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Infrastructuring platform delivery work: exclusions, coercions and resistance in delivery platforms' migrant work in Bogotá, Colombia

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ABSTRACT

This paper analyses the experiences of Venezuelan migrant workers in Colombia as Rappi couriers. Rappi is a "work-on-demand via app," founded in 2015 in Colombia, that links clients with nearby restaurants and stores through a couriers' network. Drawing on STS (Science and Technology Studies) scholarship on labor and infrastructures, we explore the ways in which migrant workers interact with Rappi algorithmic, material and legal infrastructures, the coercion and violence they experience, and the tactics and solidarities that they create to make a living. We understood migration as a domination relation within gig workers, an approach that allows us to identify specific exclusions that migrant couriers suffer in an already precarious local labor market. Methodologically, we have developed an Ethnography for the Internet conducted during the COVID-19 pandemic through three different sources and interaction layers: WhatsApp and Facebook non-participant observation and exploratory interviews with Rappi migrant workers. In what follows, we offer a theoretical analysis of the intersections between migration and the gig economy infrastructures based on the Colombian case. Navigating the experiences of migrant gig workers with Rappi, we discuss the dynamics of inclusion-exclusion they live in their interaction with the platform and the infrastructures that support and constitute their work.

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Infraestruturando o trabalho de entrega mediado por plataformas: exclusões, coerção e resistência entre entregadores de plataformas de entrega em Bogotá, Colômbia

RESUMO

Este artigo analisa as experiências de trabalhadores migrantes venezuelanos na Colômbia como entregadores da plataforma Rappi. Rappi é um "aplicativo de entregas," fundado em 2015 na Colômbia, que conecta os clientes com restaurantes e lojas próximas através de uma rede de entregadores. A partir do referencial teórico do campo CTS (Ciência, Tecnologia e Sociedade) sobre trabalho e infraestruturas, explorando as formas pelas quais os trabalhadores migrantes interagem com as infraestructuras algorítmicas, materiais e legais de Rappi, a coerção e a violência que sofrem e as táticas e solidariedades que criam para ganhar a vida. Entendemos a migração como uma relação de dominação dos trabalhadores, uma abordagem que permite identificar as exclusões específicas que sofrem os migrantes em um mercado de trabalho precário. Metodologicamente, desenvolvemos uma etnografia para a Internet realizada durante a pandemia de COVID-19 através de três fontes e camadas de interação diferentes: observação participante de WhatsApp e Facebook e entrevistas exploratórias com trabalhadores migrantes de Rappi. A seguir, oferecemos uma análise teórica das interseções entre migração e infraestrutura da economia da Plataforma na Colômbia. Navegando pelas experiências dos trabalhadores migrantes do Rappi, discutimos a dinâmica de inclusão-exclusão que vivem em sua interação com a plataforma e as infraestruturas que apoiam e constituem seu trabalho.

Haciendo infraestructura el trabajo de reparto en plataformas: exclusiones, coersión y resistencia entre trabajadores de reparto digital en Bogotá, Colombia

RESUMEN

Este artículo analiza las experiencias de trabajadores migrantes venezolanos en Colombia como mensajeros de Rappi. Rappi es una "aplicación de reparto," fundada en 2015 en Colombia, que conecta a los clientes con restaurantes y tiendas cercanas a través de una red de mensajería. Basándonos en los ESC (estudios sociales de la ciencia) sobre trabajo e infraestructuras, exploramos las formas en que los trabajadores migrantes interactúan con las infraestructuras algorítmicas, materiales y legales de Rappi, la coerción y la violencia que experimentan y las tácticas y solidaridades que crean para ganarse la vida. Entendemos la migración como una relación de dominación dentro de los trabajadores, este enfoque permite identificar las exclusiones específicas que sufren los mensajeros migrantes en un mercado laboral ya precario. Metodológicamente, hemos desarrollado una Etnografía para el Internet realizada durante la pandemia de COVID-19 a través de tres fuentes y capas de interacción diferentes: observación no participante de WhatsApp y Facebook y entrevistas exploratorias con trabajadores migrantes de Rappi.

A continuación, ofrecemos un análisis teórico de las intersecciones entre migración y las infraestructuras de la economía de Plataforma en Colombia. Navegando por las experiencias de los trabajadores migrantes de Rappi, discutimos la dinámica de inclusión-exclusión que viven en su interacción con la plataforma y las infraestructuras que soportan y constituyen su trabajo.

1. Introduction

The gig economy is rapidly expanding through Latin America (Diaz 2019), and delivery platforms are at the front of such expansion. Delivery platforms allow traditional activities such as delivery work to be channeled through an app and executed in the "real" world (De Stefano 2016). In this case we analyze Venezuelans' migrant work experiences with Rappi, one of the most important platform companies in Latin America. Rappi was founded in 2015 in Colombia as a four-sided digital business which connects couriers, known as Repartidores (in Spanish), clients and restaurants with the app via algorithmic management methods (Tassinari and Maccarrone 2020). During the last five years, Rappi's operation has expanded to Mexico, Brazil, Uruguay, Argentina, Chile and Peru, becoming the first Unicorn in the region, valued at USD 1200 million (Bustos and Velásquez 2019; Rappi 2018). The number of delivery workers has risen across the region as the "result of an increasingly services-oriented urban economy and the dissemination of information technology in cities" (Zuev, Psarikidou, and Popan 2021, 239). According to Reuters there are approximately 50,000 *Repartidores* in Colombia working for Rappi (Griffin 2020), and most of them are from Venezuela. Migrant workers constitute an important part of the urban platform economy in the world (Van Doorn, Ferrari, and Graham 2020). In Latin-America migrant workers[1] represent approximately 83.6% of digital couriers in Argentina,[2] 66.2% in Ecuador,[3] 25% in Uruguay,[4] 70% in Chile,[5] and 57% in Colombia.[6] Most of them are Venezuelan citizens due to the massive migratory process in the region triggered by the political and economic crisis in that country (Gandini, Rosas, and Lozano-Ascencio 2020; OLDS 2017). In this context, Colombia became the main receiving country of Venezuelans in the world, accepting more than 1.7 million migrants in the last five years.[7]

