ISSN 2007-9737

Clustering Analysis in "Instant Delivery" Services: Examining the Urban, Logistics, and Social Challenges in Mexico City

Ana Bricia Galindo-Muro[1], Jaime Mora-Vargas[1,*], Laetitia Dablanc[2], Miguel Gastón Cedillo-Campos[3]

[1] Tecnológico de Monterrey, Escuela de Ingeniería y Ciencias, Mexico City, Mexico

[2] University Gustave Eiffel, Paris, France

[3] Instituto Mexicano del Transporte, Sistemas de Transporte y Logística, Mexico

jmora@tex.mx

Abstract. The rise of on-demand delivery, specifically the recent "Instant Delivery" services phenomenon, has significantly impacted urban, logistics, and social policies in metropolitan areas. As a result, cities face new challenges as they strive to promote economic growth and improve their inhabitants' quality of life while adhering to intelligent practices. Despite its growing importance, "Instant Deliveries" remains largely unexplored in academic literature. This study focuses on the landscape of instant deliveries in Mexico City, the largest metropolitan area in Latin America. It analyzes the delivery couriers through their demographic characteristics, participating companies, job dynamics, incentives, and the challenges they face. Results from the courier profile and the Hierarchical clustering demonstrate that couriers tend to be motivated to work within a delivery platform, even in the face of overwork and the absence of medical insurance or social benefits. This motivation is attributed to prevailing unemployment conditions and the necessity of additional income.

Keywords. Instant deliveries, urban policies, clustering, social challenges, Mexico.

1 Introduction

In today's fast-paced world, the 'platform economy' empowers workers with flexibility and accessibility, fundamentally altering the employment landscape.

Digital labor platforms are a game-changer for those who face limited opportunities. These platforms offer a pathway to economic inclusion by providing access to flexible work arrangements tailored to individual needs.

Thus, flexible, temporary work arrangements enable workers to seamlessly juggle paid work and other obligations [14]. The "platform economy" refers to various digitally mediated economic transactions [32] involving the temporary exchange of goods and services by "gig workers" [5].

(Advantages) However, it is important to keep in mind the various drawbacks that come along with this working model. For example, inadequate pay, uncertain and insufficient work opportunities, job insecurity, lack of social benefits, limited training options. Additionally, it's worth noting that discrimination may continue or even increase under this model [12].

Platform economy has different segments, but one of the most used nowadays is "instant deliveries" [10]. Approximately 350,000 people in Mexico work in this sector as couriers, and it is estimated that at least 21 million Mexicans have used a delivery platform [24]. According to Dablanc et al. [10]: "Instant delivery services provide on-demand delivery within two hours by

private individuals, independent contractors, or employees by connecting consignors, couriers, and consignees via a digital platform." According to the market characteristics, the delivery time varies mainly because of the population, vehicles employed, and traffic conditions.

The rise of instant deliveries has led to new consumer habits centered around speed, convenience, and customer satisfaction [33]. This delivery service is typically provided in areas with high demand from the local population [19]. The online purchasing process involves a simple click, but delivery time is a crucial factor to consider.

There is a limited product range due to the high number of online stores, and volumes are small compared to parcels or other deliveries. However, these services face several challenges, such as more delivery locations, higher replenishment frequencies, reduced stock levels, and poor vehicle loading factors [33].

Digital platforms often receive orders concerning daily needs, including groceries, meals, and other everyday items [34]. The delivered goods are mainly from existing stores, primarily locals (as restaurants, drugstores, or convenience stores), so the products are offered to regular customers.

While the platform economy is transforming nearly every industry, they are an exceedingly difficult research object due to their degree of variation and complex relationships with markets, institutions, and technologies [31].

Insufficient data provided to researchers by app-based services has led to a lack of formal knowledge of delivery services [11]. Platform economy, which rely on app-based services provided by ordinary citizens (unskilled logistics workers), have become prevalent in developing markets like Mexico City due to the high population density and consumer demand.

However, the city faces numerous challenges that must be addressed to perform these activities efficiently. Therefore, this research examines the current state of instant deliveries in the Mexico City metropolitan area from the perspectives of urban logistics, demographics, economic development, and public policies.

Two surveys were employed to construct the instant delivery courier profile. The data obtained identified the primary motivations driving couriers in the Mexico City metropolitan area to work within a delivery platform. This analysis used the information of 661 delivery couriers. Due to the lack of data in this field, we employed an exploratory analysis. Results showed that unemployment and the pursuit of additional income are the predominant reasons that motivate a person to work as an instant delivery courier.

