

BOOKLET

# ROAD SAFETY AND CYCLELOGISTICS

CHALLENGES AND OPPORTUNITIES IN BRAZIL



Fundación **MAPFRE**



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**LABMOB**

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Sem CO2 Entregas Ecológicas - Curitiba

Señoritas Courier - São Paulo

Tele Entregas - Fortaleza

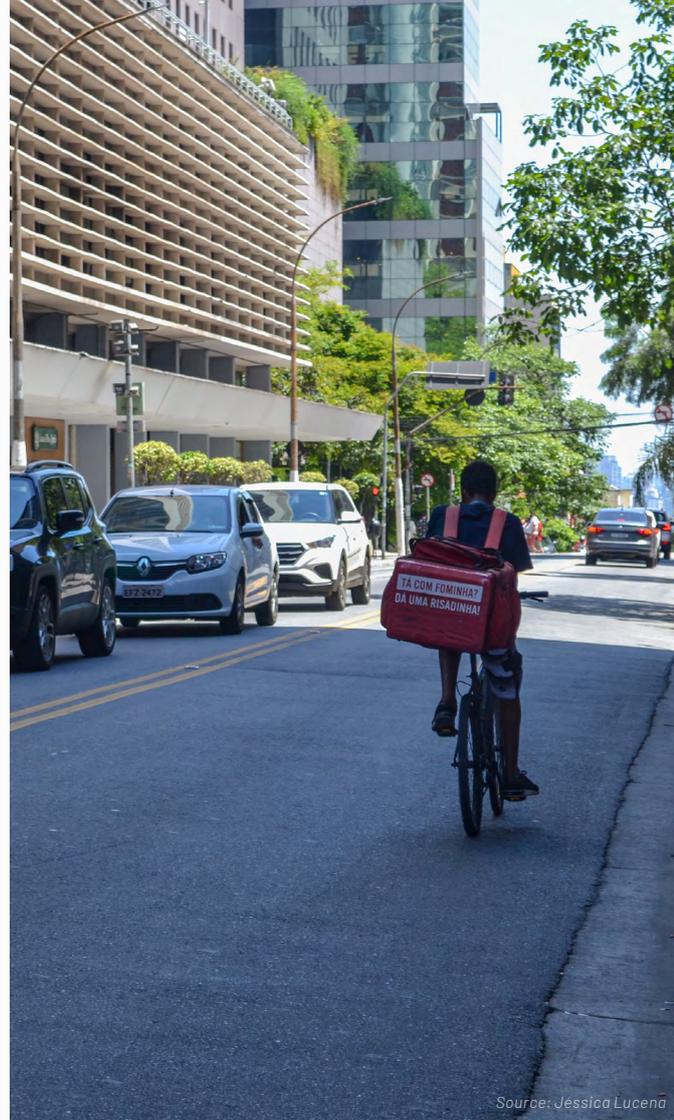
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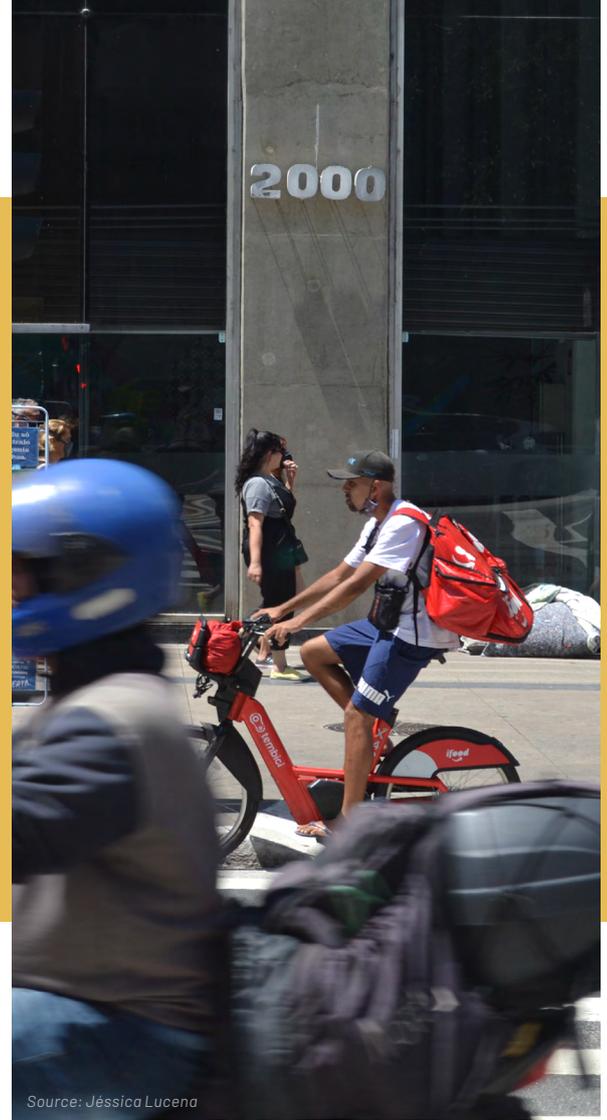
# INTRODUCTION

