Digital platforms and urban flows: dispersion and control of precarious work

Plataformas digitais e fluxos urbanos: dispersão e controle do trabalho precário

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Abstract

The recent spread of digital platforms has produced new dynamics in the relationship between work and the city. The aim of this article is to analyze urban flows of app-based delivery workers in the São Paulo metropolis to explore empirically the conditions under which this work is inscribed in the city. We argue that the dispersion of thousands of workers throughout the metropolis, supported by an algorithmic management, can only be carried out through an incisive control of time, territory, and of the work itself, as well as through the workers' intense vulnerability. Using data obtained by means of ethnographic incursions, interviews, and by the development of cartographic material, we seek to discuss the dynamics of (re)production of central-peripheral inequalities along with work that is spatialized under the centralized management of platform companies.

Keywords: digital platforms; work; urban flows; control; precariousness.

Resumo

O espraiamento recente das plataformas digitais tem provocado novas dinâmicas da relação entre trabalho e cidade. O objetivo deste artigo é analisar os fluxos urbanos dos entregadores de aplicativos pela metrópole de São Paulo para explorar empiricamente as condições em que esse trabalho se inscreve na cidade. Argumentamos que a dispersão de milhares de trabalhadores pela metrópole, ancorada por uma gestão algorítmica, somente se realiza por um controle incisivo do tempo, do território e do próprio trabalho e pela intensa vulnerabilidade dos trabalhadores. Mobilizando dados obtidos por meio de incursões etnográficas, entrevistas e elaboração de material cartográfico, buscaremos discutir as dinâmicas de (re)produção das desigualdades centro-periferia de um trabalho que se espacializa sob gestão centralizada das empresas de plataforma.

Palavras-chave: *plataformas digitais; trabalho; fluxos urbanos; controle; precariedad*e.

Introduction

Work controlled by digital platforms is a relatively recent phenomenon and has gained greater prominence in Brazil in the last decade. Despite being a widely globalized phenomenon, it takes on particular characteristics in a national context where broad segments of the urban working class have always coexisted with high degrees of social vulnerability and economic insecurity, situations exacerbated by processes of neoliberalization and the erosion of the fragile labor protection legislation, achieved through decades of social struggles. Given its expression and speed of expansion, the platformization of work has become a privileged subject of study regarding precarization, subordination, and deregulation, as well as raising questions about the impacts of the proliferation of platform-managed workers on the urban life of major metropolises.

According to Guimarães (2021), based on a survey by the Locomotiva Institute in 2021, approximately 11.4 million workers used apps as a supplementary or primary source of income in Brazil. As noted by Machado and Zanoni (2022), this rise in platform-mediated forms of work can be explained by three interconnected processes. The first of these processes is related to the spread of internet access and new information and communication technologies, giving rise to new business models and ways of organizing and exploiting labor. In this context, and playing a significant role in the proliferation of digital platforms, is the notable increase in smartphone consumption in Brazil, especially since 2012, as reported by Reuters/G1 (2013), as well as the multitude of apps offering various services through digital platforms.

The second process responsible for driving labor relations through digital platforms pertains to the context of neoliberal reforms, as noted by Cardoso and Azaïs (2019), which caused Brazilian workers to lose rights like never before in such a short period, particularly in the year 2017 when laws were passed that removed obstacles to outsourcing in all economic sectors and the Labor Reform, which legitimized both old and new labor exploitation practices. As Filgueiras (2021) details, we have seen the spread of corporate narratives that legitimize and promote the idea that flexibility is necessary for increased formalization and job creation. The emerging figures of platform workers proliferate in harmony with this scenario of labor relations becoming more flexible, the weakening of relatively stable contractual forms, and the erosion of worker protections (Carelli and Oliveira, 2021).

The last factor relates to the social and economic crisis deepened by the COVID-19 pandemic, catalyzing processes that were already underway, linked to job precarization and informalization. Unemployment and the need to supplement income led many workers to engage in platform work to make a living. This was the case for hundreds of thousands of app-based delivery workers. Research has shown an increase in demand for this activity (Abílio, Amorim, and Grohmann,

2021; Machado and Zanoni, 2022; Véras de Oliveira and Festi, 2023), which remained uninterrupted as it was considered essential. Therefore, it represented an opportunity for those who found themselves without work or with insufficient income. With the increase in the number of workers, there was a decrease in earnings and an increase in working hours for the majority of delivery workers (Abílio, Amorim, and Grohmann, 2021).

This recent proliferation of digital platforms, which engage thousands of workers solely in the metropolis of São Paulo,[1] especially in transportation and delivery apps, while exposing existing inequalities in urban space, also generates new spatial practices and everyday relationships in the city, reshaping urban morphologies that have been gaining significant prominence.

In this context, the aim of this article is to describe and analyze new dynamics in the relationship between work and the city triggered by the expansion of platform--based work. Specifically, it will highlight the urban flows of app-based delivery workers throughout the metropolis of São Paulo. These workers, through their movements between residential areas and central locations with high delivery potential, reveal new mechanisms for (re)producing center-periphery inequalities. These urban flows will be analyzed through their involvement in work relationships that occur through the dispersion of thousands of just-in-time workers (Abílio, 2020a; De Stefano, 2016) across the metropolis, anchored by algorithmic management that can only be effectively achieved through rigorous control of time, territory, and the work itself.

The research has been developed within the scope of the international cooperation project Fapesp-ANR "Grey zones and Territories: transformation of work and the emerging figure of Platform Worker. A France-Brazil comparison" (REGREYZ&Co),[2] whose overall purpose is to use the heuristic approach of the “grey zones of work” to investigate the modulations between old and new forms of precarity embedded in the living conditions and the activity of app-based delivery workers in the distinct contexts of Brazil and France. For this purpose, immersion in the daily routines and work practices has been a fundamental effort to prospect empirical material enabling the comparative endeavor. In this text, we present a portion of the empirical work carried out in São Paulo, through ethnographic fieldwork and interviews conducted in various delivery worker gathering points, from January 2022 to March 2023. During this period, thirty-four semi-structured interviews and over a hundred informal conversations with delivery workers were conducted. Utilizing data provided by these workers and gathered through documentary research on platform companies, it was also possible to create the cartographic material that will be presented.