This paper analyses the experiences of Venezuelan migrants in Colombia working as Rappi workers. Drawing on STS (Science and Technology Studies) work on labor and infrastructures (Suchman 1995; Vora 2015) we explore the ways in which migrant workers interact with the infrastructures in which Rappi as the platform is nested, highlighting

[1] OIT, Oficina Regional para América Latina y el Caribe. El aporte de las personas refugiadas y migrantes venezolana en los servicios esenciales de reparto de alimentos y medicina durante la pandemia de la COVID-19 Argentina, Colombia y Perú; 2021. Lima: 2021. pp. 4–5. https://www.ilo.org/wcmsp5/groups/public/---americas/---ro-lima/documents/publication/wcms_794072.pdf.

[2] https://publications.iadb.org/publications/spanish/document/Econom%C3%ADa_de_plataformas_y_empleo_C%C3%B3mo_es_trabajar_para_una_app_en_Argentina.pdf.

[3] http://library.fes.de/pdf-files/bueros/quito/17108.pdf.

[4] https://www.elpais.com.uy/que-pasa/noche-inmigrante-lidian-trabajos-nadie-quiere.html.

[5] http://www.economiaynegocios.cl/noticias/noticias.asp?id=539385.

[6] https://www.urosario.edu.co/Documentos/Nova-Et-Vetera/Encuesta-completa-rappitenderos-Observatorio-Labor.pdf.

[7] 31 de enero de 2021 01 Distribución de venezolanos en Colombia. p. 2. https://www.migracioncolombia.gov.co/infografias/distribucion-de-venezolanos-en-colombia-corte-31-de-enero-de-2021.

the coercion and violence they experience by dealing with these infrastructures and the tactics that emerge from the efforts to make the app work for them. Migrants' experience is shaped by a complex set of forces including the geopolitical context, the political economy of digital platforms and workers' own personal history as migrants. In this paper, we approach such complexity from the perspective of migrant workers with the platform. This provides a route to identify particularities of migrant workers and specific exclusions that they suffer in a context in which platform work is already precarious for Colombian workers.

In what follows, we offer a theoretical analysis of the intersections between migration and gig economy infrastructures based on the Colombian case. Secondly, we present our methodological approach (Hine 2015) developed to understand migrant gig work during the first strike of COVID-19 pandemic in Colombia. Thirdly, navigating the experiences of migrant gig workers with Rappi, we discuss the dynamics of inclusion-exclusion they live in their interaction with the platform and the infrastructures that support and constitute their work. This approach aims to identify the particularities of migrant work and the specific exclusions that they suffer in a context in which platform work is already precarious for regular (Colombian) workers (Sanchez Vargas, Maldonado Castaneda, and Hernández Díaz 2022). At the end, this paper aims to show how platform-mediated work infrastructures triggered particular experiences of coercion, violence, and cooperation among migrant couriers.

2. Intersecting migration and gig economy infrastructuring

Migrant labor has been studied from multiple perspectives, including race and ethnicity, income and education levels, labor markets and skills, intersectionality, intermediation and integration, among others (Panizzon et al. 2015). The relationship between migrants' access to income sources and employment and broader social and political forms of inclusion has been analyzed in different geographical locations and social groups. Riaño (2011), for instance, using the concepts of economic citizenship and intersectionality analyses the access of skilled migrant women to the labor market in Switzerland. The author shows "how the socioeconomic position, gender, and ethnicity of migrant women intersect to shape their labor-market position" (Riaño 2011, 1535). Other studies about on-demand service platforms have found that labor segmentation reproduce inequalities associated with specific contexts where the platforms operate. Nationality, gender, and race are indicative of workers' advantages or disadvantages in the platform economy in developed countries.

Other works have emphasized the tensions between inclusion-exclusion that migrants experience in the labor market. Lee and Pratt (2012), for instance, document Filipino migrant workers struggles in the U.S. to reach citizenship and social inclusion. The authors argue that the promise of inclusion into citizenship is both inclusive and exclusive "because the exclusionary border "effectively follows them inside" the territory of the nation. That is, the national border dividing citizens from noncitizens acts within and not simply at the edge of national territory" (Lee and Pratt 2012, 891).

Digital platforms involve dynamic processes in which they interact with other social and economic forces, as well as with institutions, serving as gateways that operate the inclusion/exclusion/discrimination mechanism. Platforms do not arise on their own or

operate in a power vacuum; they are implemented and intertwined with existing socio-economic structures and cultural forces, to help create a certain social and economic order; according to Van Dijck and his colleagues, they are "an integral part of society."

In such an unbalanced scenario, cooperation is key to migrants' resilience in hostile labor markets but also can entail risks of segregation and isolation. The social networks in which an individual works and lives, play an important role in determining the opportunities and choices presented to individuals (Ravenelle 2019). Migration literature has noted that immigrants tend to have more immigrant co-workers; this partly can be explained by the spatial organization and segregation, but when immigrants depend only on a specific group for labor market participation, "they risk becoming trapped in low wage jobs with poor labor conditions and being excluded from the parts of the labor market that the majority has access to" (Lobo and Mellander 2020, 3).

