

Socio-spatial adaptation in the food delivery system during the first stages of the Covid-19 pandemic in Guadalajara, Jalisco

Adaptación socioespacial en el sistema de entrega de alimentos a domicilio durante las primeras etapas de la pandemia del Covid-19 en Guadalajara, Jalisco

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Abstract

Focusing events are associated with opportunities for innovation and transformation of social practices. Socio-spatial adaptation processes induced by these events are a relevant issue due to theoretical and public policy reasons. This article analyzes the growth of food delivery services during the early stages of the Covid-19 pandemic and the socio-spatial adaptation observed in Guadalajara, Jalisco. Based on evidence generated through semi-structured interviews with food deliverers in the Providencia area, the study identifies four dominant socio-spatial adaptation strategies. Workers used them to adapt to the pandemic in a context of systemic problems of social and urban inequality, social distancing policies, and increased occupational hazards, while digital platforms gained legitimacy and pushed for service diversification.

Keywords: Focusing events; food delivery; Covid-19; digital platforms; urban segregation.

Resumen

Los eventos focales están asociados a oportunidades de innovación y transformación de prácticas sociales. Su capacidad para inducir procesos de adaptación socioespacial es relevante por razones teóricas y de política pública. Este artículo analiza el crecimiento de los servicios de comida a domicilio durante las primeras etapas de la pandemia por Covid-19 y la adaptación socioespacial observada en Guadalajara, Jalisco. Con base en evidencias generadas a través de entrevistas semiestructuradas con repartidores de alimentos en el área de Providencia, el estudio identifica cuatro estrategias dominantes de adaptación socioespacial. Los trabajadores las usaron para adaptarse a la pandemia en un contexto de problemas sistémicos de desigualdad social y urbana, políticas de distanciamiento social y aumento de riesgos ocupacionales, mientras que las plataformas digitales ganaron legitimidad e impulsaron la diversificación de servicios.

Palabras clave: Eventos focales; entrega de alimentos; Covid-19; plataformas digitales; segregación urbana.

Recibido: 25 de abril de 2022

Aceptado: 24 de agosto de 2022

Publicado: 21 de septiembre de 2022

Cómo citar: Verduzco Chávez, B., & Valenzuela Varela, M. B. (2022). Socio-spatial adaptation in the food delivery system during the first stages of the Covid-19 pandemic in Guadalajara, Jalisco. *Acta Universitaria* 32, e3554. doi. <http://doi.org/10.15174.au.2022.3554>

Introduction

Socio-spatial adaptation is an interaction process that takes place in multiple scales of space and time. It is caused by a diversity of combinations of individual decisions as well as by institutional, contextual, and structural forces. It may present episodes of learning and innovation provoked by critical situations known in the public policy literature as focusing events, such as rapid variations in environmental conditions, catastrophes, pandemics, rebellions, revolutions, or any other rapid change in conditions with strong social effects. Focusing events lead to changes on policy agendas, alter power relations, and interest group mobilization (Birkland, 1997).

Theoretical interpretations and empirical analysis are needed to understand who adapts to what, why and how context matters, and what are the consequences of adaptation. Understanding adaptation was a central research topic for human ecology scholars investigating the relation between structural patterns and social processes taking place at the origins of global manufacturing dominance by the United States (Dear, 2012; McDonnell, 2011). Explaining adaptation and learning processes is part of the research agenda for scholars analyzing resilience to globalization, climate change, or disasters affecting a particular region, city, or community (Christmann & Ibert, 2012; Pelling *et al.*, 2008).

This article investigates socio-spatial adaptation by looking at the growth in use of food delivery digital platforms during the early stages of the Covid-19 pandemic, observed in a gastronomic district of Guadalajara, Mexico. The study covers a period of 101 days (March 17 to June 25, 2020). Findings presented here come from 20 semi-structured interviews with delivery people from different digital platforms (Uber Eats, Rappi, SinDelantal, Didi Foods). Interviews were conducted between May 31 and June 11.

Adaptation is analyzed as a broader socio-spatial transformation led by the use of new technologies and to contextual conditions faced by individuals. For this purpose, this article is organized in five sections. First, it addresses the theoretical and empirical approach to analyze socio-spatial adaptation as a process that entails human interaction, space, learning processes, reflective systems, ascriptions of meaning, and explanations of specific practices (Meusburger & Werlen, 2017). The second part contextualizes research in the western suburbs of Guadalajara, a city facing a historical pattern of urban segregation as a recurrent issue in urban policy agendas due to its durable nature and the new shapes resulting from social and technological changes (Vaughan & Arbaci, 2011). The third section presents research findings regarding organized and policy responses as well as the experience of food delivery drivers. The fourth section presents a discussion of research findings, and section five presents conclusions.

This article makes three key contributions: it identifies changes on several aspects of social interactions taking place during the early stages of the Covid-19 pandemic in the food delivery-service; it characterizes four socio-spatial adaptation strategies followed by delivery personnel in the face of the pandemic as a focusing event; and it draws policy implications from adaptation practices of key participants on the platform mediated-food delivery service in contemporary cities.

Theoretical framework: analyzing socio-spatial adaptation after a focusing event

Society responds to a focusing event by creating social meanings, adjusting and changing spatial identities, organizing and deploying control systems, creating and reproducing expectations, and transforming the spatial organization of cities and regions through public policies and new interactions. Turunen (2017) regards adaptation as a set of responses to larger social processes (such as segregation) and variations in living conditions (vulnerability). Artopoulos *et al.* (2018) claim that adaptation involves sharing knowledge, cultural exchange, and plural dialogue aimed to change how space is used and interactions interpreted.

Socio-spatial adaptation has a contentious nature (Martin & Miller, 2003). Tilly (2004) links adaptation to different forms of social boundary activation lived through competition and conflict and attachment of distinctive practices. Gusic (2019) argues that, in the face of conflict, space is relational, which is socially-produced and has material, perceived, and lived dimensions. After analyzing post-conflict situations, Morrow *et al.* (2020) recognized that acting on territorialized space can be contentious and complex, and it may be a transformative experience for both space and individuals.

Drawing on this literature, the concept of socio-spatial adaptation to the Covid-19 pandemic as a focusing event is used here to refer to changes observed in several practices by different actors involved on the food delivery service on a particular urban context. Responses to the pandemic are an important part of a purposeful effort by social actors to reframe, change, and assess individual and collective spatial practices (Liggett & Perry, 1995).

Understanding the role of digitally mediated services is an essential goal of studying socio-spatial adaptation to the Covid-19 pandemic as a focusing event. Scholars have attempted several explanations of what digital platforms are and what they do to everyday life of individuals, social relations, urban interactions, and the economy. Artioli (2018) describes digital platforms as an important facet of urban change as they modify how individuals are connected to each other and to the urban environment, which includes what, how, and where is exchanged in a particular urban space. Ecker & Strüver (2022) describe the creation of a new "platform urbanism", defined as a mode of production of space with platforms operating as the central node of techno-social interactions in cities.

Expansion in usage of digital platform services, as a key feature of the socio-spatial adaptation to the Covid-19 pandemic, has several social and policy ramifications. Three central aspects of this socio-spatial adaptation process are addressed on this article: i) the relevance of a focusing event as an agenda setting force, ii) the interactive reinforcement or challenge of prevailing socio-spatial practices, and iii) the contentious reframing of target populations.

Focusing event as an agenda setting force. Following a definition introduced by Birkland (1997), Covid-19 is an agenda setting focusing event of global relevance. It forced humanity to focus the attention on a diverse set of policy fields (Ewert & Loer, 2022). Its effect may change over time, but coexistence of the virus during the early stages of the pandemic was an opportunity to introduce several policies to facilitate or induce transitions in urban life (Pierantoni *et al.*, 2020).