The article is divided into three sections, in addition to the introduction and concluding remarks. The first section briefly addresses the everyday dynamics of work, demonstrating that the flexibility and informality of platform-based work relations are also achieved through a sharp control over time and space. In the second section, we aim to detail and represent the urban flows, particularly those of bicycle delivery workers, by connecting the

work within and through digital platforms, the living conditions of these workers, and the urban space itself. Finally, in the last section, an important contradiction that runs through digital platform work is highlighted: while highly precarious forms of labor engagement are produced and reproduced, there is also consent, or at least resignation, on the part of these delivery workers, contributing to legitimizing and disseminating new forms of worker control, management, and subordination.

Platformized work: control through instability

Heiland (2021), drawing from the Marxist formula, argues that a central dimension of platformized delivery services lies in the "annihilation of space by time" (Marx, 2015), as the execution of the last mile, the delivery of the product into the hands of the customer, poses a significant challenge for the sector. According to the author, this moment becomes a kind of bottleneck as it proves more resistant to rationalization and control, being one of the most costly stages of the logistical process. This is the technical and economic challenge that app-based companies invest in overcoming by streamlining coordination between restaurants, delivery workers, and consumers. The algorithmic management of labor in the delivery sector aims precisely at cost reduction and greater control over the worker in carrying out this task.

A number of studies have therefore discussed the mechanisms that enable the control of the dispersed mass of workers engaged in this network (Griesbach, Elliott-Negri, and Milkman, 2019; Veen, Barratt, and Goods, 2020; Abílio, Amorim, and Grohmann, 2021; Heiland, 2021). Among the highlighted aspects, the technological structure of algorithmic control and the systems of evaluations, rewards, and blocks that allow for extremely flexible and arbitrary workforce management stand out. Central to this is the remuneration model in the form of payment for completed deliveries to workers who are constantly available, in other words, the mobilization of just-in-time workers (De Stefano, 2016; Abílio, Amorim, and Grohmann, 2021). The subordination of labor to capital is presented as a relationship between two free actors operating in the supply and demand market. Payment is made only for the service actually performed, relieving the company from covering the "downtime" during the shift, during which delivery workers often remain available for more than 10 hours, sometimes without a weekly break.

According to data from internal research commissioned by iFood (the largest company in the sector in Brazil) and conducted by the Locomotiva Institute, as revealed by Agência Pública in 2022,[3] 61% of the platform's registered delivery workers reported working 7 days a week. Furthermore, approximately 47% of the delivery workers stated that they work more than 10 hours a day, with 17% working more than 12 hours a day (Cícero, 2022). These numbers not only reflect an extension of the working day but also the breakdown of the boundaries that define such a workday, with the fundamental limit now being the willingness and physical capacity of the workers.

Platform companies claim to be mere intermediaries between customers and workers, who are referred to as "partners" or "collaborators," supposedly having the

autonomy to work when, how, and if they wish. Therefore, there would be no subordination relationship or establishment of an employment bond. However, workers effectively rely on digital platforms for their economic livelihood, and a clear power asymmetry is identified between the companies and the workers (Kalil, 2020). These workers are subject to constant evaluations and ranking of their activity (Figures 1 and 2), without knowledge and control over the rules that affect the distribution of work (such as who will receive a particular delivery), their compensation, or the continuity of their own work.

Figure 1 – Screenshot of the Rappi app

Screenshot of the Rappi app provided by a delivery worker in January 2023. It shows the worker's ranking in the app, with an 80% acceptance rate, 88% completion rate, and a customer rating of 4.9. There is also a quantification of the hours worked in relation to the hours that were previously scheduled in the app.

Figure 2 – Screenshot of the iFood app

Screenshot of the iFood app provided by a delivery worker in April 2022. The completion rate for this delivery worker is 53%, which, according to him, already makes it difficult to receive orders through the app

Thus, another crucial aspect of the platformized workforce management process is identified in the platform companies' ability to "define the rules of the game without fixing them" (Abílio, Amorim, and Grohmann, 2021, p. 39). This extreme flexibility in the rationalized use of labor in time and space is achieved through algorithmic labor management, which mobilizes automated processes for the collection and processing of large amounts of data, encompassing both georeferenced consumption dynamics and patterns of behavior, movements, and interactions of the delivery workers with the platforms.

From this volume of information and the technical capacity to process it, coupled with the condition of a workforce without contracts and rights, platforms are able to influence the increase, decrease, spatial location, and working hours of this workforce. To do this, they mobilize resources such as constant changes in compensation rates, arbitrary blocks, and deactivations, as well as the establishment of dynamic zones with increased bonuses in places and times of higher demand (especially in situations that would discourage work, such as heavy rain and flooding).[4]

The quantity of deliveries can vary significantly, depending on several factors, including: a) demand and distribution of orders in delivery areas; b) the length of time each worker has been in the activity, as more experienced ones tend to receive more orders if they have a good rating on the app; c) the day of the week, with more orders on Fridays and weekends, and the day of the month, with more orders at the beginning of each month when families typically receive their payments; d) the time of day, with higher demand in the evening in residential areas and for lunch and breakfast in commercial areas; e) the daily work hours of each worker, which can exceed 16 hours; f) the physical capacity and experience of the bicycle delivery worker, which involves aspects such as ease of navigating city spaces and better handling of obstacles in picking up and, especially, delivering goods; g) the type of registration of the delivery worker (whether as nuvem or OL worker, as will be detailed in the next section of the article).

It is evident, then, that these just-in-time workers are subjected to significant instability in their work. There is a complete absence of regulations regarding work hour limits and minimal guarantees of safe working conditions. The risks of accidents are quite apparent, especially among motorbike delivery workers. According to Ribeiro (2022), based on data from the Parliamentary Commission of Inquiry on App-Based Services of the São Paulo Municipal Council, motorbike delivery workers accounted for 20% of those hospitalized at the Institute of Orthopedics and Traumatology at the Hospital das Clínicas of the University of São Paulo in 2015 and 2016. However, in 2022, they represented 70% of trauma sector patients (Ribeiro, 2022).

The costs of the necessary tools for performing the activity are typically the responsibility of the workers. Delivery workers need to cover a range of essential equipment that is rarely provided by platform companies.