Similarly, Lowe, Hagan, and Iskander (2010), explore how immigrant workers acquire skills through informal means and how they demonstrate skills for which they have no formal credentials. "Rather than reflecting skills and educational credentials, immigrant earnings are often affected by legal status and access to work-related legal protection" (Lowe, Hagan, and Iskander 2010, 206). They conclude that it is important to trace emergent pathways for immigrant skills development as repositories of immigrant knowledge and power. These works implicitly acknowledge the importance of taking into account legal, knowledge and market infrastructures to understand inclusion-exclusion dynamics in migrant labor.

As mentioned earlier, in this paper, we studied migrant workers' experiences as delivery platforms couriers' in Colombia. The Colombian Ministry of Foreign Affairs (2020) estimates that more than 1.7 million Venezuelans live in the country. Half of them are men (51%) mostly between 18 and 39 years old (30%). The Colombian government has issued a temporary permit for Venezuelans to remain legally employed in the territory for two years, known as PEP (Permiso Especial de Permanencia, for its acronym in Spanish), which 45% of Venezuelans (around 770,246 people) have. In contrast, more than 900,000 Venezuelans are considered "irregular" as they lack a permit (PEP). However, non-governmental sources have reported difficulties estimating the Venezuelan population in Colombia due to "fluid cross-border migration and the likely use of informal border crossings" (USAID 2018, 2). Approximately 327,000 Venezuelans live in Bogotá, the Colombian capital, half of them had PEP and around 55.4% a job, although 77.5% of them were employed in the informal economy (Observatorio Proyecto Migración Venezuela 2019).

Venezuelan migration to Colombia is unique because of the historical, geographical, and cultural roots shared by the two countries (Farné and Sanín 2020). Before the current crisis, Venezuela received almost 2 million Colombians, between the 1970s and 2010, looking for the promises of the richest country in Latin America. Now the process has reverted; Colombia is the shortest escape route of Venezuelans to stronger economies such as Brazil, Chile, or Argentina (Muñoz-Pogossian 2018). Despite their similarities, Venezuelan migrants experience many difficulties once they arrive in a receiving country like Colombia. For example, their undocumented status makes them face barriers to homologate their studies and qualifications; and there is also social stigmatization based on their nationality and their recent political landscape. In addition, they must rebuild their lives in

Colombia where, in absence of local massive migration policies, there is a high percentage of informal economy and lack of employment opportunities (Anwar and Graham 2020; Van Doorn, Ferrari, and Graham 2020, 1).

In this context, thousands of Venezuelans have found in platform-mediated gig work the much-needed opportunity to make a living, in spite of informal working conditions (Anwar and Graham 2020; Van Doorn, Ferrari, and Graham 2020). Other sectors with an important presence of migrant workers in Colombia are commerce, hospitality and construction (Farné and Sanín 2020). However, because of delivery platform work characteristics, such as time flexibility, few enrollment requirements and cash transactions, many migrants find digital platforms as the quickest way to become economically active in Colombia. Although the exact number of migrants in this profession is unknown, the trend is increasing, particularly given the situation derived from the pandemic (Farné and Sanín 2020).

Different works in STS have analyzed the complex relations of work and the connection between labor and sociomaterial infrastructures (Suchman 1995, Vora 2015). At the center of such analysis is the concept of infrastructure to display a better understanding of how organisations work through classifications, standards and the sorting of people and things out, while enacting and arranging labor and activities in particular ways (Star 1999). Infrastructure studies have been helpful to analyze the invisible work that sustains everyday markets and labor flows and the impact of classifications, knowledge and ordering on shaping the inclusion of certain people at the expense of excluding others. In the case of gig economy, labor is "algorithmically managed" (Zuev, Psarikidou, and Popan 2021); such technologies are possible because of wider infrastructures that provide the basis where couriers, customers and companies interact.

Star (1999) notes the difficulty of providing a definition for infrastructure because it involves the often invisible set of objects and relations that make possible other practices. Digital couriers who deliver through an app are set to provide their service whilst their work activity is basically organised by a platform and its black-boxed algorithms. Digital delivery is possible by the infrastructures that create and sustain a digital platform like Rappi. Rappi's expanded infrastructure encompasses heterogeneous elements: the app; the couriers and their material objects of work: cycles, bags, smartphones; restaurants and other providers; regulation, information and data infrastructure, digital financial services, city landscapes, consumers and the interactions between supermarkets and organisations.

Infrastructure studies emphasizes the critical role of infrastructure's human elements, such as work practices, individual habits, and organizational culture, as well as the ways an infrastructure can structurally exclude some people from purportedly "universal" services (Ribes and Bowker 2008; Ribes and Finholt 2009). Understanding Digital Platforms as infrastructures therefore allows us to unpack the relations couriers establish with the platforms that mediate, in legal, transactional, and logistic ways, the "service" migrant workers have to perform. Platforms have a performative role in organising labor by setting the time and the working conditions for its "associates." But more importantly, looking at infrastructures allows us to trace the context of production and use, and the social/cultural and technical entanglements in which digital platforms operate. Digital platforms, such as Rappi, access and control the data of the different parts involved in the delivery value chain, capturing and profiting from the work and information produced

by delivery workers, associated businesses (stores, restaurants) and users (individual consumers).