As suggested by Birkland (2004), a focusing event does not necessarily translate into policy learning, social learning, political learning, or policy innovation because it may take long time for this to happen. Whether or not individuals, communities or governments are able to respond in innovative ways to challenges that may be determined by several factors such as the capacity to analyze the risks of several forms of socio-spatial relations during a rapid spreading problem (Gonçalves et al., 2021) or learning and willingness to critically assess and modify everyday routines at a massive scale. Adapting to Covid-19 required identification of policy opportunities (Ewert & Loer, 2022; Monteblanco, 2021), but most governments opted for social distancing as a key policy to prevent contagion. National and subnational level governments developed policy agendas (hostile or enthusiastic) as a response to the use of digital platforms (Artioli, 2018).

Interactive reinforcement or challenge of prevailing socio-spatial practices. Adaptation is the sum of individual and social actions aimed at coping with changes on the interaction possibilities in different specific urban contexts where spatial practices take place. Context shapes socio-spatial practices and reinterpretations of social interaction in space and time (Pedrazzini et al., 2005).

Context and scale are relevant issues in explaining how different social actors adapt. In the presence of a focusing event, individuals and groups may innovate, change, or adopt certain action repertoires to deal with contentious issues. Socio-spatial adaptation may be observed at different scales. Looking at large changes, Florida et al. (2021) argue that urban adaptation to the pandemic may be present in the form of macro (inter-regional) changes, involving an increased use of teleworking, shifting geographies of innovation, increased appeal of innovation hubs, and micro adjustments (city-neighborhood-district) such as additional demand for personal space and use of private amenities outside of cities, changes in mobility patterns, less demand for office space, and the consolidation of live-work neighborhoods. Analyzing changes taking place at a meso-level, Mouratidis (2021) argues that the pandemic reshaped the links between different components of urban space and quality of life. Million (2021) describes how different social institutions (schools, bars, restaurants, sport clubs, etc.) experienced different paths of spatial adaptation through spontaneous and localized initiatives. At the individual level, Erfani & Bahrami (2022) highlight the compression of human activities in smaller spaces, including the use of home as a workplace.

Contentious reframing of target populations. Signs, meanings, and practices are a relevant part of lived experiences and play a role in defining the agenda setting influence of a focusing event (Martin & Miller, 2003). Target populations find opportunities to participate in framing how different individuals, groups, or organizations are perceived on the policy-making process. After a focusing event, participation may assume contentious forms. Stereotypes are reinforced or challenged, groups may be reframed in the public discourse as deserving or undeserving target populations (Schneider & Ingram, 1993), political calculations are reassessed (Donovan, 2001), and stakeholders mobilize to reduce vulnerabilities and risks (Prater & Lindell, 2000). During adaptation processes, social boundaries may be formed, transformed, activated, or suppressed through social mechanisms aimed to "interrupt, divide, circumscribe, or segregate distributions of population or activity within social fields" (Tilly, 2004).

In the early stages of the Covid-19 pandemic, food delivery personnel had a weak and vulnerable position in the public sphere. They were involved in unstable and insecure working relationships with digital platform companies and restaurant owners, they were also a vaguely defined category as public policy target population, and their work involved participating in unpredictable or potentially insecure interactions with final consumers (Newlands et al., 2017; Stewart & Stanford, 2017).

In sum, socio-spatial adaptation may take place at different scales. At the city or metropolitan level, delivery personnel participate in socio-spatial relationships and practices taking place in particular local contexts (Ecker & Strüver, 2022). Under the disturbed conditions resulting from the Covid-19 pandemic, socio-spatial adaptation may be understood as a process shaped by a multitude of lived experiences, discourses and practices, government agencies, individuals, and communities who interact on specific locales.

By focusing on the experience of food delivery personnel, this article shows that socio-spatial practices help to explore what happens to different social groups interacting in urban districts or neighborhoods, since they become the meaningful context for adaptation strategies. This relational interactive learning experience involves four dimensions: 1) Changes in socio-spatial bonding, which defines how individuals face the challenges imposed by a focusing event on the key interactions of their everyday experiences (family, friends and close relationships); 2) socio-spatial boundary activation on the public space; 3) experimenting with technology mediated relations as a solution to socio-spatial interaction challenges imposed by the focusing event, and 4) trusting collective and institutional solutions.

By analyzing a case observed in an affluent district of Guadalajara, this article contributes to provide answers for three relevant questions: (1) What socio-spatial interactions and everyday practices emerged or were reproduced while coping with the Covid-19 pandemic and social distancing policies adopted in the early stages? (2) How did multiple interactions and spatial practices of food delivery personnel shape different socio-spatial adaptation strategies? and 3) What are the theoretical and policy implications of the socio-spatial process observed on the wake of a focusing event?

Materials and Methods

Tracing evidence of socio-spatial adaptation at the community level

Different methods may be used to analyze socio-spatial adaptation to the Covid-19 pandemic as a focusing event. Quantitative methods help to trace variations in spatial and temporal patterns of service flows connecting restaurants, delivery persons, and consumers. Data mining enhances predictions of movements in the city (Andrienko et al., 2021), and it may be used to chart urban dynamics (Romanillos et al., 2021) and to decipher meanings from social patterns and interactions between technological layers and social systems (Spielman & Thill, 2008). The quantitative strategy has problems to analyze variations in human behavior and agency, particularly under the conditions of instability generated by a focusing event (Scott & Garcia, 2016; Vespignani, 2009). Qualitative methods focus on exploring social interaction and meanings attributed to changing social and spatial contexts (Zerouati & Bellal, 2020) and are used to explain how interests converge on public issues on a particular space and time, and how social groups activate action repertoires in defense of particular agendas (Ostrom, 1990; Scharpf, 1997; Whyte, 1993).

This article uses a qualitative approach to identify how food delivery personnel responded to the impacts of Covid-19 by making changes in their everyday life and how they interacted with socio-spatial practices of other actors involved in the food delivery service. The socio-spatial adaptation process was analyzed first as a contextual process where multiple stakeholders participate on contentious interactions aimed at finding ways of recovering some sense of normalcy in socio-spatial interactions and the urban economy. Government bulletins and field trips were used to analyze public reactions to changes on the food delivery service in the city.

The district of Providencia in Guadalajara, Jalisco, was selected based on its recognition as an affluent neighborhood with a large concentration of restaurants and bars serving an emerging tourist district (Verduzco & Valenzuela, 2022); a high concentration of office and housing growth as well as job concentration (López-García & Gómez-Álvarez, 2022). Waiting sites to conduct the interviews were selected following location patterns of food and beverage preparation establishments and because they were identified as the most relevant waiting points, both in exploratory interviews and field trips. Table 1 describes key variables from the interviews conducted at each site.

Table 1. Key variables of the interviewees, according to the waiting place for food delivery people in Providencia, Guadalajara, Mexico.

Variable	Site 1. Punto Sao Paulo	Site 2. Oxxo-Parque Silvano Barba	Site 3. Superama	Site 4. Midtown Jalisco	Site 5. Plaza Terranova
Intersection	Valparaiso Street & Américas Ave.	Providencia Ave. & Rubén Darío Ave.	Rubén Darío Ave. & Florencia Street	López Mateos Ave. & Colomos Street	Terranova Ave. & Herrera y Cairo Street.
Anchor	Lifestyle Mall	Public Park	Supermarket	Shopping Center	Small Shopping Center
Major Building (reference)	Luxury Hotel	Convenience Store	Supermarket	Shopping Center	Small Shopping Center
Number of Interviews	5	5	5	3	2
Motorcycle drivers	5	5	4	3	1
Bicycle Drivers	0	0	1	0	1
Male	5	5	4	2	2
Female	0	0	1	1	0
Companion	0	1	0	1	0
Average Age (years)	24	26.6	24	26.6	24.5
Students	2	0	3	1	2
Has other job	1	0	0	1	0
Married	2	1	0	0	0
With Children	2	3	1	1	0
Time of interview	6-9 PM.	5-8 PM	1-3 PM	4-6 PM	1-3 PM
Uber Eats	2	5	2	1	
Rappi	4	2	4	3	2
Didi Foods		1	1	2	
SinDelantal		1	2	1	1

Source: Author's own elaboration based on fieldwork conducted from May 31 to June 11, 2020.