These include the most obvious items such as modes of transportation (motorcycles and bicycles), as well as smaller but crucial items for the job, such as a thermal bag, helmet, raincoat, and a smartphone with accurate GPS, long-lasting battery, and paid mobile internet access, in addition to daily meals. The combination of these costs significantly cuts into the earnings of these delivery workers, which prompts them to work longer hours to compensate for this reduction.

The time dedicated to work becomes even more extensive when we consider that a significant portion of app-based delivery workers in São Paulo reside in the city's outskirts, as identified in our research and other investigations (Abílio, 2020a; Braga and Silva, 2022). In addition to the unpaid time they are available for the platforms (wait times between deliveries and during deliveries while waiting for the order to be handed over by the restaurant or received by the customer), delivery workers, especially those who use bicycles, also face hours of commuting from their residential areas to the central hubs with higher demand for delivery services (areas with higher purchasing power). It is in this scenario that we identify the importance of thinking about the platformized management of labor and the reproduction of urban inequalities in an interconnected way. In the following section, we will present with greater emphasis the data obtained in our field research, which empirically demonstrates the depth of this connection.

Daily work dynamics: time and space control

iFood has established itself as the leading app-based delivery company in Brazil, with over 200,000 registered workers.[5] Therefore, the vast majority of delivery workers we encountered in the field are affiliated with this company. It's important to note that there are two ways to engage in delivery activities with iFood: nuvem (cloud) or OL, which stands for Logistic Operator. The logistic operator is an intermediary company between the platform company and the delivery workers, responsible for specific zones within the city. Nuvem delivery workers can deliver wherever they prefer and become available for delivery as soon as they log in to the app, following registration approval. Payment is made weekly, and they receive deliveries and payments directly from the platform. On the other hand, OL delivery workers can only pick up orders in the designated areas and can choose to be paid daily (with a fee), weekly, or bi-weekly. OL workers, however, have priority in the distribution of orders, according to consensus among interviewed delivery workers (both OL and nuvem).

Many delivery workers, as observed in fieldwork, opt for the OL system in order to quickly gain registration approval, receive more deliveries per day than nuvem delivery workers, or because they need daily payments. An employee of the OL company assigns each

delivery worker to their shift. Through surveys created in Google Forms and sent in WhatsApp or Telegram groups, delivery workers indicate the hours they prefer to work on a given day or the next day. The OL company then designates, in the iFood app, which delivery workers are responsible for a particular area during that shift. Because they are responsible for ensuring that a certain number of delivery workers are available in each zone on the days and times specified by iFood, the OLs receive a percentage of each delivery as compensation.[6]

According to data provided by iFood to Agência Pública, 20% of its workers were engaged as OLs in 2020. However, fieldwork and interviews seemed to indicate a higher and increasing proportion of OLs, at least in the second semester of 2022. Interviews with OL leaders conducted in São Paulo in June 2022 indicated that the percentage of delivery workers engaged as OLs ranged from 30% to 50% in comparison to those engaged as nuvem workers. According to the interviews, in the city of São Paulo, there are between 15 to 700 workers per OL company.

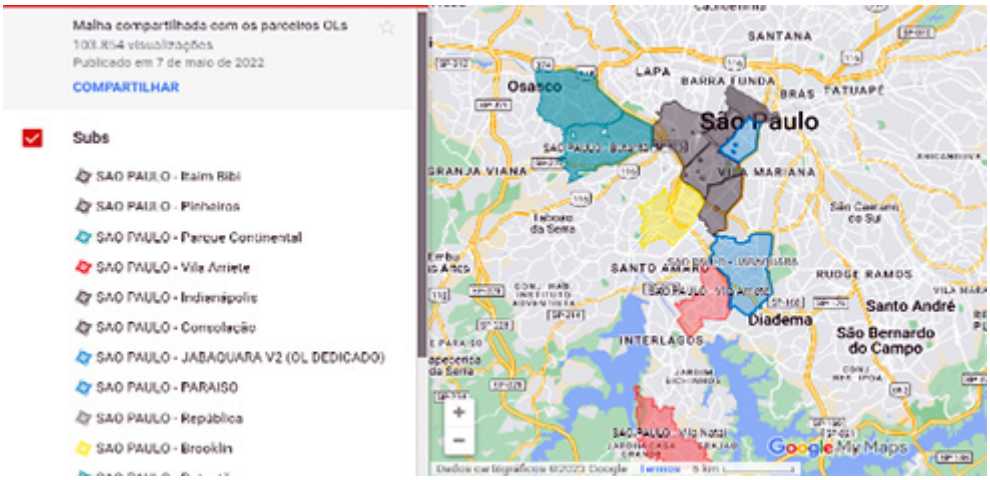
Many delivery workers, especially in the second half of 2022, also reported switching to the OL system because they were no longer receiving calls as nuvem workers. Additionally, the fact that nuvem workers received weekly payments while OL workers could receive daily payments, at least since mid-2022, seemed to attract many delivery workers to this form of engagement. In this regard, vulnerability in daily life can lead to this form of engagement, not only because they receive more deliveries as OL workers but also because they need a faster return on their earnings. Workers who are paid daily, in some OLs, may have only one day off per week and need to fulfill all the chosen shifts, unlike those who opt for weekly or even bi-weekly payments, who in some OL companies end up having more flexibility to have more days off and not work a shift if they don't want to. It can be concluded from this that the greater and more immediate the worker's needs, the higher their degree of subordination to the OL company.

The monopoly of iFood's deliveries in the city of São Paulo[7] and the observed increase in the engagement of workers in the OL system at least until December 2022[8] are indications of the limits of this instantaneity and algorithmic self-sufficiency of digital platforms. iFood intensifies its control over a mass of just-in-time workers – and, at the same time, highlights the limits of algorithmic management – by defining zones and ensuring that there is a certain number of delivery workers in each of them through the human and close control carried out by the OL companies. These OLs reveal sophisticated strategies of territorial control.

The map in Figure 3 belongs to an OL company that operates in São Paulo and is shared with delivery workers through a Google Forms questionnaire, allowing them to choose in which submarket they want to work.