Other scholarship has addressed the tensions between infrastructure and resistance. For instance, Elyachar (2014) examines the complex relationship between social structures, agency, and resistance, with a focus on the Egyptian Tamarod movement, which demonstrated the power of collective political action by mobilizing millions against President Mohamed Morsi. Instead of viewing Tamarod simply as an act of resistance, the author explores how it utilized Egypt's communicative infrastructure for political aims, offering a fresh perspective on agency as a multifaceted and historically situated phenomenon. This approach challenges traditional binaries of success or failure in resistance movements, and suggests that understanding the interplay between social infrastructures and political mobilization can enrich social theory. Resistance has been also analyzed in connection to the strategic use of digital infrastructures by social movements. Maeckelbergh (2016) has documented the various methods through which movements have leveraged digital technology, particularly platforms akin to social media, in conjunction with mass street mobilizations. These strategies show the different of ways in which technology influences individuals' thoughts and actions politically.

In the case of digital platforms such as Rappi, we have found it productive to understand the infrastructure as a process rather than a stable and closed entity. As Plantin has noted "both infrastructure and platform refer to structures that underlie or support something more salient" (Plantin et al. 2018, p. 294). In the case of Rappi, there is an attempt to make workers an infrastructure to support the company's business model. Repartidores become a supporting infrastructure alongside data and banking networks, and roads. This configuration is essential to the definition of a platform and its business model. As Plantin et al. highlight, "These companies deploy the term 'platform' to position themselves as neutral facilitators and to downplay their own agency: 'platform' is 'specific enough to mean something, and vague enough to work across multiple venues for multiple audiences'" (Plantin et al. 2018, 297). This is a strategy to avoid their legal responsibilities with workers and customers, as the case of Uber and AirBnB presenting themselves as platforms, "merely connecting car or property owners with potential customers" (Plantin et al., 2018, p. 297). At the same time, platform studies show how these are constrained within profit-driven corporate ecosystems (Plantin et al., 2018, p. 295). A platform becomes an infrastructure when it connects with other systems in a heterogenous and flexible way, making agreements with different sectors, among them with the State, expanding their interest and targets. Being an infrastructure is part of being essential. Although the organisation of Rappi itself fits into Plantin and colleagues description of the "infrastructuralization" of platforms, in this paper we focus on the attempts to make migrant workers invisible and operative to the functioning of the platform.

In what follows we explore the interactions of Venezuelan Rappitenderos with Rappi describing the partial inclusions they experience by working with the platform, the exclusions that they face when they meet the legal, digital, and financial infrastructures that sustain the platform operation and the attempts of the platforms to transform their work into an additional infrastructure. The entanglements of regulatory and digital infrastructures in matters such as migration, employment and welfare policy are

key elements that affect migrant gig work, most of the time with negative effects for workers.

3. Studying migration and digital platforms in COVID-19 times, an Ethnography for the Internet

Rappitenderos are a massive part of the urban landscapes (parks, sidewalks, streets, supermarkets, restaurants, among others) in different Latin American cities. They fill virtual spaces such as Facebook groups, WhatsApp chats, YouTube channels and the mass media, as well, talking about their working situation, the company future, etc., enacting a hybrid economy, both material and digital. The use of these social networks is a consistent practice among platform-mediated delivery workers around the world (Waters and Woodcock 2017; Woodcock and Graham 2019), because these are safer spaces to share their experiences and grievances and build personal and work-related solidarities (Waters and Woodcock 2017).

Drawing on an Ethnography for the Internet (Hine 2015), this research presents different layers of the migrant workers' interactions with Rappi platform, prioritising their voices in this analysis. In March 2020, just when the fieldwork of the project had started, a series of quarantines and mobility restrictions were announced in Colombia. Rappitenderos were one of the few groups allowed to keep working on the streets, as they were regarded as essential workers in the supply of food and medicines. Before COVID-19, ethnographic fieldwork was to be carried out with delivery workers on the streets. With the new situation, we decided to rely on digital resources to understand the work done on the streets. Then, we had to respond to the increasing amount of information generated on social media regarding couriers' role as we became increasingly aware of the need to understand digital data production logics, paying attention to the rhythms of virtual information (Venturini and Latour 2008). In this sense, the work focused on couriers' daily practices through their digital interactions, becoming a flexible and multi-localized approach. Thus, Ethnography for the Internet allowed us to explore the exclusions, coercions and solidarities shared by them in different spaces of digital communication, learning "to be there" (Hannerz 2003). The relationship between online and offline is one of the characteristics of this approach, recognizing that the Internet is co-produced in both spaces.

Our Ethnography for the Internet (Hine 2015, 5) lasted from March to December 2020 during the first strike of the COVID-19 pandemic in Colombia. The fieldwork consisted of three sources according to the interaction spaces identified. (i) Two Facebook Rappitenderos' groups, (ii) two WhatsApp Rappi workers' groups, and (iii) virtual in-deep interviews with migrant workers to contrast and discuss the findings from the other sources. We did not collect data in person due to the extension of the mandatory quarantine in the country, so the virtual interviews allowed us to include the voices of the couriers. In the following we present each source:

First, a Facebook profile was created to conduct a non-participant observation exercise on Rappi workers' online discussion groups. Two private groups created in 2017 by the workers themselves were found through a search using the word "rappitendero" on Facebook's searching tool. Both groups had more than ten thousand active members at the time. A request to join each group was sent along with an informed consent.

They shortly accepted and we started to capture posts manually from March 6th to May 11th, 2020. As a result, 767 posts were collected: comments, videos, photos, and platform screenshots. Most of the captures related to the app functionality, distance-based fees and road calculation and the sales of bicycles, backpacks, mobiles, and app accounts.

Secondly, on Facebook we found two public links to join Rappi workers' WhatsApp groups. We joined them by asking for permission to the groups' administrators, after we sent an abbreviate informed consent. On March 12, the groups had around 257 members each. We monitored and captured around three hundred daily messages through WhatsApp; allowing the research team to understand the participants' daily interactions (Akemu and Abdelnour 2020). On June 30, we stopped the data harvest due to saturation.