Interviewees were selected based on a voluntary basis, on which the possible candidates considered available time, trust, and willingness to participate.¹ A semi-structured interview format was used by a team of two researchers. A written guide of the questions was available, but participants had flexibility to adjust the depth and scope of the interview based on personal experience, perception, and available time. Questions were directed to capture socio-spatial practices motivated by the pandemic, perceptions, and interpretation of interactions with other actors in the food delivery service, including the place of delivery personnel on public policy agendas.

¹ Only verbal informed consent was obtained from the interviewed. All interviews were conducted in a public place, and all safety protocols were followed during the interviews. Consent was given for pictures avoiding facial recognition of the drivers and companions.

Answers were captured by taking notes. Interviews conducted are not intended as a statistically representative sample. Provision of delivery service is closer to an unstable fluid in space and time than a fixed roster of providers in a particular site, day, and hour. Safety protocols were used, but not every worker was willing to be part of the study. As suggested by conventional criteria for semi-structured interviews (Dworkin, 2012), the interview process was interrupted as it approached to a saturation point, where new interviews were providing little if any information regarding the socio-spatial adaptation process. Content analysis of interviews was used to characterize observed changes in the spatiality of interactions involving delivery personnel. Interviews were coded to:

Identify personal and social bonding experiences by looking at practices such as sharing resources and adjusting spatial interaction on the domestic level, paying attention to children's needs, use of family and friend networks, and preparing to face labor uncertainty by studying or generating alternative income.

Assess prevailing or emerging socio-spatial practices (concerns, criticism or reinforcement of specific social practices, activation of social boundaries on the urban space, and different forms of tackling restaurant strategies and public policies, including adaptation by using multiple apps and waiting sites.

Assess how workers adapt to the changing nature of the technology-mediated experience of delivering food under the conditions created by the Covid-19 pandemic, which involves labor experience, use of platform apps, incidents, interpretation of labor relationship and general perception about the prospects of this line of work.

Identify attitudes towards the pandemic, including acceptance of its character as a public threat and as a focusing event, disposition to assume risks and to change conventional everyday working practices, respect, and understanding of other's attitudes and concerns, restaurant practices, government policies, and support for collective action.

The next section contextualizes the study and describes the different strategies used by food delivery workers.

Results

Adaptation and learning experiences in a pandemic context in Guadalajara, Mexico

The study reported here explores the manifestations of socio-spatial adaptation in a district of the metropolitan area of Guadalajara by looking first at the general context of food delivery in the city and then analyzing socio-spatial practices of food delivery personnel.

The urban context of food delivery in Guadalajara

The city of Guadalajara is a good case for analyzing how the Covid-19 pandemic, as a focusing event, created opportunities for a rapid increase in the adoption of food delivery platforms. The metropolitan area of Guadalajara is the second largest city in Mexico. It is formed by 10 municipalities with a population of around five million inhabitants (for the year 2020). Every major technological change has shaped the socio-spatial landscape in this city by furthering down socio-spatial segregation patterns and creating advantages for the western areas. The combination of territorial organization and the city's social inequality affect business location decisions, but business spatial strategies have broad implications for urban structure, housing distribution, and geography of the food industry.

In this case, the speed and impact on the pandemic event on the learning processes of specific groups and players is an opportunity to generate new knowledge regarding how the use of a new technology shapes the transformation of a sprawling Latin American city within broader techno-social trends. Three aspects of the urban context are relevant for the study of socio-spatial adaptation process observed after the pandemic.

The growing presence of digital platforms as powerful players. At a global level, by the end of 2019, relationships between restaurateurs, platform operators, delivery people, and the public were in crisis as public debate grew on issues such as wages, delivery drivers' safety, handling of tips, and restaurant owners' doubts about the convenience of using these systems (Thompson, 2019). The long-term survival of platform operators has been a key subject of inquiry. According to Ryder (2019), companies with origins in taxi service were losing billions of dollars. Others have pointed to challenges in negotiations between platforms, large chains of restaurants, or even small-scale operators, in exchange for lower commissions (Molla, 2020).

The Covid-19 pandemic opened new horizons, not necessarily free of tensions and problems. In May 2020, The Wall Street Journal (WSJ) reported a strong growth in orders during the pandemic, but not in profit margins. The WSJ noted that companies faced uncertainty about falling demand when businesses returned to normal (Haddon & Wernau, 2020). Other reports suggested that greater demand forced adjustments in the number of workers, renegotiation of rates and commissions, and adoption of new forms of ordering deliveries (Bandoim, 2020).

Companies operating digital platforms were facing different challenges in different countries. In Mexico, four food distribution platforms were waging a fierce battle for the market in 2019: Didi Foods lowered the cost of delivery from 18 to 10 pesos to compete with Uber Eats, Rappi, and Sin Delantal (Reyes, 2019). At the beginning of June 2020, Uber Eats reported presence in 45 cities of 30 Mexican states, including Puerto Vallarta and Guadalajara, in Jalisco –the states of Campeche and Tlaxcala were missing–.

Geography of food delivery services in Guadalajara. In the metropolitan area of Guadalajara, historic urban inequality and the suburban growth have favored the formation of attractive gastronomic agglomerations for digital food delivery platforms. Five districts stand out: Chapultepec, Providencia, Chapalita-Expo Guadalajara, Tlaquepaque Centro, and Andares, a high density subcenter in the municipality of Zapopan. With the exception of Tlaquepaque, located to the east, these are places with the highest income levels in the metropolis and are located to the west of downtown Guadalajara.

Before the food delivery digital platforms arrived to this metropolitan area, pizzerias, oriental food restaurants, and taco stands had their own delivery service. Famous restaurants and, above all, many small ones, lacked the service. Platform operators arrived in December 2016, when Uber Eats affiliated 116 restaurants (Villareal, 2017). Didi Foods arrived in February 2019 (Rodríguez, 2019).

Providencia, the urban district studied here, is located in the north-west of the municipality of Guadalajara, the central city of the metropolis. It has an approximate area of 12.9 square kilometers (Figure 1) and contains a diverse gastronomic district. In this area, prices per square meter of land range between one thousand and four thousand U. S. dollars (Instituto de Información Estadística y Geográfica [IIEG], 2020).