The remainder of this paper is organized as follows: Section 2 summarizes recent studies performed in the instant deliveries field. Section 3 presents the methodology. Section 4 shows the results obtained from the survey analysis. Finally, Section 5 discusses conclusions and the challenges faced by couriers.

2 Literature Review

2.1 Couriers' Profiles and Challenges

A systematic search strategy was developed using keywords such as instant delivery, courier, fast delivery, instant delivery, and crowd delivery. Following the search strategy, duplicates were removed, and screening based on predefined criteria was conducted. After screening, 67 papers were selected for inclusion in the review.

Results showed that the concept has been explored from several angles, including algorithm development, urban planning, couriers' profiles, cooperative alliances, software development, challenges for public and private sectors, consumer analysis, digital strategies, environmental initiatives, and the impact of emerging transportation modes. This investigation mainly focuses on couriers' profiles and challenges regarding urban design and delivery operations for the public and private sectors.

The starting point for this research was the survey methodology applied by Dablanc et al. and Aguilera et al. [10, 9, 2]. According to a study conducted with 517 couriers in Paris, France, most platform-based food delivery couriers are young men who primarily use bicycles and motorized two-wheelers for transportation.

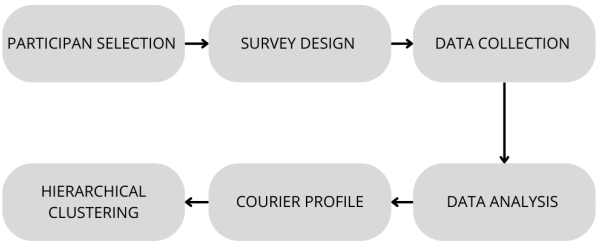

Fig. 1. Methodology

Additionally, most of these couriers came from countries other than France, accounting for 85% of the total. Papakostopoulos and Nathanael [26] conducted a survey to explore the demographic characteristics of couriers in Athens, Greece, identifying 17 key factors. Through interviews, it was revealed that two major traffic offenses were prevalent among respondents: running red lights and not wearing helmets.

Consequently, the authors developed a courier profile for each offense. The first profile, which corresponds to running red lights, consists of young couriers aged 18 to 24 with two years or less of working experience.

They typically use motorcycles solely for work purposes and receive hourly pay. In contrast, the second group (related to not wearing helmets) revealed that couriers are unconcerned about the condition of their vehicles and consist of young individuals who receive a fixed salary.

De Oliveira et al. [11] analyzed the characteristics and work done by motorcycle couriers in Belo Horizonte, Brazil. Most motorcycle couriers are male (80%) under 46 years old. According to the authors, using motorcycles for instant deliveries is popular due to their low purchase and upkeep expenses. The research findings indicate that the "age" of the courier and the "delivery fee" charged impact their productivity.

In surveys executed in the United Kingdom and France, results showed that delivery drivers tend to be male and relatively young, indicating that around two-thirds were under 25. Only 5% of the respondents were females [4]. Finally, a survey conducted by Deliveroo (UK) of 900 of its delivery drivers in June 2017 revealed that 90% of the respondents did not consider the job as their primary source of income [4], indicating that, in most of the cases, the platform served as supplementary rather than primary employment. The study conducted by Dablanc and Aguilera [10, 9, 2] demonstrated the challenges couriers face as they navigate varying regulations, urban infrastructure, and traffic conditions while traveling between cities. Although the obstacles couriers face may vary worldwide, their standard response lies in their adaptability to urban environments.

A South Korean Asian platform provides an innovative relief or substitute driver service called "daeri-gisa" [27]. This service began in the 1980s and was primarily used to prevent drunk driving incidents. In this sense, Yun [36] conducted a case study in Seoul, where the author interviewed 60 temporary drivers and 40 temporary driving service users.

The interviews shed light on how workers use urban space at night and the practical knowledge they possess on navigating Seoul after dark. The article highlights the global trend of expanding the night-time economy and mobility. However, due to unique urban conditions, night-time driver-delivery services have reached new heights in Seoul.

An efficient public transportation network, a culture of regularly organized events for corporate social gatherings, and urban housing primarily based on vertical residential units (city planning based on the urban density focus) have played a vital role in shaping these services. According to Timko and van Melik's [31] findings, many delivery drivers attempt to develop methods for "summoning" orders.