According to Hine (2015), digital scenarios are heterogeneous, so there is no single ethical code to approach them. In this sense, ethnographers have the task of understanding these spaces from the nature of their interactions, recognizing and anticipating potential ethical problems. The research always started from the principle that digital spaces are as real as what happens outside of them, and that our identity and intentions should be clear at all times. The collection of information on Facebook was retrospective, i.e. there was no real-time participation in the conversation. This meant that there was no interaction between the participants, and therefore the nature of the conversations and their dynamics were not altered.

As ethnographers, we turned to Facebook's policies (see: https://es-la.facebook.com/business/learn/lessons/manage-your-group), which cover the functions of the administrator of a group in this social network, who has the power to accept, reject, or eliminate the presence of any applicant. Therefore, the role of the group administrator is to control entry into the group, examine the study's intentions and disclose the study with its co-administrators and members in order to identify possible problems in its implementation. It is emphasized that group administrators in this type of virtual space represent the members of the group by accepting the informed consent. It was also always made clear the academic purpose of the interactions, their anonymity, and compliance with the restriction on direct and individual contact with the group members.

The non-participant observation included the creation of a public profile of the research project, with a description of the study indicating its academic purpose, where information about the documents resulting from the research, courses designed, socialization activities, among others, were published, making the intention of the study visible. During the period of the study, no comments, questions or concerns were received from the members of the groups regarding the profile created.

To identify the migrant couriers on Facebook and WhatsApp, we carried out two strategies on the datasets: (i) We searched for the Venezuelan country code (+58) in the WhatsApp groups' list member, identifying that one of the group admins was a migrant. Once we identified these numbers, we anonymized couriers' names assigning a code: MigrantCourier01, 02, etc. (ii) Given that most of the group members had Colombian phone numbers, we searched in the dataset for words in Spanish such as: "Venezuela," "Pana," "Chamo" and others that emerged during the review. We selected all messages and posts containing these words. The empirical material was translated, anonymized, and analyzed according to the study objectives.

Thirdly, we establish contact with leaders of the delivery-platform workers' union (UNIDAPP in Spanish) to conduct the interviews. Five Venezuelan UNIDAPP members

were invited to participate in virtual in-depth interviews (three men and two women). All interviews took around 60 minutes and were done online by Google Meet. Some of the topics discussed were related to their experience working as migrant Rappitenderos in Colombia, their perception about differential treatments in the platform due to their migratory status and their working conditions. This experience ratifies Vandaele's (2018, 16) observations about couriers' digital networks as a "breeding ground for self-organised courier associations" to leverage their collective power and fight for their rights. However, in this case, as Woodcock and Graham showed "there are risks with using a platform like WhatsApp or Facebook, as they are not designed for worker organising and lack safeguards against management surveillance or infiltration" (2019, 136).

The WhatsApp account created was unique and exclusive to the project, with a phone number activated for the study, which was published on the website, the Facebook profile, and in publications about the events of the research. The WhatsApp profile included the name of the project, which was available to all, as well as a photo that graphically represented the project. Given the nature of the WhatsApp environment, there was no way to disclose more information about the project. The administrator of the WhatsApp group was always the same during the research period, and by virtue of his role, he managed the inclusion or exclusion of group members.

The interviews were carried out with prior informed consents. All data was anonymized, and all interviews were transcribed verbatim. Transcripts were checked for accuracy. We conducted a discursive analysis of the transcriptions and used the insights to contextualize and theorize our study. The project was subject to a rigorous and thorough review by the Institutional Review Board of Universidad del Rosario.

For each case, we utilized inductive analysis for publications and messages on Facebook, WhatsApp, and interview data. We highlighted the most representative voices and narratives during the coding process. Data were coded inductively using an interactive, constant comparison technique with an emergent design.

Our ethnography considers the perspective of non-participant observation, in which traditionally one does not interact by being invisible, maintaining the distance between the observer and the observed in a virtual environment. We considered this participating through a figure that allowed us a non-invasive co-presence in different digital spaces (De Seta 2020).

Different interactions of Venezuelan Rappitenderos were selected. The main topic of selection was practical issues they face whilst working with Rappi. These encounters render visible the infrastructures that sustains Rappi operation and Rappitenderos' work. We present interactions related with working permits, financial services, phone data and accounts ownership and surveillance. From these encounters emerge a set of tensions between inclusion, for instance Rappi provides one of the few jobs in which Venezuelans in Colombia can open a Bank account, and the exclusions of being a migrant.

4. Navigating the digital platforms infrastructures, experiencing the exclusions of being a migrant gig worker

Platforms and infrastructures are relational and a process. Platforms are designed to make workers' work invisible, transforming it into an operating infrastructure. However, this process is full of frictions and contradictions. Migration is a condition that resists

invisibility, both for the exclusions that it entails, it could be a stigma, and for the agency of the workers themselves and the solidarity that it creates. A key contribution of the infrastructures' scholarship on gig work is the importance of rendering visible inclusions/exclusion dynamics built into standards, classification systems, registers and algorithms. Digital platforms' business model is centered on making customer-restaurant-delivery relations simpler, reducing interactions to a couple of clicks and the assessment of the service. In practice the movement of food from restaurants to homes involves navigating the city, moving across streets and buildings whilst being tracked and competing against time, traffic, and algorithmic classification once the migrant is accepted into the platform. In this section, we discuss four examples that illustrate the dynamics of inclusion/exclusion built into the platform and experienced by migrant Rappi workers. These situations highlight the tensions between the platform and the relationship that migrant workers establish with it, and the ways in which the platform can integrate workers into other nested infrastructures (data, banking, migration registers) whilst at the same time producing frictions and new forms of exclusions.