In our fieldwork, it was possible to observe not only control over territory but also strong control over time. There is an imposition of how many minutes the delivery worker has to reach the restaurant or the customer's location (under the risk of penalties) (Figure 4), as well as control that the delivery workers need to have over their own work: in the case of Rappi, it is necessary to reserve the hours during which they will be logged into the app (Figure 5), or in the case of iFood's

Figure 3 – Zones delimitation by a Logistics Operator



Screenshot from Google Maps, accessed via a link (with 103,854 views in March 2023) shared with delivery workers on WhatsApp for them to choose from which submarket they want to pick up orders for delivery.

bicycle delivery workers, schedule the pickup of the shared bike they will use the next day (Figure 6). In the latter case, delivery workers often reported the need to access the app at midnight, under the risk of not having a bike available the next day. For OL-engaged workers, it is also necessary to respond to daily surveys on WhatsApp or Telegram groups with their work shifts. Some of the interviewed delivery workers mentioned setting alarms on their phones to wake up and not miss the survey in order to secure their shifts (Figure 7).

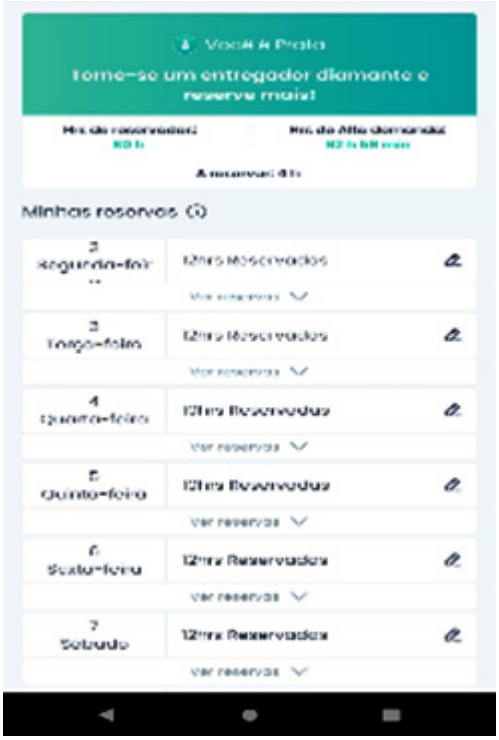
Through the various forms of work and territory control employed by these platform companies, it can be argued, as suggested by Tozi (2020), that digital platforms are also territorial platforms, managing both just-in-time and just-in-place work (Tozi, Duarte, and Castanheira, 2021). The plasticity of flexible accumulation (Harvey, 2008) is implemented through the updating of elements associated with Fordist rigidity, such as the stringent control of time and space. In this platformized work, however, the formal mediations and devices of coercive labor regulation that characterized the development of the industrial economy, such as the time clock, give way to other sophisticated forms of control. While no longer marked by confinement to the workplace, these controls involve new strategies for managing time and space, which are more flexible and concealed.

Workers engaged with and through digital platforms not only need to manage their own time (making reservations in bike-sharing apps, scheduling their work hours for the next day, extending their work shifts, and intensifying their labor when there are bonuses, etc.) but

Figure 4 – Time specified by the iFood app for the delivery worker to cover

Screenshot from iFood, provided by a delivery worker in June 2022. Highlighted is the time the screenshot was taken and the time by which the delivery worker should arrive at the restaurant to pick up the order.

Figura 5 – Reservation of time slots for work on the Rappi app



Screenshot provided by a delivery worker in January 2023, indicating work hours from 10 to 12 hours per day. Scheduling of work hours is necessary for delivery workers using Rappi.

Figura 6 – Shift reservation for workers engaged in the OL system of iFood

Screenshot from WhatsApp, provided by a delivery worker, reminding them of the times when they can fill out a Google Forms questionnaire to inform their work hours. Since each OL company has a limited number of delivery workers per zone in each shift it is important for workers to fill out the surveys as soon as they become available in order to try to secure their desired hours and zones

Figura 7 – Reservation of shared bicycles from the iFood Pedal base

Screenshot from the iFood Pedal app. The name and code have been omitted to protect the identity of the delivery worker.

also adopt strategies related to territory: where to wait for more orders and which tactics to choose regarding their own movements. As will be detailed in the next section, these tactics in space and time practiced by delivery workers are directly influenced by the centralization and management of these companies over the city, which define or contribute to configuring the work territories of these workers throughout the metropolis. It is also worth noting that these companies have access to vast georeferenced data generated by the daily movements of thousands of workers on the city's public streets. These pieces of information are compulsorily provided by the workers during the course of their work and reveal a lot about urban dynamics (such as urban routes, the use of bike lanes for bicycle delivery workers, and traffic patterns, especially for motorcycle delivery workers).

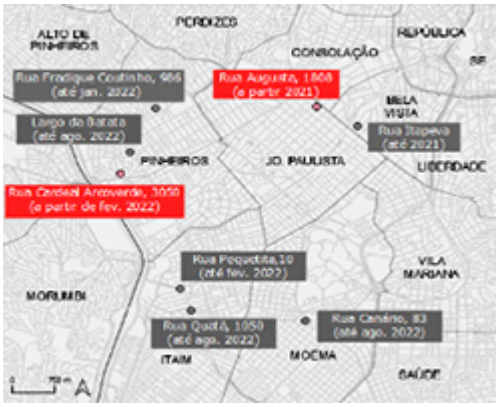
As Abílio (2020b) states, these platform-based companies can execute their strategies through mechanisms of dispersion, centralization, and control. The control of territory carried out by platform companies is anchored in a constant effort to minimize their costs, which are often passed on to the workers themselves, and the ownership of fixed assets. In this sense, while these platform companies rely on a high degree of technological development, enabling the control and management of a vast contingent of just-in-time workers, they also develop highly flexible territorial strategies. Emblematic cases include the sudden exits of ride-sharing company Cabify from Brazil in June 2021 and Uber Eats, a food delivery service, in March 2022.

In fieldwork conducted throughout the year 2022, there was also a rapid reconfiguration of the locations of iFood's shared bicycle stations in São Paulo. In Figure 8, it can be seen that in 2022 alone, five electric bicycle pickup bases for iFood delivery workers were deactivated, and at least until March 2023, they were concentrated only in Pinheiros (Cardeal Arcoverde Street) and Jardim Paulista (Augusta Street), indicating a greater centralization of urban flows of these workers to access their work equipment. These relatively agile changes, including the closure of one base and the opening of another, are only possible due to the use of temporary, easily disassembled, and low-cost structures (Figure 9).[9]

Urban flows and the center-periphery relationship

The emerging figures of platform workers produce and materialize urban flows based on the need to move quickly through urban space. These journeys can be explained by the contents of the urban space and the just-in-time working conditions of the delivery workers. Faced with the precariousness of the activity (in which they have to bear the risks

Figure 8 – Map of deactivated and active iFood Pedal bases in 2023



Cartographic elaboration by the authors. The addresses of iFood Pedal bases were obtained from fieldwork conducted from January to September 2022 and from the website: https://entregador.ifood.com.br/.