Thus, due to the secrecy of the order-assigning algorithm, couriers rely on intuition and trial and error. They position themselves closer to busy restaurants to find "better" neighborhoods. Arriagada et al. [5] interviewed 35 workers from seven platforms operating in Santiago, Chile.

The study revealed that respondents perceive a sense of independence in certain circumstances but also acknowledge dependency on algorithmic control in others. The authors underscore the challenges related to labor rights despite the regulations outlined in Chilean Law No. 21.431, which sets labor standards for platform workers. However, issues concerning algorithm management remain unresolved.

Table 1. Respondents per Municipality - Survey B

State	Municipality	Respondents
Mexico City	Iztapalapa	94
Mexico City	Alvaro Obregón	58
Mexico City	Cuauhtemoc	51
Mexico City	Iztacalco	39
Mexico City	Gustavo A. Madero	39
Mexico City	Miguel Hidalgo	36
Mexico City	Cuajimalpa	35
Mexico City	Xochimilco	33
Mexico City	Tlahuac	30
Mexico City	Tlalpan	29
Mexico City	Magdalena Contreras	28
Mexico City	Venustiano Carranza	19
Mexico City	Coyoacan	16
Mexico City	Azcapotzalco	13
Mexico City	Milpa Alta	10
Mexico City	Benito Juárez	9
Mexico State	Naucalpan de Juárez	17
Mexico State	Nezahualcoyotl	13
Mexico State	Chimalhuacan	11
Mexico State	Ecatepec	6

The previous studies emphasized the significance of labor conditions, the social environment of couriers, and the impact of urban space on their overall performance. The cases have revealed that couriers often opt for platform-based companies as the eligibility criteria do not usually demand high-level skills like work experience or education.

Moreover, they enjoy a certain level of control over the number of hours they work. Furthermore, some of these studies have found that illegal work situations are prevalent in the gig delivery market. Undocumented workers and underage workers are commonly employed for on-demand deliveries. While these jobs may provide employment opportunities for many people in precarious situations, they also raise social and economic issues in big cities [2].

2.2 Integrated Approaches to Logistics and Sustainability

Research on optimization algorithms, including K-means clustering, genetic algorithms, and heuristic approaches, focuses on solving complex problems like the Traveling Salesman Problem and vehicle routing. For example, Tagorda et al [30]. investigated two-phase heuristic algorithms for efficient route planning and delivery services. Similarly, Syauqi and Zagloel [29] explored the role of industrial research and route optimization with heterogeneous vehicles to improve computation time and delivery accuracy.

Studies in this area examine the environmental impacts of logistics, such as CO2 emissions and sustainable warehouse management. Matskul et al. [22] applied multivariate statistical analysis and hierarchical clustering to address these challenges, proposing strategies for sustainable development in supply chains.

Several authors, such as Zhao et al. [37], explored the integration of machine learning in logistics, utilizing historical data for decision support systems (DSS) and improving operational variables like vehicle routing and delivery efficiency. Çay et al. [6] further delved into the application of LightGBM and XGBoost for payout predictions and resource allocation in e-commerce logistics.

Komarudin and Abyantara [20]highlighted methods for hub-and-spoke network design, optimizing origin-destination pairs to enhance customer satisfaction in service industries. Liashenko and Yakymchuk [21]focused on consumer behavior and investment strategies in grocery retail, emphasizing data-driven approaches.

He et al. [16] explored image coding and courier positioning, integrating K-means++ clustering and manual methods to improve coding operations and inspection systems. Similarly, Charan Kumar and Nagamani [7] investigated sensor nodes and energy-efficient routing protocols, focusing on innovations in underwater wireless sensor networks.

Guo et al. [15] examined the role of crowdsourcing in logistics, emphasizing indoor positioning systems for merchant-level operations. Stadlthanner et al. [28] focused on efficient packaging and clustering algorithms for courier and parcel services, integrating density-based clustering methods.