(1) Being a migrant worker in the gig Colombian market

A constant in the different workers' accounts across platforms and in the interviews is that Rappi has provided an opportunity for them in a country in which finding any job is extremely difficult. Migrants that became Rappitenderos four or five years ago, affirmed that the platform used to be a good way of earning money but that the conditions changed in the last two years. Others are aware of the poor working conditions that the platform provides but they recognise that being Rappitendero can be the only way of making a living as in this a conversation between two couriers in WhatsApp on March 20th, 2020:

> Courier 1: Bro, look, I didn't join this group to criticize Rappi because, unfortunately, now I need a job and I must deliver. When I have better life conditions, I will look for another job that allows me to work without a high school degree in Colombia. I am sorry but I can't say that they are miserable (referring to Rappi) because, right now, it's the only opportunity I have.
>
> Courier 2: I have submitted around 120 resumes in two months, I have looked for a job in a whole Bogota […] and I haven't even got a job to clean restrooms. So, there is no other choice for me, I can only hold onto this (referring to work in Rappi) […] I don't want to ask for money in Transmilenio (Bogota's public transportation system) or buy goods hoping to sell them.

For these migrant couriers, Rappi represents a low-skilled job alternative that allows them to work without a Colombian degree, even without a work permit. As it is noted, Rappi often is the only opportunity Venezuelans have in the Colombian employment market.

(2) Platform failures, people's fault

Platforms such as Rappi algorithmically organise the work activity (and payment) of couriers in terms of time, price, distance, and points. However, in practice there are constant breaks in that flow (breaks of the infrastructures) that represent a challenge for workers of

any nationality. In the following text a delivery worker complains about the difficulties of delivering food and the ways they are punished by the company when a customer cancels an order.

> Rappi stories: you pick up an order at El Corral (Restaurant brand) at 9 pm in the middle of a downpour, you are headed to Castilla (a neighborhood in Bogota's southwestern) to deliver the order. When you arrive at the building you reach the client after half an hour because there is not even an apartment number specified. The client says that they cancelled the order, so you go home. In the morning you are headed 15 kilometers away to return the order. In the office, they tell you that they are not paying the service to you, so you lost 30 kilometers plus the time you spent picking up the order and delivering it in the middle of a downpour. Those shameless. (Source: Rappitenderos Facebook group, April 2020)

This situation (canceled orders) is normalised among couriers, as many of them refer to similar situations and try to keep going on. As the replies to the previous comment show, this is a common experience for Rappitenderos regardless of their nationality:

> Courier 1: This happens daily. Welcome to Rappi.
> Courier 2: Get used to this. It is always like this.
> Courier 3: A bad day start over with a clean slate, there is nothing else left to do.

For instance, there is a gap between the client information gathered by the platform and that needed by the courier to fulfill the task effectively. The margins of error that are acceptable to the company are disastrous for those who make a living from being efficient and finding detailed points. In other of this publication's comments, one courier talked about a service called Rappi Cash which consists in taking money out from an ATM requested by a customer. The problem is that, sometimes, ATMs don't work and Rappi's platform sets a debt to the courier for the amount of money requested to take out, and then blocks their working account. However, as it will be presented later, the nationality issue will be key when another payment system is put in place.

(3) Digital inclusion does not work well for migrants

The first step to become a Rappitendero is to fill the platform forms with basic information such as name, age, phone number and identity number. Here the troubles begin for the Venezuelan workers, the forms assume that you are going to introduce a Colombian national identity number that is often between 8 and 10 digits. If you are a migrant, you need a foreign identity number to legally work in Colombia, but most of the Venezuelans do not have this document. In the context of the migration emergency, Colombian authorities issued a special document as an attempt to regularize the thousands of Venezuelan migrants: the PEP (Special Permanence Permit). This permit allows migrants to study, work and receive social services for 90 days that can be extended up to two years. However, such integration is very unstable and unclear in practice. Such lack of clarity on working rules and the misinformation about Venezuelans working rights is part of the tensions and violence that migrant workers experience in their daily work.

Working with Rappi has effects in the inclusion of the migrant workers in two related infrastructures: data consumption and financial services. An often taken-for-granted element in digital platforms work is the need to have a smartphone and sufficient data as an entry

requirement for any worker. When one of the interviewees was asked about the requirements to work in Rappi's platform, he referred to the necessity of mobile data and described an alliance with the mobile company Movistar, specifically for migrant couriers. This alliance consists in a mobile plan that costs 34.000 COP (around 9 USD) monthly and includes 4.5GB to log in Rappi's mobile app, 1.2GB access for WhatsApp and 100 plan minutes to call from Colombia to Venezuela. This plan is exclusively offered for migrant couriers working with Rappi and it has been taylored for them, including calls to Venezuela.

Another key infrastructure linked to Rappi operations is financial services. The gig economy is possible because of the digitalisation of millions of transactions through credit cards and cash. Likewise, digital platforms pay workers and services through this same infrastructure. Infrastructures are nested; they connect with other infrastructures, such as banking, biometrics, citizenship registers, datafied geospacer, amongst others; but the nesting is never perfect. It is full of friction, and it is more hostile to the vulnerable that dwell in the boundaries of the coupling.

For migrant workers having a bank account is rare given the requirements to open one (working permits, passports, visa, amongst others) and therefore being out of the financial system implies an exclusion from the digital marketplace in which Rappi exists. This is also a problem for Colombian Rappitenderos. The use of financial services in Colombia is relatively poor compared to advanced economies and a huge informal economy moves basically through cash.