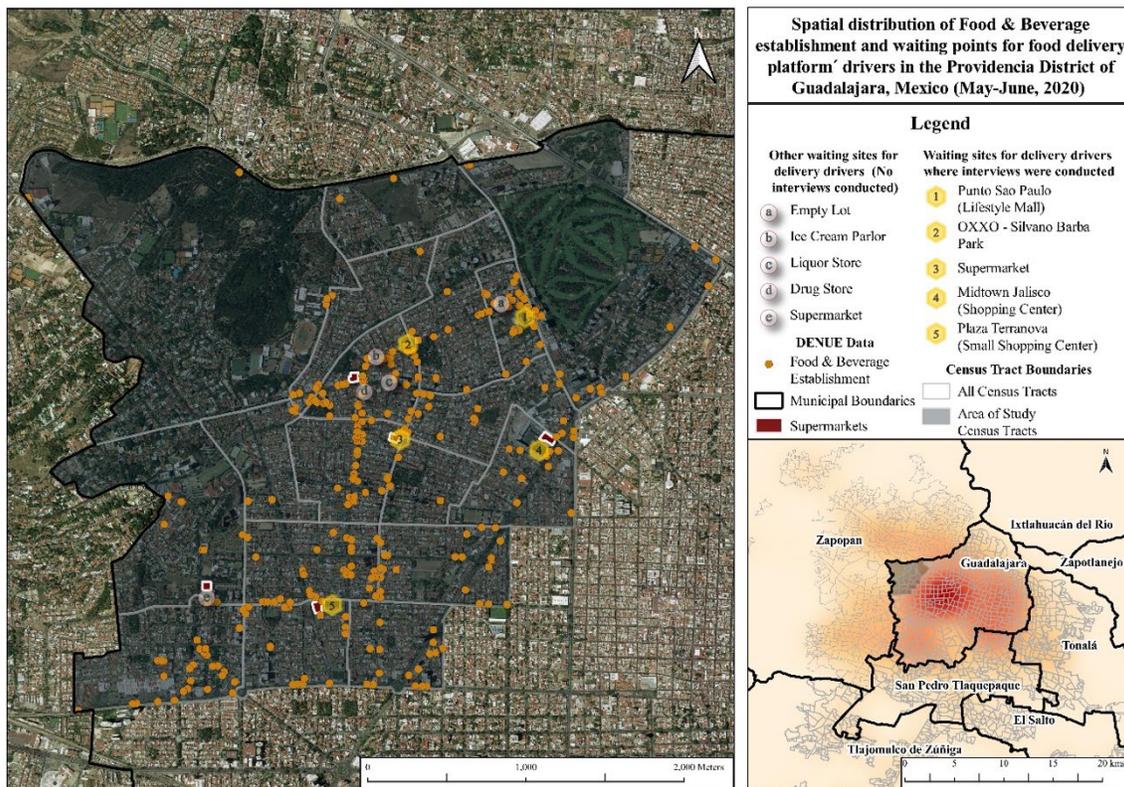


Figure 1. Area of study (waiting points for food delivery people and food & beverage establishments in the Providencia District of Guadalajara). Source: Author's own elaboration based on Directorio Estadístico Nacional de Unidades Económicas (DENUE) (2020) and fieldwork conducted from May 31 to June 11, 2020.

Prior to the interviews, tours were made by car and on foot in the main avenues of the Providencia district in order to find common waiting places for delivery people, where interviewees reported a high demand for food delivery service. In this district, delivery service is carried out mainly by motorcycle, by men whose average age is 26.4 years. There are few women, and they preferably work morning shifts. Some distributors are accompanied by a partner or friend. While the distributor drives the motorcycle, the companions carry a backpack with food (Figure 2).



Figure 2. Food delivery people at work with a companion.
Source: Author's photo from fieldwork conducted from May 31 to June 11, 2020.

The early stages of the Covid-19 pandemic. To understand the dynamics of adaptation, a timeline was constructed. It extends from March 17, the beginning of the social distancing policy, to June 25. Even in this short period, three stages are distinguished according to the level of incidence of Covid-19 in Guadalajara: the first with maximum records of eleven daily cases in Guadalajara on May 6 and 25 in the metropolis on May 9; the second stage with 42 on May 29 and 88 on the 30th; and the third with 223 and 490 on June 23, respectively (Figure 3).

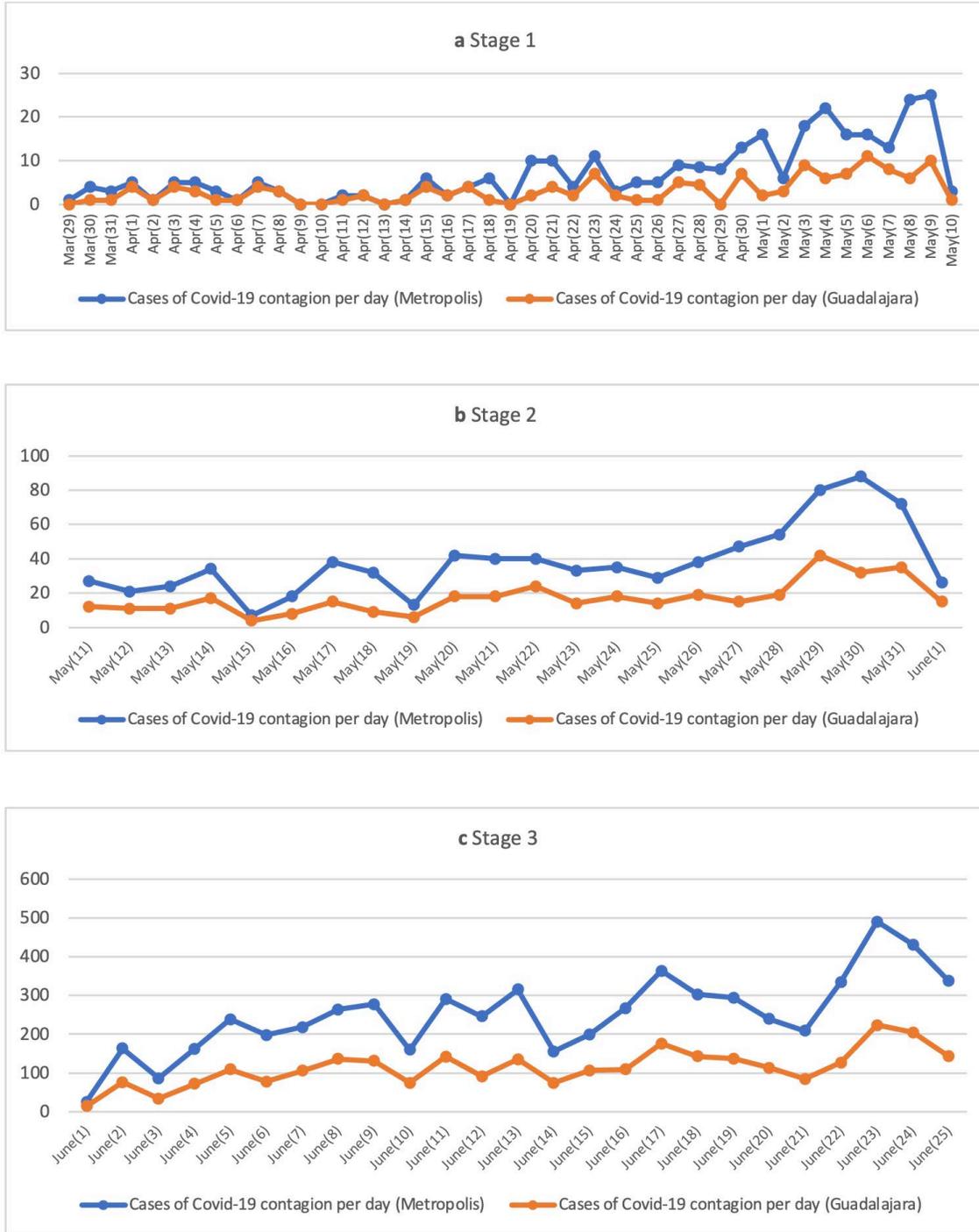


Figure 3. Daily cases of Covid-19 contagion in the Guadalajara Metropolitan Area, March-June 2020. a) Stage 1, b) Stage 2, c) Stage 3. Source: Author's own elaboration based on press releases by Secretaría de Salud del Gobierno del estado de Jalisco (March-June 2020).

Figure 4 shows how players reacted to levels of incidence in each stage and to government preventive decisions aimed to better manage the situation in order to keep running this part of the urban system. Government entities were moving towards a better structured effort to manage the situation, trying to reconcile prevention of contagion and to open up the economy. Restaurants followed suit by launching initiatives to maintain consumption. Digital platforms made adjustments aimed at greater efficiency and competitiveness derived from their knowledge of the behavior of the other players. The role of these three players is described below.