This booklet summarizes the study of cyclelogistics in Brazil through the lens of road safety. Its main objective was to explore relevant aspects of road safety in the trips of delivery cyclists in Brazilian cities, from a systemic viewpoint. The information collected shows the perspective of delivery cyclists on the perception of road safety during their trips and their working conditions.

This study was developed by the Laboratory for Sustainable Mobility (LABMOB), by the Graduate Program of Urban Studies (PROURB), and the Federal University of Rio de Janeiro (UFRJ), with financial support from MAPFRE Foundation.

The study developed exploratory research that analyzed the ecosystem of delivery cyclists through a quali-quantitative triangulation with primary and secondary data, obtained through a combination of data collection tools.

The results presented here are linked to the data in the technical report of the same name, with more detailed, in-depth information about the study. It is available for download on [labmob.org](http://labmob.org) and <https://www.fundacionmapfre.com.br/publicacoes/estudos-e-pesquisas/>.



Source: Jéssica Lucena

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# METHODOLOGY



## DIMENSIONS AND INDICATORS

The study was based on five dimensions that make up the cyclelogistics ecosystem from the perspective of road safety – considering the delivery workers, the bicycles and equipment used, the cyclelogistics companies, the urban space (workplace), and the laws and public policies that affect these activities.

### *Delivery-cyclists*

This is the target audience of the study. In this dimension we seek to understand the profile of these workers, their relationship with the bicycle, their work relationships, their perception of road safety as cyclists and as a professional whose work space is the street, their involvement in traffic crashes and their perception of the occupation.

### *Bicycles and equipments*

This dimension looks into the workers main work tool, as well as equipment and accessories that help in efficiency and safety during the journey. These are the instruments that insert workers into the physical environment and whose characteristics directly interfere with road safety conditions. This dimension includes questions about types, uses, and conditions of bicycles and equipment for the purpose of the delivery workers and cyclelogistics.

### *Companies and collectives*

These are the organizations that group the delivery cyclists and with which they are linked through different contracts. Companies can be specialized in logistics and bike courier, by app or retail. The good practices of these organizations collaborate to positively impact road safety and the working conditions of delivery cyclists.

### *Urban infrastructure*

This dimension deals with the characteristics of the workplace of delivery cyclists. The state of this public road space provides the relationships and dynamics that design road safety conditions, including aspects related to road traffic conditions and rules. This dimension seeks to understand the suitability of the built environment for cyclists, bicycles and cyclelogistics, considering users' risk perceptions based on road characteristics.

### *Legislation and public policy*

This dimension addresses the interface of cyclelogistics and road safety with the public administration, surveying the instruments by which the state can impact the working conditions of delivery cyclists and road safety through legislation, regulation, tax incentives, and campaigns.

## ***Dimension indicators***

### ***Delivery-cyclists***

Gender;  
Race;  
Age;  
Education;  
Home address;  
Workplace address;  
Previous occupation;  
Experience with cyclelogistics;  
Way of transportation to the workplace;  
Work hours and daily deliveries;  
Ownership of work equipment;  
Concerns regarding the occupation;  
Personal insurance;  
Involvement in crashes;  
Behavior during trips.

### ***Bicycles and equipments:***

Typology and technology of the bicycle used;  
Accessories and equipment used;  
Cargo transport accessories;  
Use of headphone/speaker;  
  
Body signaling and personal protection elements;  
  
Technical problems with equipment;  
Equipment maintenance.

### ***Companies and collectives:***

Nature of the company or collective;  
  
Internal legislation of companies or collectives;  
Types of hiring professionals;  
  
Incentives for road safety, urban and road education;  
Educational actions and campaigns;  
Professional training;  
Insurance;  
Social responsibility and work rights;  
  
Benefits and legal support for delivery cyclists;  
  
Challenges of corporate policies;  
Monitoring and evaluation policies.