Figure 9 – Photo of an iFood Pedal base on Augusta Street

Bicycle pickup point operating with a temporary structure at the back of a parking lot on Augusta Street. Photo by the authors on February 14, 2022.

and costs) and the low pay of on-demand work (for each task/delivery carried out), these delivery workers try to intensify the use of their own labor power, optimizing their journeys and extending their daily working hours. To do this, they try not only to be in regions with a higher demand for orders, increasing the chances of receiving more deliveries per day and reducing the interval between each one, but also in regions where bonuses are more frequent, in order to increase what they earn per delivery.[10]

In this sense, there are three elements that help to explain commuting in search of a reduction in unproductive work time, both for bicycle and motorcycle delivery workers. The first is the obvious social inequality between delivery consumers, especially of food, and those who work through digital platforms. Of course, delivery workers can also be consumers at certain times. But what we want to highlight here is that, in addition to the fact that delivery customers request deliveries from their homes, in general, in more upscale areas of the metropolis (Map 2), they also place orders at their workplaces, especially at lunch and breakfast, and in important centralities of the corporate sector (such as Faria Lima and Luís Carlos Berrini avenues), which reveals spatial configurations of urban inequalities.

The second element is the concentration of restaurants in certain areas of the metropolis, such as the Itaim Bibi and Pinheiros districts. Specifically with regard to bicycle delivery workers, it is crucial that they are not only in the areas with the highest demand for orders, but also in the areas where they will pick them

up (Map 2). This is because they make smaller deliveries, generally up to 3 km between the restaurant and the customer's home.

The concentration of restaurants contributes to creating "landing zones" for these couriers, such as in the vicinity or parking lots of shopping malls or in other places where they gather and wait for more orders – or, as they say, for the app to ring (Figures 10 and 11).[11]

The third element highlighted in this text is iFood's system of bonuses in specific areas of the city, known as "promo per zone". This system also contributes to the displacement of workers from different parts of the Metropolitan Region, not only where they can make more deliveries, but also where they can earn more in each one. According to information collected in fieldwork and on the map by Fioravanti (2022), a large part of the East Zone is not covered by these bonus areas. As a result, delivery workers have to commute every day from where they live, usually on the outskirts of the city, to the central areas where they can make deliveries.

Figure 10 – Photo of a motorcycle delivery workers landing zone

Waiting points in the parking lot of the Itaquera shopping mall, East Zone, in an area reserved for delivery workers, mostly motorcycle delivery workers. Photo by the authors, 7 Jan 2023.

Figure 11 – Photo of bicycle delivery workers landing zone

Barão de Itapetinga Street, in the city center, with a greater presence of bicycle delivery workers. Photo by the authors, 14 Mar 2022.

These journeys to the centralities of the metropolis, already represented by Fioravanti (2023) and discussed by Rizek, Rangel, and Fioravanti (2023), were stimulated by iFood's own website aimed at the delivery workers,[12] which, in the first half of 2022, highlighted the "top regions for delivery". Figure 12, based on images made available on the site, clearly shows that the city center and certain districts, such as Pinheiros and Itaim Bibi, are indicated as recommended regions for deliveries. Although the criteria adopted by iFood have not been explained, most of them coincide with those where there is already a concentration of deliveries, restaurants, shared bikes, and bonuses. Although the map of the East Zone (Sapopemba, São Mateus, Vila Prudente, and Água Rasa) and South Zone (Campo Grande, Socorro, Cidade Dutra, and Cidade Ademar) highlights regions recommended for delivery by bicycle, they do not have as much demand for orders and bonuses or any bike-sharing pick-up points.

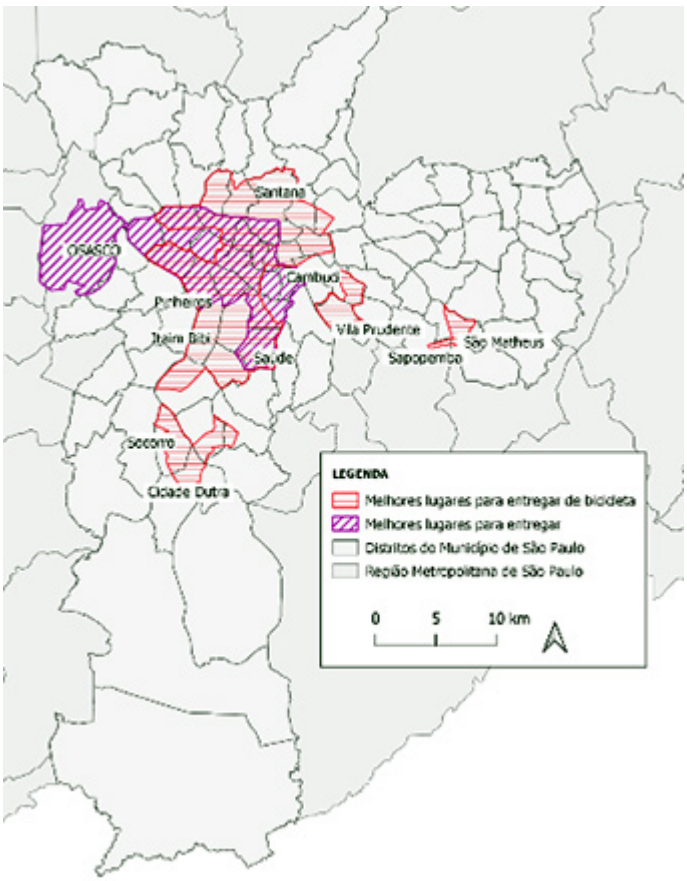
These precarious just-in-time workers spend their own time and resources looking for areas where they can make intensive use of their labor power, in a process in which the city itself becomes a workplace. The platform companies pay a minimal cost for the things that make it possible for these workers to flow through and within the city, in other words, infrastructure (such as urban roads, paid for by the state itself) and public services (also paid for by the worker, such as the transport used by cycle delivery workers to access bicycle collection points).

