in the uberized world of work; and to stimulate other surveys to understand the activity of an app-based driver of shared private transportation.

References

Abílio, L. C. (2020). Uberização: A era do trabalhador just-in-time? *Estudos Avançados*, *34*(98), 111–126. doi: 10.1590/s0103-4014.2020.3498.008.

Acquier, A., Daudigeos, T., & Pinkse, J. (2017). Promises and paradoxes of the sharing economy: An organizing framework. *Technological Forecasting and Social Change*, *125*, 1–10. doi: 10.1016/j.techfore.2017.07.006.

ADP Research Institute (2016). *A evolução do trabalho: A natureza inconstante do ambiente de trabalho global*. ADPRI. Available from https://brasscom.org.br/wp-content/uploads/2017/10/F3_AF_FOW_210x297_0909_BX.pdf.

Amorim, H., & Moda, F. B. (2020). Trabalho por aplicativo: Gerenciamento algorítmico e condições de trabalho dos motoristas da Uber. *Fronteiras-estudos midiáticos*, *22*(1), 59–71. doi: 10.21902/RevPercurso.2316-7521.v2i29.3500.

André, R. G., Da Silva, R. O., & Nascimento, R. P. (2019). "Precário não é, mas eu acho que é escravo": Análise do Trabalho dos Motoristas da Uber sob o Enfoque da Precarização. *Revista Eletrônica de Ciência Administrativa*, *18*(1), 7–34. doi: 10.21529/RECADM.2019001.

Antunes, R. (2018). *O privilégio da servidão: O novo proletariado de serviços na era digital*. SãoPaulo: Boitempo.

Antunes, R., & Filgueiras, V. (2020). Plataformas digitais, uberização do trabalho e regulação no capitalismo contemporâneo. *Contracampo*, *39*(1), 27–43. doi: 10.22409/contracampo.v39i1.38901.

Banco Interamericano de Desarrollo (2016). *Economía colaborativa en América Latina*. Madrid: IE Business School. Available from https://publications.iadb.org/es/economia-colaborativa-en-america-latina.

Bardin, L. (2011). *Análise de conteúdo*. Lisboa: Edições 70.

Basso, P. (2018). *Tempos modernos, jornadas antigas: Vidas de trabalho no início do século XXI*. Campinas: Editora Unicamp.

Belk, R. (2014). Sharing versus pseudo-sharing in web 2.0. *The Anthropologist*, *18*(1), 7–23. doi: 10.1080/09720073.2014.11891518.

Böcker, L., & Meelen, T. (2017). Sharing for people, planet or profit? Analysing motivations for intended sharing economy participation. *Environmental Innovation and Societal Transitions*, *23*, 28–39. doi: 10.1016/j.eist.2016.09.004.

Borges, L. O., Alves-Filho, A., Costa, M. T. P., & Falcão, J. T. R. (2015). Condições de trabalho. In P. F. Bendassolli, & J. E. Borges-Andrade (Eds.), *Dicionário brasileiro de psicologia do trabalho e das organizações* (pp. 227–236). São Paulo: Casa do Psicólogo.

Borges, L. O., Costa, M. T., Alves-Filho, A., Souza, A. L. R., Leite, C. P. R. L. A., & Falcão, J. T. R. (2013). Questionário de condições de trabalho: Reelaboração e estruturas fatoriais em dois grupos ocupacionais. *Avaliação Psicológica*, *12*(2), 213–225. Available from https://www.redalyc.org/articulo.oa?id=335027505012.

Brito, J. C. D. (2000). Enfoque de gênero e relação saúde/trabalho no contexto de reestruturação produtiva e precarização do trabalho. *Cadernos de Saúde Pública*, *16*, 195–204. doi: 10.1590/S0102-311X2000000100020.

Cantera, J., & Vaquero, P. (2012). *Networknomics: Un nuevo paradigma de creación de valor en la economía de la creatividad, la conectividad y la colaboración*. Scotts Valley: Create Space Independent Publishing Platform.

Capaverde, C. B., Medeiros, I. B. D.O., Antonello, C. S., & Rodrigues, M. B. (2021). Subjectivities behind the wheel: Transformations in work relations of drivers in Brazil. *International Journal of Organizational Analysis*, *29*(1), 155–171. doi: 10.1108/IJOA-10-2019-1911.