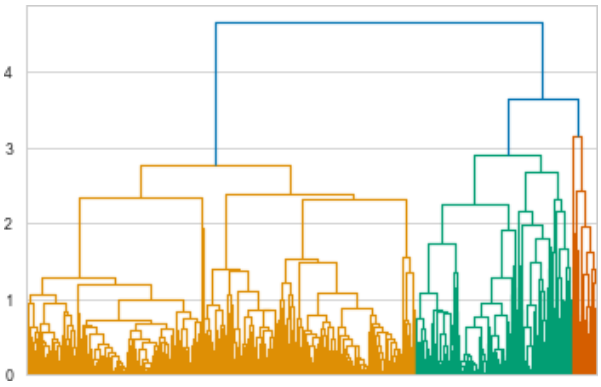

Fig. 2. Dendongram

Hong et al. [17] provided insights into behavioral research and spatio-temporal data mining for analyzing uncertain deliveries and urban logistics. Mustata et al. [3] linked artificial intelligence with route optimization, exploring its impact on fuel prices and public road systems.

2.3 Discussion

Despite their significance, the existing literature has notable gaps regarding the comprehensive understanding of the impact of these jobs on different facets of society and the economy. While operational elements have been extensively studied, there remains a gap in understanding couriers' economic circumstances and needs from the perspective of quality of life. Additionally, this study develops a delivery courier profile in an emerging market such as Mexico, providing valuable insights for both public and private decision-makers.

3 Methodology

Instant deliveries, facilitated by digital platforms, have become an essential component of the modern economy. Due to its novelty, this methodology allowed us to understand the social aspects of platform activities and comprehend the context through data analysis. The data for this study was collected through surveys and demographic analysis of the surveyed individuals. The scope of this study includes collecting and analyzing data from a metropolitan area, ensuring a comprehensive view of couriers' operational environment. However, it is essential to note that the findings are based on the specific demographic and economic conditions of the surveyed areas, which may limit the repeatability of the results.

3.1 Survey Analysis

This research was conducted as a case study, which enabled the gathering of empirical data and investigation of a contemporary phenomenon that has not been thoroughly researched in its real-life context (Yin, 2003).

Data were collected from 92 delivery workers as primary sources, using the methodology outlined by Dablanc et al. [9]. A second primary source was the survey conducted by OXFAM México [25], which involved 986 couriers. The study will emphasize when each survey was employed to enhance reader comprehension.

Survey A. The first survey (Survey A) consists of 40 questions covering the following five categories: the courier's personal information (age, gender, birthplace, economic dependents, education, motivation to work), experience and affiliations (app company, experience, workday), vehicle characteristics (year, driver's license type, vehicle purpose), operations (working areas, distances, time, workdays per week), and challenges encountered during their delivery work.

The survey design was based on the one implemented by Dablanc [9], with minor adjustments to account for cultural aspects, legislation, experience, types of products delivered, and technical issues related to the vehicles. The data was collected in October 2022, during which 92 couriers were interviewed while delivering an order.

Although some questions may be merged with Survey B to enhance the results, specific inquiries, such as those mentioned previously, remain exclusive to Survey A. Survey A presented fewer pre-processing issues. However, specific responses had to be removed due to lack of coherence or data capture errors (e.g., age recorded as 125 instead of 25). This study employed **75** valid responses.

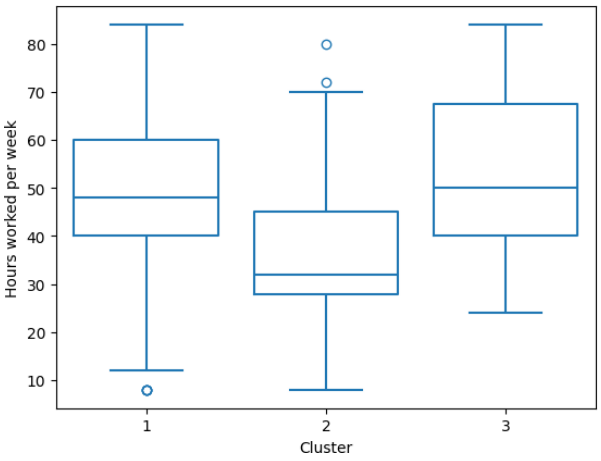

Fig. 3. Distribution of hours worked by cluster

Survey B. The second survey (Survey B), conducted by OXFAM México, comprises 46 questions. Unlike Survey A, Survey B extends its scope to include additional categories such as COVID-19 information (including vaccine application and possible treatment), security measures (such as health insurance coverage, companionship, social benefits, and accident reporting), financial aspects (including weekly income, tips, and operational costs), and inquiries into harassment and discrimination.