Even the payment of taxes is reduced, as there are a series of legal loopholes that allow these companies to proclaim themselves as technology companies rather than delivery companies. Tax on Services (ISS) is not paid in the cities where there are the most deliveries, but where the company's headquarters are located. The headquarters of iFood, Rappi, Loggi, and Uber are in Osasco, a municipality to the west of the Metropolitan Region, whose ISS is lower than that of São Paulo. By moving iFood's headquarters to Osasco, the city of São Paulo will lose R$82 million a year, according to Rodrigues (2021) based on data from the CPI dos Aplicativos.

The urban flows at each delivery

These just-in-time workers not only need to reduce waiting times by going where they can get paid the most, but they also try to manage and optimize the journeys made during deliveries, adopting strategies in time and space in relation to the use of their workforce, weighing up which deliveries they should accept based on the minimum rate offered, the distance involved (to the restaurant or to the customer's home), the route (more or less steep, in the case of bicycle deliverers, or with more traffic jams and traffic lights, in the case of motorcycle delivery workers) and the time stipulated by the app for each task (often insufficient considering the distance and the characteristics of the route).

Figure 12 – Best regions for delivery, according to iFood, 2022



Map created by the authors. The best regions for deliveries by bicycle were delimited by the authors based on an image available at: <htttps://entregregador.ifood.com.br/dicas-ifood/melhores-regioes-para-entregar-de-bike-em-são-paulo/>, published in January 2021. The best regions for deliveries in general (by motorcycle and bicycle), called "Top Places" by iFood, were delimited based on an image available at: <http://entregador.ifood.com.br/quero-fazer-parte/top-ligares/>, published in July 2020. iFood's criteria for the construction of both images were not explained.

Returning to the same area is necessary in the case of OL delivery workers, who have to pick up their orders in the sub-praças [sub-regions] to which they are destined (Figure 13). It's also an option for many nuvem delivery workers, who return to certain streets because they already know the restaurants and the routes to take, as well as having sociable relationships with other workers in certain "landing zones". As fieldwork has shown, many delivery workers try to return to areas they already know and avoid going too far, which would also make it difficult for those who use iFood Pedal to return their electric bikes and increase the risk of exceeding the four-hour limit for each pick-up. This strategy makes it easier to optimize journeys by dispensing with the use of GPS to reach the destination and indicating the places where most calls arrive. Knowing the area also helps them avoid restaurants that take too long to deliver the order. If the wait for the order exceeds 30 minutes, delivery workers are paid the equivalent of half the fee. For many, it would be more worthwhile to use that time on a faster delivery.

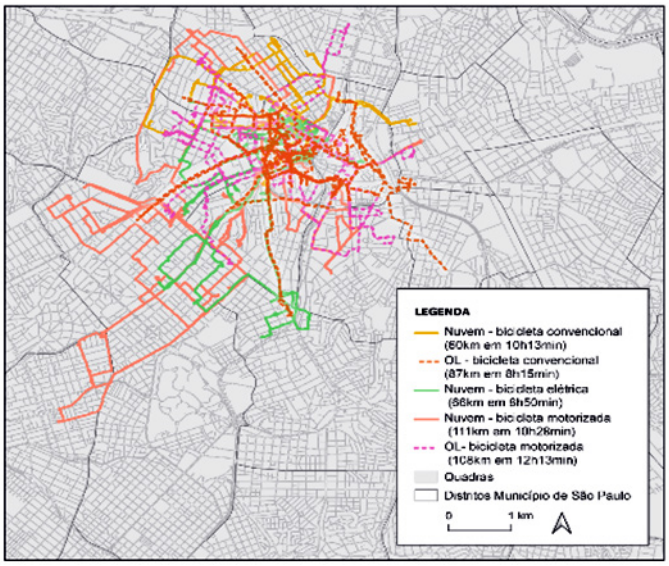
Figure 13 – One-day commute of a delivery worker engaged in an OL system, using a conventional (non-electric) bicycle

Screenshot from the Strava app. Image provided by delivery worker. It shows that the delivery worker always had to return to the República sub-praça to be available to receive new calls, even after taking the order to the Cambuci, Jardim Paulista and Campos Elísios areas

There is enormous dynamism and complexity in the world of commuting undertaken by delivery workers. In the center of São Paulo, people often use their own bicycles, also because of the flatter topography which makes the use of shared electric bicycles less necessary than in the Paulista Avenue area, for example. It is worth noting that it is only possible to walk or cycle along the city center's pedestrian zones, which explains the lower number of motorcycle couriers in certain parts of the central region. Similarly, in districts crossed by highways with intense traffic and high-speed cars, such as the Raposo Tavares highway (West Zone) and Radial Leste Avenue (East Zone), the use of motorcycles is much more frequent than bicycles.

In the central region, it's also common for many delivery workers to use motorized bicycles (conventional bicycles adapted with a combustion engine) or scooters. Although they cost more than electric bikes, these allow them to optimize the use of their own workforce and make more deliveries. The use of each means of transport (conventional shared bicycle, electric shared bicycle, motorized bicycle) also implies different daily journeys (Figure 14).

Figure 14 – Map representing the journeys made in a working day based on different forms of engagement by the same bicycle delivery worker, 2022



Map created by the authors, based on data and routes provided by an iFood delivery worker.

It is possible to observe that the use of a motorized bicycle allowed the delivery worker to cover a much longer distance each day, going from the city center to the Itaim Bibi district (111km as nuvem). That day, this worker made 20 deliveries. With a motorized bicycle, but linked to an OL, he made 27 deliveries, covering a shorter distance (108km), but over a longer working day (possibly because he chose the day before which shifts he would be logged in for and because he also received more orders and extended his working time to receive more). Both with a conventional bicycle and a motorized one, when he was engaged as an OL, this delivery man would return to the República sub-praça to make himself available for more deliveries (in the case of the OL) or even because he already knew the area (in the case of the nuvem). The use of the conventional bicycle, whether as a cloud or as an OL, was accompanied by a shorter daily working day, possibly due to the physical strain. As a nuvem, with a conventional bicycle, he worked almost 2 hours longer than as an OL, probably in an effort to make more deliveries, which, as an OL, he gets in a shorter time.