Carelli, R. D. L. (2017). O caso Uber e o controle por programação: De carona para o século XIX. In A. C. R. Leme, B. A. Rodrigues, & J. E. R. Chaves Júnior (Eds.), *Tecnologias disruptivas e a exploração do trabalho humano*, 130-146. São Paulo: LTr Editora.

Carneiro, J. S. (2018). *Consumo de filmes em cinema no Brasil: Configurações e preferências do espectador*. Dissertação de Mestrado em Administração. Universidade Federal da Paraíba. Available from https://repositorio.ufpb.br/jspui/handle/123456789/12943.

Cavalcante, G. M. M. (2009). *A precarização do trabalho e das políticas sociais na sociedade capitalista: Fundamentos da precarização do trabalho do assistente social*. Dissertação de Mestrado em Serviço Social, Universidade Federal de Alagoas. Available from http://www.repositorio.ufal.br/handle/riufal/2338.

Cheng, M. (2020). Uber's market value has just reached an all-time high. *Quartz*. Available from https://qz.com/1928990/ubers-market-cap-surpasses-its-ipo-valuation/.

Christensen, C. M., Raynor, M. E., & McDonald, R. (2015). What is disruptive innovation? *Harvard Business Review*, *93*(12), 44–53.

Clairouin, O., Bettinelli, M., Bellanger, E., & Schirer, A. (2017, February 23). Peut-on vraiment gagner sa vie en étant chauffeur Uber? *Le Monde*. Available from https://www.lemonde.fr/videos/video/2017/02/23/peut-on-vraiment-gagner-sa-vie-en-etant-chauffeur-uber_5084277_1669088.html.

Conaty, P., Bird, A., & Ross, P. (2016). *Not alone: Trade union and co-operative solutions for self-employed workers*. Manchester: Cooperatives UK.

Corona-Treviño, L. (2017, July 9–13). Technology management of capital assets and risks in the service sharing economy: Cases of uberization of crowdfunding and transportation in Mexico. *2017 Portland International Conference on Management of Engineering and Technology (PICMET)*, Portland, Oregon. [Paper presentation]. Available from https://ieeexplore.ieee.org/abstract/document/8125266.

Costa, F. J., Orsini, A. C. R., & Carneiro, J. S. (2018). Variações de mensuração por tipos de escalas de verificação: Uma análise do construto de satisfação discente. *Gestão.Org*, *16*(2), 132–144. doi: 10.21714/1679-18272018v16n2.p132-144.

Costa, M. T. P., Borges, L. D. O., & Barros, S. C. (2015). Condições de trabalho e saúde psíquica: Um estudo em dois hospitais universitários. *Revista Psicologia Organizações e Trabalho*, *15*(1), 43–58. doi: 10.17652/rpot/2015.1.490.

Diário do Nordeste (2019, October 24). A cada 23 corridas pela Uber, apenas 1 terá motorista mulher no Ceará. Available from https://diariodonordeste.verdesmares.com.br/negocios/a-cada-23-corridas-pela-uber-apenas-1-tera-motorista-mulher-no-ceara-1.2166053.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, Phone, Mail, and Mixed-mode Surveys: The Tailored Design Method*. Hoboken: Wiley Publishing.

Dimock, M. (2019, January). *Defining Generations: Where Millennials End and Generation Z begins*. Pew Research Center. Available from https://www.pewresearch.org/fact-tank/2019/01/17/where-millennials-end-and-generation-z-begins/.

Farrell, D., & Greig, F. (2016). Paychecks, paydays, and the online platform economy: Big data on income volatility. *Proceedings. Annual Conference on Taxation and Minutes of the Annual Meeting of the National Tax Association*, *109*, 1-40. Available from https://www.jstor.org/stable/26816593.

Firmino, R. J., Cardoso, B. V., & Evangelista, R. (2019). Hyperconnectivity and (im) mobility: Uber and surveillance capitalism by the global south. *Surveillance and Society*, *17*(1/2), 205–212. doi: 10.24908/ss.v17i1/2.12915.