Data exploration was conducted using R software and Python programming language. Python was employed for the data preparation procedures mentioned below. Each individual in both datasets is depicted in the matrix as a row, while each question is regarded as a feature with its corresponding column. It is important to note that various responses delineate each question.

Survey B initially consisted of 986 attributes. The data pre-processing steps are as follows: During the survey, couriers were given the option to input '99' for discrete variables and '999' for continuous variables if they preferred not to respond. As a result, all records containing '99' or '999' were excluded from the analysis to mitigate potential biases in the results.

Regarding columns related to fees and incomes, respondents were given the choice to leave the space empty if they wished to avoid answering. Therefore, all NaN values were dropped from the dataset for these columns.

However, if a column had more than 50% of its attributes as NaN, it was dropped to maintain data integrity. Given the survey dataset's predominance of categorical data, two additional adjustments were made. Columns containing text-based responses, such as municipality names, were transformed using the label encoder function of the Python SciKit Learn library. This process facilitated the conversion of textual categorical responses into numerical features.

Subsequently, infrequent categories were identified within the dataset. Responses associated with such categories were systematically eliminated from the dataset. These actions were executed using a threshold of 0.01, ensuring that categories with limited representation were appropriately managed. As a result, the final dataset consisted of **586** responses.

Hierarchical clustering. Standard clustering methods can be classified into two main classes, namely hierarchical and non-hierarchical clustering procedures. The concept of hierarchical clustering revolves around two approaches: bottom-up aggregation and top-down splitting. In the aggregation-based method, each data object initially starts as its own group.

Then, based on pairwise similarities among all data objects, the two most similar objects are merged into a single group, represented by their mean value. The similarities between this new group and the remaining groups are recalculated, and the two most similar groups are merged again. This process repeats until all data objects are combined into a single group [35].

In contrast, the splitting-based method takes the opposite approach. Here, all data objects are initially treated as one large group. This group is then progressively split until each object forms its own individual group.

In practice, aggregation-based hierarchical clustering is more widely used than the splitting-based method. Hierarchical clustering has several limitations. It is sensitive to outliers, which can distort results, and is computationally expensive, making it unsuitable for large datasets. Interpreting results can be challenging due to the complexity of dendrograms.

Table 2. Full-time and part-time work by cluster

Cluster	Workday	Percentage
1	Full-time	77.94%
	Part-time	22.05%
2	Part-time	61.49%
	Full-time	38.50%
3	Full-time	76.92%
	Part-time	23.07%

The algorithm relies on subjective judgment to evaluate clusters, lacks flexibility with multi-dimensional data, and requires the number of clusters to be predefined, which isn't always feasible. Additionally, the clustering process can produce overlapping groups, depend on data order, and struggle with categorical variables, making it less effective for certain applications [1].

4 Results

The Mexico City metropolitan area comprises 16 municipalities within Mexico City (previously known as the Federal District or simply "D.F."), 60 municipalities from the State of Mexico, and one from Hidalgo State. For this study, data from Survey B were collected from all municipalities in Mexico City and four from the State of Mexico.

Table 1 presents the number of respondents per municipality to aid reader comprehension. Most interviews were conducted during courier deliveries or while participants were waiting for assignments, ensuring convenience. No personal information, such as names or addresses, was requested to preserve respondents' privacy.

Due to a lack of information about the essential characteristics of the delivery courier population, as highlighted in the literature review, a representative sample of couriers was unattainable. Therefore, to ensure maximum representativeness, the interviews were conducted systematically.

All randomly selected couriers at each survey spot were provided with the questionnaire and responded to it, further enhancing the reliability of our data collection process.

Due to the scope of this research, certain variables related to COVID-19 and inquiries into harassment and discrimination from Survey B were not considered. However, they should be studied in future research. Based on the findings of Survey A and Survey B, a delivery courier profile was constructed. Some demographic characteristics, such as those mentioned in Section 2, were also explored. However, other areas such as education, economic dependents, and estimated income were also examined.

It has been observed that most delivery couriers who participated in both interviews were males, accounting for 88% of the total respondents. Of all the respondents, 65% belonged to the age group of 18 to 29 years. Additionally, 10% of the participants were females between the ages of 18 and 29 years, with none being over 50. Regarding educational attainment, results indicated that 57% of the respondents had completed high school as their highest level of education, 23% had finished middle school, and 16% held a university degree.