Big banks in Colombia such as Davivienda have developed e-banking products targeted to the unbanked population (i.e. Daviplata -Spanish name-) in which customers only need a phone number to send or receive money that can be withdrawn at any ATM or partner store. Rappi has established a partnership with Daviplata to pay Venezuelan Rappitenderos, while Colombians must link the Rappi account with a bank account and a credit card. Daviplata functions as a mobile application which allows users to receive and transfer money for free without having a bank account or a debit card. Rappi pays couriers through this app. In the case of vulnerable migrants such as those working in Colombia, this is not a minor issue. The smartphones they need are often violently stolen and replacing it can be a serious economic demand for them.

Despite the tutorials and videos developed by the company showing the benefits of this alliance, for Venezuelan Rappitenderos, Daviplata has become a problematic area for workers with their Venezuelan ID (PEP) numbers. As discussed in several WhatsApp conversations (Figure 1).

As it is signaled in this conversation, migrant workers perceive these services as designed for Colombians. Sometimes the bank account linked to Rappi does not fit with the PEP or the situation of many migrants lacking any legal document; therefore migrants must pick up their wage in-person from Rappi payment points. There are also some problems related to the payment portal Daviplata. There is misinformation among Venezuelan couriers about how to use this portal. Thus, having problems with Daviplata creates serious income and payment issues. They find this situation exclusionary and a barrier to earning their livelihoods.

This situation exemplifies the partial or limited inclusions that Rappi provides migrant workers. Although working with the platform is a way of getting access to other infrastructure that would remain closed for them such as digital finance, their access is more limited than

Conversation 1.	Conversation 2.	Conversation 3.
Courier 1: How do I activate Daviplata?	Courier: I haven't got my payment in two weeks because I have a problem with Daviplata […] People don't understand that for new Couriers and Venezuelans this is a fu****g problem.	Courier 1: Good night partners, a friend of mine has a problem with Daviplata, she doesn't know how to enter her personal data because she is Venezuelan. What can she do?
Courier 2: Colombian or Venezuelan?		
Courier 1: Venezuelan		
Courier 3: How does your nationality affect?		
Courier 4: The fu****g document and a thousand procedures to make it work.		
Courier 2: Daviplata only works for Colombian.		Courier 2: She should enter her Venezuelan ID. Then, she should type her PEP number, her phone number and the email she used to sing up in Rappi. After that, she should take a picture of her PEP and create a password.
Courier 3: This is exclusionary.		
Courier 4: To use Daviplata you must have an ID card either national or foreign.		

Figure 1. Different WhatsApp Rappitenderos group conversations selected. Source: WhatsApp group conversations, anonymized. April, 2020.

that of their Colombian colleagues. We have also identified how migrants are profiled by the App and classified with a higher risk than Colombians, limiting the goods they can deliver or certain services. For instance, we found that migrant workers were not allowed to deliver technological items to customers such as computer accessories or smartphones, until they reached a certain level on the app (as Diamond, the highest level at the time of the observation). However, during the pandemic this changed:

> In Rappi, before the pandemic, if you were Venezuelan, you could not access technology deliveries, now due to the pandemic and high technology requests you can do it but rarely, only in high demands times and only the older accounts. (Rappitendero Interview, man, 30 years old. December 2020)

(4) Resisting algorithmic control in the legal/illegal boundaries

The economic crisis during the COVID19 pandemic significantly damaged formal and informal employment in small businesses such as restaurants and pubs, amongst others; meanwhile the demand of essential goods deliveries through digital platforms increased. In this context, Rappi experienced a rising supply of potential workers in which Rappitenderos accounts become a scarce and valuable commodity, particularly for Venezuelans. As a result, we noticed that Rappitenderos denounced the traffic of accounts and the difficulties they experienced to get one.

While developing WhatsApp's ethnography, we found many messages about the possibility of working with borrowed and rented accounts, a common strategy among migrant Rappi couriers. This is a perilous strategy because the Police are constantly asking couriers to show their documentation and app accounts. There are also some messages referring to falsifying the Venezuelan personal ID card to work on Rappi's platform. As it is noted in one conversation on WhatsApp:

Courier 1: Boys, I have a friend that doesn't have PEP and he is going to work with a friend's account who lives with him. How can he log in when the app asks him for a photo? Anyone else in here works with an account that is not of their own?
Courier 2: Tell him not to do it, because if a *tombo* (policeman) stops him, checks for his account, and finds out that is not his, he can be caught faking.
Courier 1: Sh** ahahahaha. Let me tell him, thank you so much. Although, if he fakes an ID, ¿would they let him work? I mean, with a picture of him but with another name.
Courier 3: He can work normally, the problem is that if the police stop him and discover that the account is not his, he may get a fine.
Courier 1: Be careful, that is also falsifying personal ID.
Courier 4: He can go to jail. If the police scan the ID bar code, f*ck, jail for falsifying documents.
Courier 1: If it is the Venezuelan ID card ahahaha you know that this ID already seems fake.
Courier 4: It may work.
Courier 5: Bro, another thing, somebody is renting an account to me but it's a woman's, is there any problem?
Courier 6: These days, the police are checking that the account is your own, if it's not, you'll get a fine.

Couriers mention and share knowledge and different strategies to validate their documents in Rappi's platform and, for instance, log in and work. For example, they often talk about how to clear the app's cache, how to place the ID card on the camera and how to validate their data on the platform. These low-tech actions contrast with the high-tech displays done by Rappi and other digital platforms regarding identity validation and security, which involve facial recognition algorithms and complex machine learning. On the other hand, Rappi uses the State to reinforce its surveillance infrastructure, appealing to the Police, Para-Police staff (Brigadistas) and migration enforcement to check the authenticity of the accounts and in some cases to punish strikes and worker protests. Besides, some restaurants' employees may request personal documents from couriers to make sure that they match those registered in Rappi's app account. Despite the risk they take, for some Venezuelan couriers there is no other option to work than borrowing or faking an account.