Fleming, P. (2017). The human capital hoax: Work, debt and insecurity in the era of Uberization. *Organization Studies*, *38*(5), 691–709. doi: 10.1177/2F0170840616686129.

Franco, D. S., & Ferraz, D. L. D. S. (2019). Uberization of labor and capitalist accumulation. *Cadernos EBAPE.BR*, *17*(SPE), 844–856. doi: 10.1590/1679-395176936x.

Freitas, A. D., Pita, M. B. V., & Alexandre, R. C. (2018). Do antigo ao novo: Geração Baby Boomers, geração X, geração Y, geração Z e seus conflitos nas organizações. *Revista de Trabalhos Acadêmicos–Universo Juiz De Fora*, *1*(7). Available from http://www.revista.universo.edu.br/index.php?journal=1JUIZDEFORA2&page=article&op=view&path%5B%5D=7220.

Frenken, K., & Schor, J. (2017). Putting the sharing economy into perspective. *Environmental Innovation and Societal Transitions*, *23*, 3–10. doi: 10.1016/j.eist.2017.01.003.

Gansky, L. (2010). *The mesh: Why the future of business is sharing*. New York: Portfolio Penguin.

Gapper, J. (2018, June 5). How millennials became the world's most powerful consumers. *The Millennial Moment: the Business of a Generation*. Londres: Financial Times. FT Series. Available from https://www.ft.com/content/194cd1c8-6583-11e8-a39d-4df188287fff.

Gerhard, F., Silva Júnior, J. T., & Câmara, S. (2019). Tipificando a economia do compartilhamento e a economia do acesso. *Revista Organização and Sociedade*, *26*(91), 796–814. doi: 10.1590/1984-9260919.

Godelnik, R. (2017). Millennials and the sharing economy: Lessons from a "buy nothing new, share everything month" project. *Environmental Innovation and Societal Transitions*, *23*, 40–52. doi: 10.1016/j.eist.2017.02.002.

Groen, W. P., & Maselli, I. (2016). The impact of the collaborative economy on the labour market. *CEPS Special Report*, *138*, 1–35. Available from https://www.ceps.eu/publications/impact-collaborative-economy-labour-market.

Haig, B. D. (2005). An abductive theory of scientific method. *Psychological Methods*, *10*(4), 371–388. doi: 10.1037/1082-989X.10.4.371.

Hamari, J., Sjöklint, M., & Ukkonen, A. (2015). The sharing economy: Why people participate in collaborative consumption. *Journal of the Association for Information Science and Technology*, *67*(9), 2047–2059. doi: 10.1002/asi.23552.

Israel, G. D. (1992, November). *Determining sample size*. Florida: IFAS/University of Florida. Available from https://www.tarleton.edu/academicassessment/documents/Samplesize.pdf.

Joyce, K., Pabayo, R., Critchley, J. A., & Bambra, C. (2010). Flexible working conditions and their effects on employee health and wellbeing. *Cochrane Database of Systematic Reviews*, (2). doi: 10.1002/14651858.CD008009.pub2.

Junge, B., & Tavares, A. P. A. (2020). Subjetividades móveis: Sentidos de periferia e percepções da crise entre motoristas de Uber em Recife. *Novos Estudos CEBRAP*, *39*(1), 103–123. doi: 10.25091/s01013300202000010003.

Kovács, G., & Spens, K. M. (2005). Abductive reasoning in logistics research. *International Journal of Physical Distribution and Logistics Management*, *35*(2), 132–144. doi: 10.1108/09600030510590318.

Lameira, F. L. M., & Ribeiro, T. G. (2020). Uber: trabalho precarizado em tempos de economia do compartilhamento na cidade de Belém. *Complexitas – Revista de Filosofia Temática*, *4*(1), 79–84. doi: 10.18542/complexitas.v4i1.8047.

Leite, M. D. P. (2008, October 27–31). O trabalho e suas reconfigurações: Conceitos e realidades. *32th Encontro Anual da ANPOCS*. Caxambu, MG. [Paper presentation]. Available from https://www.anpocs.com/index.php/papers-32-encontro/gt-27/gt40-2/2713-marcialeite-o-trabalho/file.