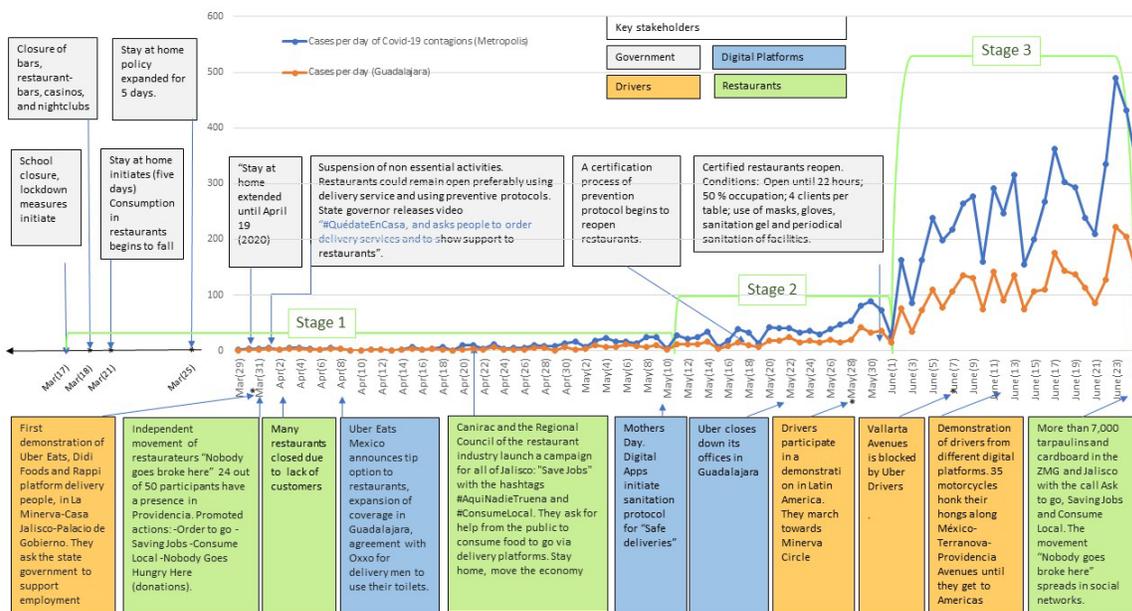


Figure 4. Timeline of the adaptation process of those involved in the distribution of food at home/workplaces in Guadalajara.
Source: Author's own elaboration based on a hemerographic review and press releases by Secretaría de Salud del Gobierno del estado de Jalisco (March-June 2020).

Platform companies: Platform companies are neither normal employers nor all-powerful companies capable of escaping the learning processes of others involved. The pandemic exposed their vulnerabilities and forced them to make changes to their services and to review their presence in cities. In an early reaction to the new conditions, Uber Eats included a function in the app to make contributions to restaurants, expanded its coverage in various cities, and made an agreement with the large chain of convenience stores to offer toilet services to its delivery people (El Financiero, 2020; Interviews).

Restaurant owners: Restaurateurs first reacted to the changes by activating forms of collective movements never considered before. Actions were based on their social capital and quickly adopted a diversifying strategy when dealing with digital platforms. Some accepted more orders than they could fill, increasing waiting times to deliver orders to couriers.

Government entities: The pandemic introduced changes in the notions of legitimacy-illegitimacy with which this type of service is evaluated in the public sphere. It legitimized the sociopolitical relevance of platforms on the public sphere. Interviewed on the streets of Guadalajara, delivery people considered their work not to be a heroic task, but an essential service for the community and a contribution to normalizing life in the city. They felt exposed to precarious conditions. They argued that their work took place in a gray area of government action and regarded themselves as occupying a public position practically ignored by the different government levels.

The municipal government limited itself to interceding so that they did not use public spaces such as parks, sidewalks, and squares; the federal government practically limited its action to coordinating with the platforms to collect taxes from the delivery people, which they considered to be a burden on their income. Delivery people acknowledged that they were allowed to work on the street during the confinement that followed the pandemic, among other things, due to the demand of local restaurateurs to support their movement called "No one goes broke here", based on the "order to go" service.

Field work findings reported in the next section reveal how delivery persons used four dominant socio-spatial adaptation strategies.

Variations in socio-spatial strategies followed by food delivery people

Narratives provided during interviews suggest that, in Guadalajara, adaptation involved four main players: government, platform operating companies, restaurants, and delivery people. This section focuses on delivery persons as central players of the system, but their experience occurs in a context where other players are also adapting to the technological change and the impacts of the pandemic. The Covid-19 pandemic exposed the limitations of technology mediated labor relations during the critical circumstances observed in 2020. The length of employment of the interviewees ranges from three to 30 months. This experience covers a sufficient period of time to calibrate changes induced by the Covid-19 pandemic in socio-spatial interactions.

Most of the employees started working in this activity many months before the beginning of the pandemic. Some did it during the first months of 2020 or increased the time dedicated to the service because other jobs they had have closed or reduced activities due to the social distancing policy. Content analysis of the interviews revealed four dominant, though not exclusionary, strategies of socio-spatial adaptation: socio-spatial bonding, socio-spatial boundary activation, technological choice and labor experimentation, and trusting collective and institutional solutions. Table 2 presents values estimated using a 1-5 scale by adding the binary results of assessing presence or absence of twenty conditions (five per strategy). Values represent how much each participant relied on every strategy to adapt to the challenges imposed by the pandemic.

Table 2. Dominant strategies of socio-spatial adaptation in food delivery service.

Interview	Socio-spatial bonding	Socio-spatial boundary activation	Technological choice and labor experimentation	Trusting collective and institutional solutions
E1	2	2	0	3
E2	1	2	3	4
E3	2	2	2	2
E4	3	2	1	3
E5	3	4	3	2
E6	3	2	2	3
E7	1	3	4	4
E8	2	2	4	2
E9	2	2	1	3
E10	2	1	3	3
E11	3	5	3	5
E12	2	1	4	2
E13	2	2	3	3
E14	0	3	2	3
E15	4	3	4	2
E16	2	3	3	1
E17	2	3	3	1
E18	3	2	3	1
E19	2	4	4	3
E20	1	1	4	3

Source: Author's own elaboration based on fieldwork conducted from May 31 to June 11, 2020.

Socio-spatial bonding. This strategy describes how individuals rely on the use of domestic social capital (family and friends) to adjust their lives and spatial practices to face the challenges of the Covid-19 pandemic as a focusing event. This strategy reveals an experience of delivering food during the pandemic guided by taking special care of close relationships and a clear preference for choices aimed at protecting the private realm. Variables in this solution include sharing resources with family members, committing with preventive spatial practices at home, providing for children needs, using friend networks and finding ways to move ahead by studying or finding alternative income. Five out of the 20 persons interviewed stand out as relying more on this strategy to cope with the challenges of the pandemic.

Socio-spatial bonding was a key component of adaptation to confinement and risk management. Some interviewees reported that, at the beginning of the confinement, they experienced a sense of relief when driving without traffic congestion, but they came to feel insecure when making deliveries, because they sometimes did so on empty streets. They got used to this new reality and, as people and cars began to return to the streets, they felt the city had returned to a kind of normalcy. During the pandemic, distributing food became a family survival strategy, which involved a process of adaptation in the field of family relationships and the revision of the meaning of this work. 90% of the participants in the study said that, during confinement, this service was their only source of income and one of the main sources of family income; 35% reported loss of income in the family due to layoffs or business closures due to Covid-19. Several participants expressed that, although in the first days there was concern about the risk they were running and care was abundant, their family benefited directly from the work they did. One interviewee described the situation this way:

There are four of us in my family, it has gone downhill for us. They rested my brother, my mother too. So, I am the strong one. I do want to rest, but I try not to, I try to continue because the situation is difficult. Yes, I am very worried (Interviewee, 15).

Despite the initial jolt of conscience, the situation did not lead to drastic changes in domestic life. It was necessary to internalize fears of contagion, and as time passed, the care was reduced. In the early stages, the lack of personally known patients led to carelessness.