Survey B interviewees categorized themselves based on their household income. 38% reported earning up to MXN 6,750 monthly (approximately 400 USD), while 37% have an income between 401 USD and 610 USD monthly. Additionally, when this research was performed, the average monthly salaries for Mexico City and Mexico State were 310 USD and 260 USD, respectively.

Therefore, it can be concluded that a delivery driver's income slightly exceeds the minimum wage; however, this amount still falls within the income bracket of a lower social class. In the case of Paris, France, food-delivery apps are often a go-to option for immigrants looking for a flexible and accessible way to earn income.

By simply agreeing to the terms and conditions, signing up to be a delivery driver can offer a source of financial stability and independence (Arriagada et al., 2023). This is because, in some countries, the delivery apps do not require them to have work permission. In Mexico, unlike other countries, most couriers were not foreigners. Only 11 people (1.2%) of the interviewed population are foreigners: Venezuela (8 respondents), Honduras (1), Panama (1), and Turkey (1).

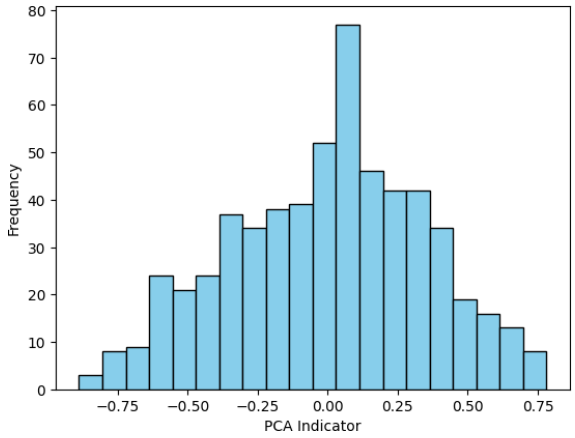

Fig. 4. Distribution of PCA indicator

However, Further analysis is needed to understand how migrant people are correlated to app-delivery services in Mexico. The city's urban configuration, distribution, and infrastructure exert minimal influence on the vehicle preferences of couriers. Regarding transportation, 74% of those interviewed use a motorcycle for deliveries, while 21% use a bicycle.

Although cars are used for supermarket deliveries in Mexico, they are not as common as motorcycles for instant deliveries. This trend is observed in both Mexico City and Mexico State. Therefore, regardless of the state, motorcycles are the preferred mode of transportation for deliveries. Security conditions could also influence this fact.

Results from Survey A showed that at least 50% of the respondents have suffered an accident during delivery, and 20% have been assaulted. Furthermore, findings from Survey A revealed that a minimum of 20% of the motorcycles were purchased in 2022, and 51% of the motorcycle fleet was acquired between 2018 and 2021. The relatively low purchase and maintenance costs are significant incentives for motorcycle usage, often as a practical working tool [11].

4.1 Clustering Results

The dataset was preprocessed to prepare it for analysis. Categorical variables were encoded using one-hot encoding, while numerical features were standardized to have zero mean and unit variance.

These transformations were applied to ensure uniform feature scaling and improve model performance. Gower's distance was used to measure the difference between two records. Records may contain logical, numerical, categorical, or text data combinations.

The distance is always between 0 (identical) and 1 (maximally dissimilar) [13]. The hierarchic clustering was made in Python employing the Scipy library. Figure 2 shows that three main clusters are generated, with the following proportions: 68.08% in Cluster 1, 27.47% in Cluster 2, and 4.43% in Cluster 3. Results indicate that, regardless of cluster assignment, respondents predominantly work full-time as couriers (Table 2).

However, in terms of remuneration, there is a notable variation between clusters. Respondents in Cluster 1 tend to earn $50.00 MXN per hour, those in Cluster 2 earn $41.00 MXN, and those in Cluster 3 earn $54.56 MXN. This difference may be attributed to the varying number of hours worked among the clusters. However, as shown in Figure 3, respondents in Cluster 3 tend to earn more primarily because they work more hours per week than those in Clusters 1 and 2.

Respondents from Cluster 1 report not having any form of social security. Conversely, most respondents in Cluster 2 indicate that they have social security either through personal arrangements or provided by a company, suggesting that they likely hold a second job. Also, Cluster 2 reported the largest percentage of part-time workers.