Leme, A. C. R. P. (2020). A nuverização do trabalho plataformizado: Da captura da cooperação social à limitação de direitos sociais vistos a partir das fases do capitalismo. *Revista Brasileira de Direito Social*, *3*(1), 129–150. Available from https://rbds.ieprev.com.br/rbds/article/view/130/102.

Lima, J. C., & Bridi, M. A. (2019). Trabalho digital e emprego: A reforma trabalhista e o aprofundamento da precariedade. *Caderno CRH*, *32*(86), 325–342. doi: 10.9771/ccrh.v32i86.30561.

Lima, T., Cavalcante, K., & Costa, M. (2011). Informalidade: Escolha ou falta de opção? Um estudo no mercado terceirão de João Pessoa/PB. *3rd Encontro de Gestão de Pessoas e Relações de Trabalho*, João Pessoa, PB. [Paper presentation]. Available from http://www.anpad.org.br/admin/pdf/2011_ENGPR110.pdf.

McKinsey Global Institute (2016). Independent work: Choice, necessity, and the gig economy. Available from http://www.mckinsey.com/global-themes/employment-and-growth/independent-work-choice-necessity-and-the-gig-economy.

Montgomery, M. (2015, March 11). *Millennials Insist the Future will be Shared*. TechCrunch. Available from http://techcrunch.com/2015/03/11/millennials-the-future-will-be-shared/.

Moraes, R. B. D. S., Oliveira, M. A. G. D., & Accorsi, A. (2019a). Uberização do trabalho: A percepção dos motoristas de transporte particular por aplicativo. *Revista Brasileira de Estudos Organizacionais*, *6*(3), 647–681. doi: 10.21583/2447-4851.rbeo.2019.v6n3.216.

Moraes, R. B. D. S., Oliveira, M. A. G. D., & Accorsi, A. (2019b). Uberização no trabalho no contexto da economia do compartilhamento: Um estudo sobre o trabalho dos motoristas de transporte particular por aplicativo em São Paulo. *Revista Interface*, *16*(2), 71–92. Available from https://ojs.ccsa.ufrn.br/index.php/interface/article/view/1107.

Nan, Z. (2017, March 23). Report says China's sharing economy to grow 40% annually. *ChinaDaily*. Available from https://www.chinadaily.com.cn/business/2017-03/23/content_28647692.htm#:~:text=The%20report%2C%20released%20by%20the,roughly%2020%20percent%20by%202025.

Nurvala, J. P. (2015). "Uberisation" is the future of the digitalised labour market. *European View*, *14*(2), 231–239. doi: 10.1007/s12290-015-0378-y.

Oltramari, A. P., & Piccinini, V. C. (2006). Reestruturação produtiva e formas de flexibilização do trabalho. *Organizações and Sociedade*, *13*(36), 85–106. doi: 10.1590/S1984-92302006000100005.

Owyang, J., Tran, C., & Silva, C. (2013). *The Collaborative Economy: Products, Services, and Market Relationships have Changed as Sharing Startups Impact Business Models*. San Mateo: Altimeter Group.

Parker, K., & Igielnik, R. (2020, May 14). *On the Cusp of Adulthood and Facing an Uncertain Future: What we know about Gen Z so Far*. Pew Research Center. Available from https://www.pewsocialtrends.org/essay/on-the-cusp-of-adulthood-and-facing-an-uncertain-future-what-we-know-about-gen-z-so-far/.

Pasquale, F. (2015). *The Black Box Society: The Secret algorithms that Control Money and Information*. Cambridge: Harvard University Press.

Petrini, M., Freitas, C., & Silveira, L. (2017). A proposal for a typology of sharing economy. *Revista de Administração Mackenzie*, *18*(5), 39–62. doi: 10.1590/1678-69712017/administracao.v18n5p39-62.

Polkowska, D. (2019). Does the app contribute to the precarization of work? The case of Uber drivers in Poland. *Partecipazione e conflitto*, *12*(3), 717–741. doi: 10.1285/i20356609v12i3p717.