Socio-spatial boundary activation. Boundary activation as a mode of socio-spatial adaptation to the pandemic was played out as a reinterpretation of prevailing conditions of social and urban inequality in the metropolitan area. Social distancing was adopted as a diversity of choices and practices aimed at reducing risks while handling food delivery orders. In the context of the pandemic, delivery personnel, customers, and other players used boundary activation mechanisms to prevent contagion. Seven of the 20 persons interviewed used boundary activation as the dominant mode of socio-spatial interaction in order to reach a wider number of customers while, at the same time, reducing the risks associated with this job during the pandemic. Their experience was shaped by their willingness to go almost everywhere, work longer hours, respect client's attitudes and concerns as well as restaurant strategies, and be open to experiment with waiting sites.

In the context of the pandemic, boundary activation had also a contentious social dimension with clear impacts on the work experience and rewards of delivery personnel. Motorcycle drivers mentioned discriminatory practices which resulted in income reductions and negative impacts on their dignity, to name a few: instructions to leave the product at the door of the house, condominium, or gated community; petitions to leave food on the floor; and fumigation of delivered products, which sometimes reached the body of the person delivering food.

An interviewee narrated: "They take care of the distance, but it is rude that sometimes they do not even open the door for you to leave things, as if you sucked!" (Interviewee, 18). Other drivers, highlighted reductions in cash tips, which was facilitated by the extension of the distances between product collection-delivery points. A female interviewee stated: "There are rare clients. Once, a man in downtown opened the door for me almost naked, he was in his underwear. He told me 'Good afternoon' and went back" (Interviewee, 13). None of the interviewees spoke of severe changes in the relationship with clients, but almost all recalled incidents of distancing and expressions of concern from clients about the risks of contagion as a result of interacting with the food deliverer.

Housing conditions in Providencia and neighboring suburbs exacerbated the impacts of social boundary activation. Delivery workers reported receiving differential treatment in different types of housing. Many of the orders arrived from homes located in apartment buildings, horizontal condominiums, and gated communities. In this type of housing model, the most adverse treatment was recorded, not so much from customers, but from the guards at the entrance doors. The mandatory use of helmets to enter the subdivision stands out, or even the use of alternate accesses to the entrance of the residents. According to one driver:

Very drastic measures were taken in the gated communities. In some cases, you could not go through the main entrance with the food, but rather they send you to a side door, sometimes a kilometer and a half away. You have to go around a lot, because there they take your temperature and give you the gel. When they sent me to that door, in the end they didn't do anything to me, they just let me pass like that (Interviewee, 1).

As the number of users grew, platform operators decided to expand service areas. But delivery people presented a marked preference for serving the highest-income areas where the demand is concentrated and the distances traveled are shorter. The platforms focused their strategy on these areas, but the delivery people co-participated in the stigmatization of urban space, since they considered more convenient and safer moving in these areas.

Figure 5 shows the urban routes most stigmatized by delivery people: the central areas of the city, with their traffic and insecurity problems, are considered the main polygon to avoid. The next case is the north of the city that includes parts of Zapopan and Guadalajara in lower income places such as Colonia Constitución, Tabachines, and the vicinity of the Jalisco soccer stadium. Other undesirable areas are located east of the city. These include traditional neighborhoods of Guadalajara such as Oblatos (east) and areas of the municipalities of Tonalá and Tlaquepaque.

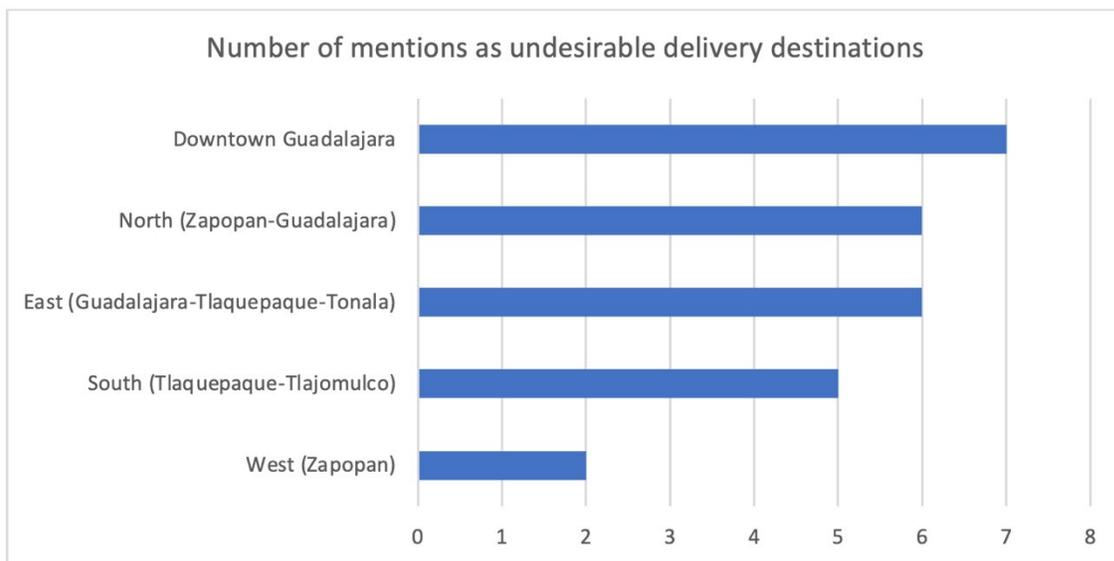


Figure 5. Places stigmatized by food delivery people who work in Providencia, Guadalajara (number of mentions).
Source: Author's own elaboration based on fieldwork conducted from May 31 to June 11, 2020.

These perceptions are consistent with the prevailing conditions of inequality in the metropolis. Discrimination was not mitigated by the origin of the delivery personnel. At one waiting site, almost all interviewees were from a neighborhood identified as undesirable, but one interviewee who did not come from such place mentioned it on his list of “places to avoid”. Socio-spatial stigmatization was used as a response to insecurity, low tips, and travel distances (in relation to the payment per trip).

Boundary activation was also practiced by other stakeholders in the food delivery service. Before the pandemic, this service had grown with relatively minor setbacks, especially in the west of the metropolis. Delivery drivers were seen as a kind of necessary evil that, on the one hand, helped expand the market; but, on the other hand, they demanded spaces and services that nobody was willing to provide for them. Drivers were virtually evicted from some waiting sites in the public space, due to the dissatisfaction of neighbors and authorities. Delivery persons usually satisfied their physiological needs, personal hygiene, and rest in shopping centers or in restaurants granting them access.

The pandemic made working conditions more precarious, because the number of delivery people grew, the willingness of restaurateurs to allow the use of facilities decreased, and –in the interest of having more orders– some restaurateurs increased waiting times for food preparation. Some interviewees reported waiting for more than forty minutes in several of the most well-known restaurants in Providencia. In addition, several restaurants took measures to prevent them from a close interaction with their staff or customers and denied them access to their facilities, such as toilets or waiting areas. One interviewee reported:

Now you have to wait outside for the order, if you want to use the bathroom, they don't lend it to you. They discriminate against you. They tell you that the bathroom is only if you consume something. They tell you that you are not a customer. I tell them that I am the customer who is going to pick up. They tell me no, no, you can't use the bathroom (Interviewee, 10).

Figure 6 shows variations in distancing measures: while a corner Italian restaurant on Terranova Avenue offers a bench to wait for orders, an inn located near Midtown Jalisco shopping center had a sign asking delivery persons to wait for their order on the street.