### ***Urban infrastructure:***

Presence of cyclelogistics infrastructure;  
Preference for bicycle facilities;  
Lane width and cycling comfort;  
Lighting;  
Speed of cars;  
Orientation signs;  
Quality of pavement;  
Directionality of the road;  
Visibility at intersections;  
Obstacles on the road;  
Volume of vehicle flow  
On-street parking  
Perception of safety by areas of the city;  
Previous involvement in crashes.  
  
***Legislation and public policy:***  
Regulation of cyclelogistic activity;  
Public policies to encourage cyclelogistics;  
Public policies for road safety;  
Educational and monitoring actions.

THE 336 RESPONSES WERE  
DISTRIBUTED AMONG THE POINTS  
OF APPLICATION AS FOLLOWS

94 POINT 1  
AUGUSTA

89 POINT 2  
LARGO DA  
BATATA

94 POINT 3  
MOEMA

58 POINT 4  
ITAIM BIBI

## SURVEY

The survey was conducted with delivery cyclists who use electric bicycles of the iFood Pedal program in São Paulo. The structured questionnaire sought to gather information from questions about

*perceptions of road safety,*

*involvement in crashes,*

*relationship with the city,*

*concerns related to the occupation,*

*accessories used,*

*general aspects of the job and*

*sociodemographic profile.*

The spots for support, pick-up and return of the bicycles were assigned as locations for the application of 336 questionnaires answered by 312 delivery men and 24 delivery women.

312 + 24  
DELIVERY MEN DELIVERY WOMEN

## CASE STUDIES

Three cities in the South, Southeast and Northeast of the country were selected to be case studies: Curitiba (PR), Fortaleza (CE) and São Paulo (SP).

The five dimensions were addressed in two case studies selected for each of the cities.

These case studies sought to find a qualitative understanding about road safety and the cyclelogistics ecosystem from the analysis of the indicators adopted in the study.

Each case study included the following instruments for data collection:



Source: Jéssica Lucena



**In-depth interviews:**  
Conducted with two delivery workers in each case and one representative of each company or collective.



**Ethnographic monitoring:**  
Monitoring of delivery routine of one of the interviewed bike couriers, in each case study.



**Characterization of the road space:**  
Characterization of parts of the route indicated by the delivery cyclists as safest and least safe within the route taken in the ethnographic monitoring.



**Counts:** In addition to the road characterization, counts of cyclists and other vehicles were taken on the same parts of the route indicated by the delivery workers as safest and least safe.



Source: Doug Oliveira/ Cicloguaçu



Source: Doug Oliveira/ Cicloguaçu

## CURITIBA

### Sem C02 Entregas Ecológicas:

a bike courier service company that was one of the pioneers in the cyclelogistics and delivery without carbon emission in Curitiba and is currently one of the few operating in the city.

Interviewees:



Delivery cyclists  
DAVI SAMUEL



was part of the ethnographic monitoring + indicated two parts of the way to be characterized and undergo counting



Sem C02 Entregas Ecológicas  
representative

### Bicicletaria Cultural:

a cyclelogistic support company that has been operating since 2011 with social impact.

Interviewees:



Delivery cyclists  
MIGUEL PEDRO



was part of the ethnographic monitoring + indicated two parts of the way to be characterized and undergo counting



Bicicletaria Cultural  
representative



Source: Adriana Marmo



Source: Adriana Marmo

## FORTALEZA

### Disk Água FP:

retail cyclelogistic delivery company and beverage distributor for 10 years. Deliveries of gallons of water and gas cylinders are representative of neighborhood trade in the city.

Interviewees:



Delivery cyclists  
GABRIEL      CÍCERO



Disk Água FP  
representative

was part of the ethnographic monitoring + indicated two parts of the way to be characterized and undergo counting

### Tele Entregas:

company specialized in fast urban delivery logistics since 1986, today with electric bicycles in its fleet.

Interviewees:



Delivery cyclists  
FÁBIO      GIL



Tele Entregas  
representative

was part of the ethnographic monitoring + indicated two parts of the way to be characterized and undergo counting



Source: Douglas Farias



Source: Douglas Farias

## SÃO PAULO

### Señoritas Courier:

Informal collective of women and LGBTQIA+ delivery cyclists founded in 2017.

Interviewees:



Delivery cyclists  
ARIEL JÚLIA



was part of the ethnographic monitoring + indicated two parts of the way to be characterized and undergo counting



Señoritas Courier  
representative



Delivery cyclists  
ROBERTO MÁRIO



was part of the ethnographic monitoring + indicated two parts of the way to be characterized and undergo counting



Carbono Zero Courier  
representative

### Carbono Zero Courier:

delivery company with bike courier and electric vehicle service, active since 2010.