In the end, platform workers share hostile working conditions set by the algorithmic governance of the platform and a business model that puts in the courier the complete responsibility and risks associated with the delivery, but that does not recognise and reward fully the contributions of this work. However, vulnerability and marginality are relational experiences in which people's position in domination structures matter. For instance, women workers experience specific forms of violence and exclusion by the platform that are not showed here. In this case we analyzed the specific relations that involve being a Venezuelan Rappitendero in Bogotá.

5. Discussion

Being "rappitendero" implies a particular kind of recognition (partial inclusion) and their work becomes an extension of their existence and identity in Colombia and in other Latin American countries. At the same time, migrant workers remain entangled in the informality of the urban ecologies of cities like Bogota that swallows them. Even though there are some aspects of platform-mediated work that remain invisible because they are

seen as mundane matters, full of "small" technicalities barely perceptible for the public, when this work is made by migrants a polyphony of material, legal and algorithmic specific coercions, violence and solidarities emerge for them (Chu 2014, 353). In this way, a migrant worker is, at the same time, an invisible subject and a visible collective.

As platforms constantly collect data and use data to calibrate and change policies and algorithms, platform workers face intersectional workplace control from algorithms designed and used by digital platforms – the so-called "invisible boss." That is why support groups are formed on social networks to exchange mundane tactics, even organizing collective actions such as protests and strikes in response to the inequalities generated by the algorithm of the platforms.

Further discussions should explore how migrant's lives and opportunities are shaped by the infrastructure whose work they sustain: Venezuelan Rappitenderos are more than just couriers, they have become key actors in the expansion of the platform in Latin America. Furthermore, the company's achievements are due to couriers' knowledge of the city, customers and restaurants. Regulations and policies align with the technocratic discourse of development, understood as a source of additional income with autonomy on the part of workers, and lean toward governments and successful companies at the expense of workers. Analyzing migrant workers experiences allowed us to see their entanglements with urban landscapes, local markets, and the complex dynamics of platform-mediated work (Birk 2017), and the moral economy of the platform economy. A look at infrastructures allows us to explore the nitty gritty of the platform and the mundane yet essential experience of migrant workers with Rappi.

A focus on infrastructures has been very productive to highlight the sociomaterial configurations at the center of platform economy and the efforts to render invisible migrant labor in the maintenance of the business model. It also brings to the analysis a sensibility toward power and its asymmetries. Digital platforms have the capacity of coordinating and controlling the coupling and access between the infrastructures that mediate, whilst migrant workers must make sense of the situations and develop tactics to navigate the rules set from above by platform managers.

Platforms such as Rappi rely on algorithms to coordinate the service they seek to mediate. This line of research calls attention to "decoding the workings of obtuse algorithms at the heart of software systems" (Mackenzie 2009) especially when algorithms have presence in operational logistics that organise offline and online settings (Mackenzie 2009, 1284). Mackenzie, drawing heavily on STS scholarship, argues that the materiality of infrastructures (in this case sustained by algorithms) needs to be brought to light in the analysis to trace how it is entangled with new forms of control within the digital work couriers do, how they can relate to companies such as Rappi and more importantly, connect or disconnect with experiences beyond the mediation: politics, employment, migration. Materiality here is not understood as dead matter but actively shaped, actively acting upon the couriers' lives.

According to Chen et al., the decisions made by algorithms and materialized by the platform have a direct impact on workers, individually and collectively, because they affect income, permanence, neutrality and equity in information, as well as making decisions that may go against your safety and health. Associated migrant couriers – not recognised as workers – resist invisible algorithmic processes that infrastructure their labor in terms of time, distance and positive ratings. Therefore, Rappi's algorithm

constantly differentiates Venezuelan couriers, disadvantaging them. In this sense, this article highlights the specific mundane yet infrastructural aspects that affect migrants unevenly. Even if the platform's code seems standard, it materialises differently for migrant workers as long as it intersects a complex socio-political context related to their migratory status.

As Dodge, Kitchin, and Zook (2009) note, it is important to dig into the social lives of ideas built into code. Despite being sustained by algorithms and classifications, the infrastructure of Digital platforms is expressed on migrants' material world. This is the case of PEP validation to use Daviplata and to log into the platform – that is, when the app requests couriers to constantly scan their ID document to log in and work. However, the platform often fails when the couriers upload the PEP, making migrant workers develop different strategies to be able to work, such as borrowing and renting Colombian accounts or falsifying ID documents to trick the app. Van Doorn, Ferrari, and Graham (2020) found that in Amsterdam, Bangalore, Berlin, CapeTown, Johannesburg and New York, platform companies are often quite lax when checking documentation of migrant couriers, to guarantee the workforce input for the Gig economy market. In Colombia, a work permit such as PEP is relatively easy to obtain for migrants. However, in Rappi's case even though the PEP is accepted as a legal document (and therefore to become a courier), it eventually fails to be reconsidered in other aspects of the platforms such as the payment systems. In the eyes of Venezuelan workers this is discriminatory as it blocks access to payment for their work. Ironically for migrants, who are Rappi's main workforce, after several years they still must navigate daily problems validating their ID documents on the platform.

Like Chen we consider that policy makers should develop a systematic and coherent regulatory framework that distinguishes the legal parameters for the intermediary sector and its companies, specifying their responsibilities and obligations for platform workers, such as the minimum wage, access to social security, occupational accident insurance and viable communication channels for grievances.

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