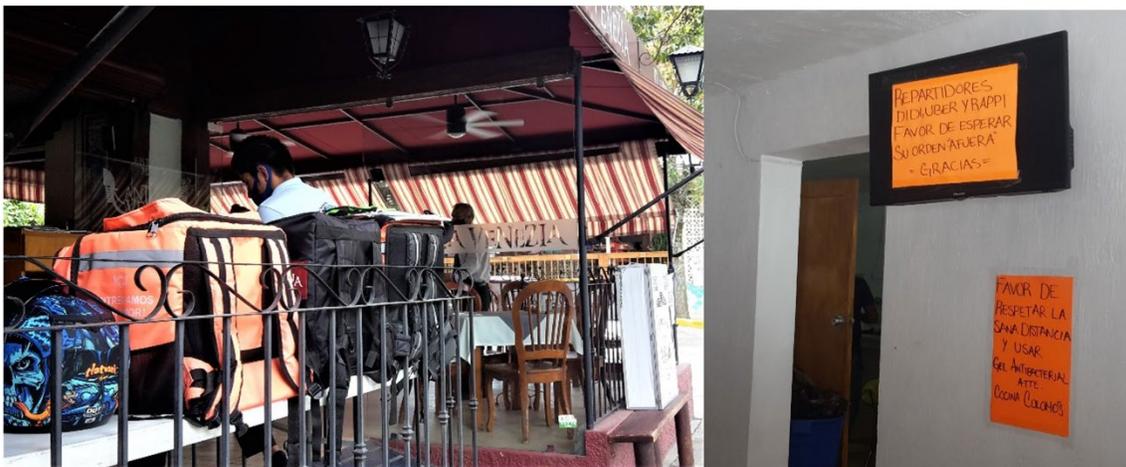


Figure 6. Variations in the treatment of restaurateurs to home delivery food in Providencia, Guadalajara.
Source: Author's photo from fieldwork conducted from May 31 to June 11, 2020.

Technological choice and labor experimentation. For delivery personnel, the pandemic changed the experience of delivering food and their perception about platform choice, managing labor incidents, labor relationships, and even the future of digital mediated work. This strategy describes how workers managed to surf the wave of techno-social interactions in the face of the pandemic. Sixty percent of the cases had higher scores for social practices or interactions corresponding to this model of adaptation.

While interviewees do not consider companies as their employers, they expect support from them. A small proportion regard themselves as employees, but almost all of them value the flexibility of this relationship. Several of them decided to use two or more platforms as a defensive strategy against deficiencies and bad practices of companies. This allows them to better deal with problems such as disagreements with the operation, arbitrary discounts, disappearance of bonuses, poor working conditions, neglect of complaints, competition by other delivery drivers, and uncertainty in the labor market.

When asked how they perceived the recent changes, interviewees reported to believe that the platforms had grown in a very rapid fashion, especially in the west of the city. Some even mentioned a certain degree of saturation. In their narratives, competition manifests in adjustments to the conditions in which services are offered during Covid-19. Changes caused by the pandemic affecting their everyday experience include an increased competition between platforms, hiring more staff, diversification of areas served, a rapid increase in demand for new consumers with no previous experience using this service. These changes increased mistrust and uncertainty about the nature and effectiveness of the service provided.

Drivers adapted to the competition by activating two or more platforms on their phones. As new platforms were arriving, many of them responded by testing them to see if they offered better opportunities. Some left, but many continued to use them to reduce waiting times. They used an average of 1.7 platforms; 50% used one; 40% used two, and 10% were registered in the four with more presence in the city. In general, they perceived areas of opportunity for food delivery service to expand to other areas of the city and through the incorporation of additional clients and services. Interviewees used the case of Rappi as an example. This platform diversified services and included: purchase of groceries and medicines; "favors" at home, such as taking a product to a place; collecting forgotten objects; or home delivery of cash, among other useful services during lockdown.

Trusting collective and institutional solutions. The contentious nature of adaptation to a focusing event begins with reassessments of new situations for different social groups. Challenged by the pandemic, delivery personnel developed an interpretation of the event as something surprising that exposed social inequality and exhibited the precariousness of their situation, which was aggravated by the extension of routes, the incorporation of new neighborhoods and risks associated with the socio-spatial differences of the city as a problem not solved by technology. Seeing the city paralyzed and everything closed down was a shock for this segment of the workforce, already exposed to a diversity of treatment from consumers.

Working under the conditions of the pandemic, required adjustments on trust networks. For delivery personnel, the biggest challenge was to believe the science explaining its existence and patterns of contagion. Believing implied taking preventive measures, respecting others' preventive practices and reassessing the relevance and supporting collective action. Delivery persons with higher scores on this strategy were those who believed that Covid was real, took preventive measures and made adjustments on their everyday life, expressed respect for other's preventive measures, had more respect for policies, and were more supportive of collective action. Fifty five percent of the participants in the study had the highest scores on this strategy to deal with the pandemic.

Interviewees recognized they could do little on their own to deal with serious situations with clients or suppliers. They claimed this was a particular challenge derived from public insecurity or accidents. In this context, some drivers participated in conventional contentious repertoires such as street demonstrations. During the period under study, four protests were registered: March 30, May 29, June 8, and June 13. In the first case, Didi Foods associates complained about handling orders and tips; on May 29, users from various platforms protested at the Minerva Circle, an iconic place in the city. On June 8, they blocked a main avenue, and on the 13th, they organized a roundup through the city's avenues that included the Terranova-Providencia corridor in the center of the studied district. The major innovation on their contentious tactics was the use of social networks to attract public government and media attention. Their motorcade was accompanied by journalists, firefighters, and police officers. A group of 35 motorcyclists honked their horns on a journey from México Avenue, in the south, to Americas Avenue in the north of the area of study (Field observation, June 13, 2020).

Discussion

Delivery food service as socio-urban experimentation

This study contributes to understand the contextual nature of socio-spatial adaptation as a process shaped by individual practices and social mechanisms. The sudden change in socio-spatial conditions that took place during the early days of the Covid-19 pandemic originated practices aimed at preventing contagion while maintaining some sense of normalcy in social, urban, and economic interactions. This article provides evidence of four key aspects of the socio-spatial adaptation observed in Guadalajara: i) Consolidation of a platform mediated service, ii) identification of four dominant strategies to describe socio-spatial adaptation experienced by food delivery personnel, iii) policy implications of socio-spatial adaptation, and iv) seeds of a changing geography of food production and distribution in the city.

Consolidation of a platform mediated service as a legitimate labor relationship and response to a focusing event. The pandemic exacerbated competition for a share in the food delivery service market. Transnational corporations operating the largest digital platforms participated in renegotiations of different aspects of their interactions with the other three key players. As reported by interviewees, platforms increased their capacity to accelerate the formalization of labor relationships and tax compliance. With restauranters they renegotiated aspects such as tariffs, waiting times, and basic aspects of working conditions of delivery people. The arrival of new platforms, combined with an increasing demand, led to narrower profit margins, expansion of service areas, and increases in service scope. Key characteristics of the socio-spatial adaptation process observed in Guadalajara confirm some of the changes reported in the literature.

From the standpoint of delivery people, the original informal relationship with platforms has been lost. Platform operators have required their collaborators to be registered as taxpayers to work. June 1 2020 was the deadline, but some interviewees expected an extension since the pandemic had complicated the Tax Administration System's task of registering them. Judging by the expressions and protests, this was still a pending issue waiting for a solution, together with other issues, such as the management of tips, distances and payments made by the platforms.

Despite progress on formalizing workers as taxpayers, platforms still transfer occupational risks to the worker's private sphere. Platforms also maintain the prerogative to establish terms and conditions of service provision. According to the interviewees, these companies unilaterally established key aspects of the service, such as order allocation, delivery fees, and penalties for customer complaints, service failures, or tip management. Algorithms, combined with increasing connectivity speed, became an instrument of labor control. Most of those interviewed could foresee a near future where companies will have greater penetration, especially in affluent areas of cities.