In addition to the previous analysis, a Principal Component Analysis was performed. Principal Component Analysis (PCA) is a widely employed technique for multivariate data analysis [23]. Its primary goal is to simplify data by transforming it into a smaller set of uncorrelated variables, known as principal components (PCs), which are linear combinations of the original variables.

These new components are selected to capture the most significant variations in the data, allowing for easier visualization and interpretation. By focusing on the principal components, PCA effectively condenses the information from the original dataset into fewer dimensions while retaining the most critical features of the data.

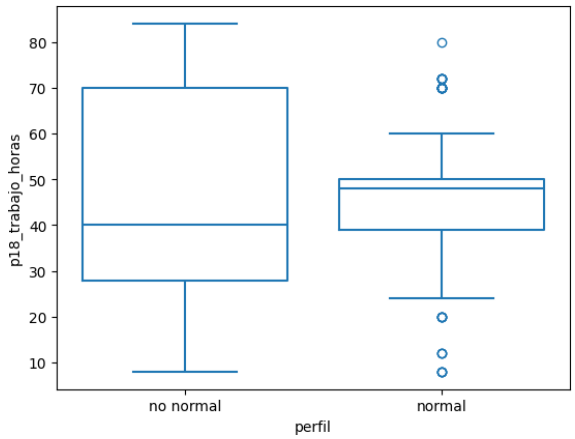

Fig. 5. Distribution of respondents according to PCA indicator

The results, shown in Figure 4, demonstrate that most respondents fall within the "normal" set of characteristics for couriers, which is equivalent to the 66.21% of the respondents. The remaining couriers, who do not fall within the normal behavior range, tend to work between 20 and 60 hours per week. A "non-normal" behavior is considered when the working hours range from 10 to 80 hours per week (Figure).

5 Discussion and Analysis

These days, delivery workers provide daily services in several cities worldwide. Products may differ, as well as the platform structure and algorithm design; however, the challenges continue and are from different points of view in many markets. The following results aim to provide a general perspective of delivery couriers in Mexico City via statistical description and Hierarchical Clustering of the variables obtained with the surveys. The delivery couriers were asked to prioritize from 1 to 5 (where one is the most important and five the least important) the following necessities for their work:

1. Commissions.
2. Protection over work pressure .
3. Social security.
4. Employee benefits.
5. Flexibility.

Results showed that workers aim to improve their social security. The second requirement they have is better control over their delivery commissions and then the employee benefits. The lack of social security for self-employed is not a new phenomenon. Still, it has gained more public attention with the digital economy and crowdworking mainly because platform workers find themselves outside the formal classification of "worker" or "employee" that is used to determine access to social protection [12].

Multiple requirements and protests have been performed in Mexico City to demand labor rights for delivery workers. By 2021, the agreement presented in the press release 432 between the Instituto Mexicano del Seguro Social (IMSS), which is a decentralized institution that offers health services to the affiliated population (working class) in the country, and the leading delivery apps in the country was performed.

The agreement consists of a pilot test where the delivery couriers affiliated with one of the delivery apps could have access to the five mandatory insurances: (i) illnesses and maternity, (ii) labor risks, (iii) disability and life insurance, (iv) old-age insurance, nursery, and (v) social benefits. To access these benefits, delivery workers had to pay less than $40.00 (approximately USD 2.0) daily. By this year, medical insurance is mandatory for delivery couriers.

By October 2024, the Mexican government announced a reform initiative to create a Labor Law chapter regulating platform work for drivers and couriers. Additionally, if a driver or courier earns at least the minimum wage, they will receive all the social benefits established by law. It is estimated that at least 272 000 workers will benefit.

The pilot test proposed in 2021 (mentioned previously) will be implemented again, allowing more than 658,000 platform workers to access social security during the trial period. Regarding commissions, couriers continue to protest against the 'algorithm.' By July 2024, in Querétaro, Mexico, nearly 400 couriers demanded an adjustment to Uber's algorithm, arguing that the fees were not aligned with volume, time, and distance traveled [8].

The response was that no adjustments could be made because the algorithm could not be modified locally. These movements were also observed in October 2024 in Mexico City, where couriers and drivers continue to demand ”fair fees” [18].

Acknowledgments

The first author would like to thank CONAHCYT (Consejo Nacional de Humanidades, Ciencias y Tecnologías) for the financial support of her PhD studies under Scholarship 921004.

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Article received on 09/06/2024; accepted on 18/09/2024.
**Corresponding author is Jaime Mora-Vargas.*