The transit of these workers is permeated by a series of constraints so that they can even ensure that their work is guaranteed: they travel quickly through the city but often face difficulties in actually staying in certain places or passing through the spaces with dignity. Throughout 2022, it was possible to observe various conflicts in the use of space. In more than one field trip, workers commented that some of the sockets in the metro station are unplugged to prevent them from staying there while charging their cell phones. They also have to use the service entrance of most restaurants, where they also rarely have access to water, food, or even a place to sit while they wait for their order. When they pick up orders in shopping malls, most of the time they can't go in with their bags on their backs and have to leave them in the parking lot docks or even on the street. In Pinheiros, we were told that two parklets (restaurant areas with tables and chairs on the sidewalks) had been removed to prevent delivery workers from staying there after complaints from local residents. In Itaquera, meanwhile, a restaurant with a high demand for iFood deliveries blocked the mobile internet signal outside to prevent delivery workers from getting too close, forcing them to wait further away.[13]

Perceptions of work: subordination and consent

With sophisticated control technologies, platform companies have proved relatively efficient at masking the relationship of subordination. This has been promoted from treating workers as "partners" and carefully presenting the scope of the business - always as facilitators of the meeting between service providers and clients – to aspects of the practical execution of the work, in which workers, in theory, could choose when to work.

However, as already discussed, the costs of carrying out the work are passed on to the workers, who use their own motorcycles, bicycles, cell phones, internet services, and have to pay for transportation to the work

area and food during the working day. In this context of evident job insecurity, with long and uncertain working hours, and the "real subsumption" of delivery workers to the platforms (Abílio, 2019), it is nevertheless striking that many of the delivery workers have positive perceptions of their occupation.[14] In the field research, the dimensions of autonomy, freedom, and the possibility of earning a higher income than in other work situations were more than frequently highlighted.

> [...] *the good thing is that I'm self-employed, so I work for myself, I make my own timetable, I choose the day I come to work, if I want to take the day off I do, so I think I have more of a life, now, not in my old job, it was 14 hours a day (an hour for lunch and I did things beyond my job, here I just deliver and that's fine), so for me it's better, dangerous, but better.* (Bicycle delivery worker-woman)

> *I love deliveries too, you know? It's just like I say, I'd swap it* [for a registered job] *if it meant getting paid R$4,000. "But do you get paid R$4,000 on iFood?". No, I don't, but I have my freedom*. (Bicycle delivery-woman)

Abílio, Amorim, and Grohmann (2021) elaborate on this manifestation of autonomy in terms of "subordinated self-management", understood as a mode of subjectivation linked to processes of subordination in which subjects perceive themselves to be responsible for their own living conditions, converting their inventive survival strategies into resources appropriated by capital. This perspective is linked to an effort to think about the meanings of this work from a Global South and peripheral perspective. The authors identify, in the expansion of platform work, a generalization of peripheral lifestyles, whose management of survival in living conditions without guarantees modulates both the trajectories of the subjects and the structure of the labor market.

As already noted, the occupation of app-based delivery has expanded greatly during the crisis caused by the Covid-19 pandemic. In addition, the positivization of this work takes place in a context in which Brazil sees more than 8.6 million people unemployed, and around 38.6 million in informality in the last quarter of 2022 (IBGE, 2023). The category of delivery workers is growing, working long hours and risking their lives to earn an income between R$500.00 and R$1,000.00 a week, in a country where almost 33 million people are food insecure (II Vigisan, 2022). The general precariousness of living conditions is a relevant factor in the relative positivity of delivery workers' work.

Among the delivery workers interviewed during the survey, throughout 2022, and with both motorcycle and bicycle delivery workers, the issue of income appeared as one of the main reasons for taking up this job. If adverse situations in other jobs or even coincidences in their personal trajectories may have led them into these markets, it is because of their relative autonomy and the possibility of higher incomes that they justify staying in these activities. In fact, as noted, many manage to reach levels of income that they would find difficult to achieve as employees in the formal labor market, especially when aspects such as schooling, professional training, and formal qualifications are taken into account. As studies on ways of making a living in the urban

peripheries of São Paulo have shown (Telles, 2006; Rizek, 2012; Feltran, 2014), the classic forms of formal employment that mobilized generations in search of access to citizenship, dignity at work, social security, and mobility are no longer available to these workers.

Therefore, it is necessary to consider the place of platformized work in the occupational trajectories of these workers, most of whom are peripheral subjects. If, from the point of view of the processes of accumulation, the relative feeling of freedom can be interpreted as a mystification of the exploitation of labor by capital, considering the perceptions of the subjects allows us to grasp the experience and the symbolic and subjective dimensions of people of flesh and blood. As has already been observed in other studies (Braga and Silva, 20202), in many cases, the positivization of precarious and unprotected work appears to oppose precisely the situation of submission that characterizes salaried work, a condition of submission that is not only related to the hierarchy of functions within a company, but also to the inseparable subjective submission, which tends to be linked to the situation of selling one's workforce, especially in contexts of extreme inequality such as Brazil. It is a non-contractual obligation to submit to a whole set of offenses, humiliations, and reprimands perceived as unfair (Rangel, 2021).

Such perceptions about the concrete possibilities available in informal occupations or low-quality formal jobs were expressed by many of the bicycle and motorcycle entrepreneurs interviewed. Many of them had worked in occupations common among peripheral workers in the city of São Paulo: telemarketing operators, fast-food chain employees, security guards, and all sorts of informal jobs. The same discourses of frustration with daily life in low-paid jobs, pressure, demands, and experiences of disrespect from superiors were repeated in the testimonies. And, faced with this shortened horizon of possibilities for work that is considered decent, even the precarious and stigmatized activity of app delivery can take on a relatively positive veneer in the subjects' discourse. At the same time, the widespread vulnerability that marks the lives of these workers, constraining their aspirations, emerges as a condition of possibility for the expansion of platform work.

Final remarks

In such precarious work, these workers commute between their homes and the centralities with high potential for deliveries, as well as to each of the many deliveries they make each day. These are dynamics which, while they are responsible for reconfiguring ways of experiencing urban space, also reproduce center-periphery inequalities. The informality, flexibility, and precariousness of the work of delivery workers engaged by digital platforms contribute to intensifying costly center-periphery commutes and compromises part of their journey just so that they can try to guarantee or optimize the use of their own workforce.