The pandemic helped to normalize this employment relationship and the social co-production of job insecurity. When comparing it with other employment alternatives, such as construction, gyms, hair dressing parlors, and other personal services, the interviewees considered that this was a good, relatively safe, and flexible income option that can be used when other jobs disappear, go into crisis, or are otherwise insufficient. Rapid expansion of the service in Providencia demonstrated that a key component of the transition to platform mediated food delivery service is the willingness of people to have the experience of consuming prepared food even during a pandemic and having to tip the driver.

Dominant strategies to describe socio-spatial adaptation experienced by food delivery personnel. Evidence provided contributes to urban studies interested on the arrival and impacts of digital platforms and the emergence of new urban geographies. The socio-spatial interaction modes pursued by delivery personnel express changes and persistence of different notions of social coexistence among families, workers, restaurants, and digital platforms. Interviews were useful to identify four dominant strategies used by delivery personnel to adapt to the pandemic. Social distance as a policy was played out in the field through different forms of social boundary activation as a recurrent mechanism observed on the technology mediated food delivery service.

Policy implications of socio-spatial adaptation. The focusing character of the Covid-19 pandemic led to several simultaneous changes introduced by a diverse set of stakeholders involved in policymaking to address the pandemic and keep the food delivery service running even during the early stages. The Covid-19 pandemic accelerated the transformation of food-delivery into a public-sphere issue (Schlesinger, 2020). Digital platforms and restaurant owners used this opportunity to shape socio-spatial interaction taking place in a poorly regulated public space. Several aspects of the food delivery conditions became a source of public debate and originated contentious repertoires. In gastronomic districts, normal street corners were transformed into public spaces and disputed resources by pedestrians, car users, and motorcyclists waiting for food orders to appear on their mobile phones.

The image of empty tables in restaurants and groups of food delivery people on the corner describe an unprecedented spatiality. With less vehicles circulating in the streets and occupying parking lots during the early days of the pandemic, public space was used to provide greater waiting room for delivery people (Figure 7). At the personal level, food delivery personnel faced the new conditions by practicing an assortment of social distancing practices in the public and private realms. While making adjustments on domestic space and family interactions, they were consolidating the corner as a logistics site and a place where face-to-face and remote interactions converge between a network of actors that extends throughout the city and changes in real time in unpredictable ways.



Figure 7. Empty tables and motorcycles on the corner, a common scene in Providencia, Guadalajara, during the Covid-19 pandemic.

Source: Author's photo from fieldwork conducted from May 31 to June 11, 2020.

The changing geographies of food production and distribution. Since the industrial revolution, every major change in socio-technical systems has had repercussions in urban areas. Faced with the use of new technologies to satisfy basic social needs, corporations, cities, families, and individuals make adjustments and develop new practices. Over time, the disruptive impacts of new technologies are mitigated.

While food delivery was gaining legitimacy during the pandemic, the spatiality of the gastronomic experience began to change in Guadalajara. In the short term, a clear consequence was observed on the conversion of formal restaurants into establishments that assembled food to be delivered to homes. An immediate consequence observed in the early stages of the pandemic materialized in scenes of restaurants that assumed the "To Go" food business model (Figure 8). Deeper down is the emergence of virtual restaurants in underprivileged locations or the growing vulnerability faced by restaurants located in high-income places that characterize the geography of gastronomy in Guadalajara.



Figure 8. Food "to go", dominant image during the Covid-19 pandemic in Guadalajara.
Source: Author's photo from fieldwork conducted from May 31 to June 11, 2020.

While research findings presented here suggest the need for additional comparative qualitative research on the theoretical and policy implications of socio-spatial adaptation, it is clear that this process has broader implications for the socio-spatial organization of urban space. Stakeholders responded by reinforcing, rather than reducing, socio-spatial exclusion practices.

Dominant adaptation strategies also pose policy challenges for the organization of cities as they have distributive effects. The winners during the early stages of the Covid-19 pandemic may be the large corporations operating digital platforms with the capacity to transform the geography of the gastronomic experience in cities. In this case, Didi Foods, Uber Eats, and SinDelantal were perceived as the main winners. They gained influence as interlocutors with restaurateurs and the government, they initiated the creation of ghost restaurants that only work in the home delivery mode, and they unilaterally adjusted the terms of interaction with delivery people.

For individuals delivering food, the pandemic opened up opportunities, but it also questioned personal choices. They confronted several questions regarding the costs and benefits of working on the risky environment created by the pandemic. Most of the interviewed persons decided to continue with this as their only job, or as a transitional phase, until they could find a better option because it was considered to be a source of income that allowed them to support relatives who temporarily lost their job in sectors such as construction, commerce, services, and other informal activities. Daily exposure to risk and new labor pressures led workers to develop different dominant strategies to cope with the Covid-19 pandemic as a focusing event. These strategies may have two long lasting consequences that deserve further research: new patterns in organizational strategies in food distribution and factors shaping variations in forms of social boundary activation build upon a segregated urban space.

Conclusions

According to Andrienko et al. (2021), the great desire of smart city models is to use data mining to learn "how citizens experience the city" and "the activities that take place in different locations of the city". This problem cannot be solved simply by expanding the use of intelligent databases. This article shows that qualitative methods are helpful to capture what citizens actually do and to understand interpretations, meanings attributed to personal experiences, and learning processes under challenging circumstances. Findings presented here are closer to the argument presented by Vespignani (2009) and Bina et al. (2020), as they expose the relevance of understanding personal experiences in times of chaos.

By analyzing evidence generated through semi-structured interviews, this study suggests that the pandemic accelerated the learning and adaptation processes observed in the food delivery service in Guadalajara. Covid-19 increased legitimacy and recognition of companies and delivery people as actors in the formation of urban policy processes. The pandemic has tested the vitality of agglomeration economies built in this district over more than three decades and, in doing so, called into question the viability and resilience of an urban structure where pockets of upscale lifestyles coexist in a segregated city.

At a larger scale, adaptation strategies raise other urban policy issues such as the consolidation of an oligopolistic market of companies with lobbying capacity that will allow them to expand their presence in the cities and impose working conditions on their delivery people; the formation of collaborative networks or social capital, as a means for collective action by restaurateurs and workers and to make gastronomic districts viable in global and tourist cities; and a differentiation in the collaboration of local governments with companies and delivery people to achieve safety and health objectives while providing the service.

Distributors, as key players in the system, had to recalibrate public and private relations in order to operate and mitigate fears and risks of staying busy in this job option: they criticized, but did not question too much, the lack of public and government recognition of their strategic work; they assimilated that customers trusted them less and even discriminated against them; they initiated collective actions. In general, they assumed, as best as they could, the decisions of the companies; they regrouped at strategic points in the city to optimize their profitability, and finally, they learned to manage the risks that their activities represented to their personal health, that of their clients and their family.

For platform operating companies, Covid-19 unfolded as a great laboratory for experimentation and assessment of preferences and responses of others. With the information collected, they will have the possibility to further influence the changes in the geography of urban gastronomy and the use of public and private spaces for social and work coexistence. While the other players in the system will have to settle for their own narratives, the digital platforms will be able to focus their actions on customers, according to their preferences, to restaurants in accordance with their practices during the pandemic, and to governments, for the management of their labor relations and with the city.

At the individual scale, the adaptation process observed in the Providencia district of Guadalajara shows that the emergency situation created by Covid-19 quickly affected the entire population and triggered innovations asymmetrically among those directly in charge of delivering food. Delivery people are positioned as a key asset for the vitality of this business area and for managing uncertainty, but their experiences leave doubts about the willingness of others involved to improve their working conditions, their everyday experience at home, and their capacity to face uncertainties and labor challenges.

Acknowledgements

Authors wish to acknowledge the collaboration of the interviewed persons who kindly accepted to participate on a study conducted during a very sensitive context where mistrust was dominating social relationships. We also appreciate the work of Álvaro Mora Maciel for the preparation of map on Figure 1.

Conflicts of interests

Both authors report there are no competing interests to declare.

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