PricewaterhouseCoopers (2015). *The sharing economy*. PricewaterhouseCoopers. Consumer Intelligence Series. Available from https://www.pwc.com/us/en/industry/entertainment-media/publications/consumer-intelligence-series/assets/pwc-cis-sharing-economy.pdf.

Rifkin, J. (2011). *The third industrial revolution: How lateral power is transforming energy, the economy, and the world*. New York: Palgrave Macmillan.

Ross, D. (2014, March 26). *Millennials don't Care about Owning Cars, and car Makers can't Figure out why*. Fast Company. Available from http://www.fastcoexist.com/3027876/millennials-dont-care-about-owning-cars-and-car-makers-cant-figure-out-why.

Sasaki, M. A. (2009). *Trabalho informal: Escolha ou escassez de empregos? Estudo sobre o perfil dos trabalhadores por conta própria*. Dissertação de Mestrado em Psicologia Social, do Trabalho e das Organizações. Universidade de Brasília. Available from https://repositorio.unb.br/handle/10482/4822.

Schor, J. (2014, October). Debating the sharing economy. *Great Transition Initiative*. Available from http://www.greattransition.org/publication/debating-the-sharing-economy.

Schor, J., & Attwood-Charles, W. (2017). The "sharing" economy: Labor, inequality, and social connection on for-profit platforms. *Sociology Compass*, *11*(8), e12493. doi: 10.1111/soc4.12493.

Sharam, A., & Bryant, L. (2017). The uberisation of housing markets: Putting theory into practice. *Property Management*, *35*(2), 202–216. doi: 10.1108/PM-06-2016-0023.

Silva, J. C. T., & Cecato, M. A. (2017). A uberização da relação individual de trabalho na era digital e o direito do trabalho brasileiro. *Cadernos de Dereito Actual*, 7, 257–271. Available from http://www.cadernosdedereitoactual.es/ojs/index.php/cadernos/article/view/227.

Slee, T. (2015). *What's Yours is Mine – Against the Sharing Economy*. New York: OR Books.

Stanford, J. (2018). *Subsidising Billionaires Simulating the Net Incomes of UberX Drivers in Australia*. Canberra: The Australia Institute.

Tabcum, S. Jr (2019, March). *The Sharing Economy is still Growing, and Businesses should take Note*. Forbes. Available from https://www.forbes.com/sites/forbeslacouncil/2019/03/04/the-sharing-economy-is-still-growing-and-businesses-should-take-note/#4121e0ac4c33.

Ticona, J., & Mateescu, A. (2018). Trusted strangers: Carework platforms' cultural entrepreneurship in the on-demand economy. *New Media and Society*, *20*(11), 4384–4404. doi: 10.1177/2F1461444818773727.

Tilford, C. (2018, June). The millennial moment: In charts. In *The millennial moment: The business of a generation*. Financial Times. FT Series. Available from https://www.ft.com/content/f81ac17a-68ae-11e8-b6eb-4acfcfb08c11.

Vieira, K. C., Paiva, A. L., Alcântara, V. C., & Rezende, D. C. (2020). Abrindo caixas-pretas das inovações disruptivas: Controvérsias envolvendo a Uber em Belo Horizonte. *Revista de Administração Mackenzie*, *21*(3), 1–27. doi: 10.1590/1678-6971/eramr200018.

Vosgerau, B. R., & Comar, R. T. (2019). As novas relações de trabalho, precarização e a dignidade do trabalhador no modelo Uber. *Percurso*, *2*(29), 311–332. doi: 10.21902/RevPercurso.2316-7521.v2i29.3500.

Zoepf, S. M., Chen, S., Adu, P., & Pozo, G. (2018, February). *The Economics of Ride-hailing: Driver Revenue, Expenses, and Taxes*, *5*. CEEPR WP. Available from https://fuelandtiresaver.com/wp-content/uploads/2020/03/Zoepf_The-Economics-of-RideHialing_OriginalPdfFeb2018.pdf.

Further reading

Organisation for Economic Co-operation and Development (2019). Average usual weekly hours worked on the main job. Available from https://stats.oecd.org/Index.aspx?DataSetCode=ANHRS#.

Corresponding author
Jeová Torres Silva Júnior can be contacted at: jeova.torres@ufca.edu.br