The dispersal of these just-in-time workers takes place due to the strong centralization of platform companies in the

organization of urban workflows, through the establishment of priority delivery regions or regions where bonuses are more frequent. In the various field studies, interviews, and ethnographic incursions, it was possible to see that, while this dispersion is brought about by the most advanced technological resources, it also poses the need for strict control of time and space, both by the companies and, to a certain extent and compulsorily, by the workers themselves. It also highlights the limits of the refined and enigmatic control mechanisms of this algorithmic management of work, given the growing use of direct, close, and human forms of control and subordination, as evidenced by the actions of the OL companies.

This work, which operates in and through urban flows, is marked by great heterogeneity linked to living conditions, modes of transport, and various practices and forms of mediation. These are forms of labor engagement that, although distinct from traditional forms of exploitation and management of the workforce, are rigidly controlled and immersed in a precariousness that can be consented to and even legitimized. This is a process in which the concentrated dispersion of workers throughout the territory is carried out in a way that is strongly centralized by the platform companies, with the intense vulnerability that marks the lives of a large portion of the urban and peripheral working class as a condition of possibility

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Notes

(1) According to data provided to the Parliamentary Commission of Inquiry on App-Based Services of the São Paulo Municipal Council, there were 563,000 active app delivery workers registered in the city (Rodrigues, 2021). The Sindimoto SP (Union of Intermunicipal Motorcycle, Cyclist, and Mototaxi Messengers of the State of São Paulo) estimates that there are 280,000 app delivery workers (by motorcycle or bicycle) in the São Paulo metropolitan area (Saraiva, 2020).

(2) The project “Grey zones and Territories: transformation of work and the emerging figure of Platform Worker. A France-Brazil comparison” is funded through a partnership between the São Paulo State Research Foundation and the Agence Nationale de la Recherche (Fapesp process 2021/04086-3).

(3) Available at: <https://apublica.org/2022/08/ifood-nao-revelou-detalhes-da-jornada-de-trabalho-de-entregadores-na-cpi-dos-apps>. Accessed on: 5 Jan 2023.

(4) These bonuses are called promotions by the delivery workers. We obtained information from the iFood app on smartphones from couriers who reported that they received around R$3.00 more per delivery during periods and zones of promotions. This usually happened on rainy days and in regions and periods of higher demand, such as Friday nights and weekends, or even at sporadic events when there is high demand and fewer workers, such as on the days of Brazil's World Cup match in 2022, when the promotions offered an extra R$8.00 per delivery. There is a consensus among delivery workers that working during promotions has a substantial impact on their monthly income.

(5) Information available at: <https://news.ifood.com.br/em-meio-a-alta-dos-combustiveis-ifood-aumenta-repasse-a-200-mil-entregadores/>. Accessed on: 12 Mar 2023.

(6) The OL companies are often created by delivery workers who ended up standing out and received an invitation from iFood to "create a company". The possibility of selecting OL supervisors or leaders also gives iFood control over the dynamics of the OL itself, by ensuring that these intermediaries have a certain profile of supervisor or leader in line with their discourse and demands. In addition to ensuring deliveries through an intermediary company created on its own initiative, iFood also ends up avoiding labor lawsuits, since these OL companies have contractual relationships that explicitly provide for labor rights.

(7) iFood held 83% of the Brazilian market share in 2021, followed by Rappi, with 13% (Petropouleas, 2022). Machado and Zanoni (2022) point to a smaller share, using a different methodology: 58% of delivery workers in the three-point model (characterized by journeys involving the app company, the supplier company, such as a restaurant or market, and the end customer) in Brazil in June 2021. It is worth noting that in February 2023, iFood lost its exclusivity with large restaurant chains, following a decision by the Administrative Council for Economic Defense (Cade) and accusations of unfair competition from other companies, such as Rappi (G1/Reuters, 2023). This and other Cade measures could weaken iFood's monopoly in São Paulo, in dynamics that possibly, if they actually occur, will only be learned in fieldwork and interviews in the second half of 2023, after the six-month deadline given to iFood to implement such changes.

(8) In December 2022, the OL company SIS Motos was declared bankrupt. According to a report by Moncau (2022), it was the largest OL company in Brazil, with branches in 24 states and 5,000 delivery workers. The bankruptcy of SIS Motos and other OL companies due, according to reports in the field, to the payment of labor rights to delivery workers (who were able to prove that they had an employment relationship), does not necessarily point to the end of the OL system, since other OL companies may emerge, including from invitations from iFood itself, to replace those that have gone bankrupt.

(9) See Lima (2022) and Rosin (2023) for more details on the operation of the iFood Pedal bases and their infrastructure.

(10) One of the aspects specifically linked to bicycle delivery workers is the concentration of the means of work, in the case of the shared bicycles available at iFood Pedal points and conventional Itaú bicycles. According to Fioravanti (2022), in the southwest vector, which corresponds to 3% of the area of the municipality of São Paulo, there were half of the shared bicycles from January to May 2022.

(11) These places are usually close to commercial outlets where they can charge their cell phones, heat up food, drink water or use the restroom. As well as waiting for orders, they eat meals (such as lunch, in the middle of the afternoon, after peak delivery times) and maintain their own conventional bicycles or change the oil in their motorcycles, as well as weaving relationships of sociability and sharing strategies for carrying out the activity. It's interesting to note that these meeting and landing points are generally different between bicycle and motorcycle delivery workers, even though they are close to each other.

(12) iFood has a website called "Portal do entregador" (delivery worker portal), where it provides information and advertisements aimed at delivery workers and those interested in working with the platform.

(13) These journeys are permeated by various constraints, but also by micro-resistances, such as delivering by motorcycle, but registering as a bicycle delivery (thus aiming to receive shorter journeys with each delivery and thus also optimizing journeys and saving fuel), or renting a third-party account to continue working in the event of app blockages.

(14) "I can't speak badly of the apps", "That's where I started", "They gave me the opportunity", were some of the phrases we heard frequently during the field research. These introductions, although followed by criticism and contrary to many other testimonies of exploitation, surprised us by their repetition. A certain attitude of gratitude for the chance to work and earn an income, often "escaping" formal jobs considered less attractive, was a repetitive aspect in the reports collected.

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