Interviewees:



# CONCEPTUAL FRAMEWORK

## CYCLELOGISTICS

Cyclelogistics activities are related to the use of mechanical or micromodal equipment (bicycles, scooters, tricycles, etc) to perform logistics activities. There are some distinctions within the cyclelogistics universe, dividing it into two major categories - the use of bicycle/micromode for transportation and delivery, sale or distribution of consumer goods (i) and for the commuting of the worker/service provider (ii).

Given its great potential, there are several cyclelogistics initiatives in Brazil, in various business models. Currently, the country has witnessed an increase in the number of bike couriers, delivery apps, and retail deliveries made by bicycles and light electric vehicles (ESTADÃO, 2021).

According to Eduardo Altheman, there is a “considerable increase in the number of cyclists who use their bicycle as a means of transportation and work, so that it is not possible to neglect the phenomenon of cyclelogistics and micrologistics when the subject is urban mobility by bicycle. In one year, from 2018 to 2019, there are estimates of a more than 5-fold increase in the number of cyclists with thermal bags on the largest cycling axis in use in the country” (2021, p. 71).

The increase in the use of cyclelogistics is due to several factors: There is a growing search for the decarbonization of the economy, where companies seek to be more sustainable; there is the agility that these cyclelogistics services add to distribution and delivery services; there is the decrease in costs, and above all, there has been an increase in home deliveries due to the Covid 19 pandemic.





## ROAD SAFETY

Road safety concerns the set of rules and regulations that guarantee the movement of people, buses, cars, bicycles and light electric vehicles through streets, avenues and highways whose main objective is the prevention of traffic claims, based on the harmonious relationship between people, vehicles and ways.

Currently, several public policies seek to reduce crashes and increase the capacity of urban infrastructure to ensure traffic safety at all levels. Even with advances in the legislative sphere, Brazil still suffers from high rates of crashes and deaths in traffic. The intense commuting movements in the largest cities, excessive congestion, low knowledge of traffic laws, little supervision and speeding are factors that, combined, create a problematic scenario that place Brazil in the fifth position of the countries with the highest number of traffic crashes in the world (IPEA, 2021).

Based on the Brazilian reality, the promotion of cyclelogistics, by increasing the number of cyclists on the streets, also opens the way for changing the situation of insecurity and the involvement of cyclists in crashes. There is room for significant improvement in Brazilian cities, both in terms of the built environment and in terms of information, prevention, inspection and traffic education policies.

A good road system assumes a systemic and complete approach to safety for the mobility of cyclists based on Vision Zero, an approach that argues that no death or crash with personal injury in traffic is acceptable. In the context of this study, delivery cyclists are seen as essential to change the patterns of logistics and urban mobility and boost a market with growth potential.



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ANALYZES  
AND RESULTS

*The delivery cyclist ecosystem was analyzed through the five dimensions:*

*delivery cyclists;*

*bicycle and equipment;*

*companies, collectives, and apps;*

*urban infrastructure;*

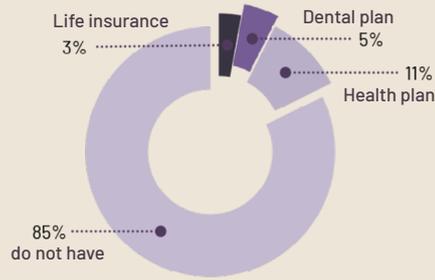
*legislation and public policies.*

*Each dimension presents their respective indicators and their results for the composition of the analyses. The syntheses and results of the analyses are presented by dimension.*



# SYNTHESIS DIMENSION 01

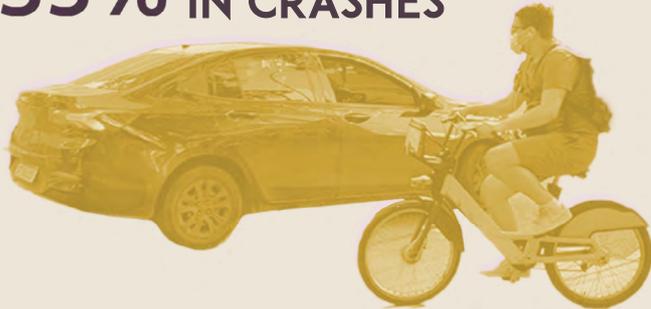
For the delivery cyclists dimension we sought to collect data on the socio-demographic profile of workers, as well as aspects related to their work routine, data on involvement in traffic claims and perceptions of road safety.



# 85%

DO NOT HAVE ANY  
**PERSONAL INSURANCE**

HAVE BEEN INVOLVED  
**35% IN CRASHES**



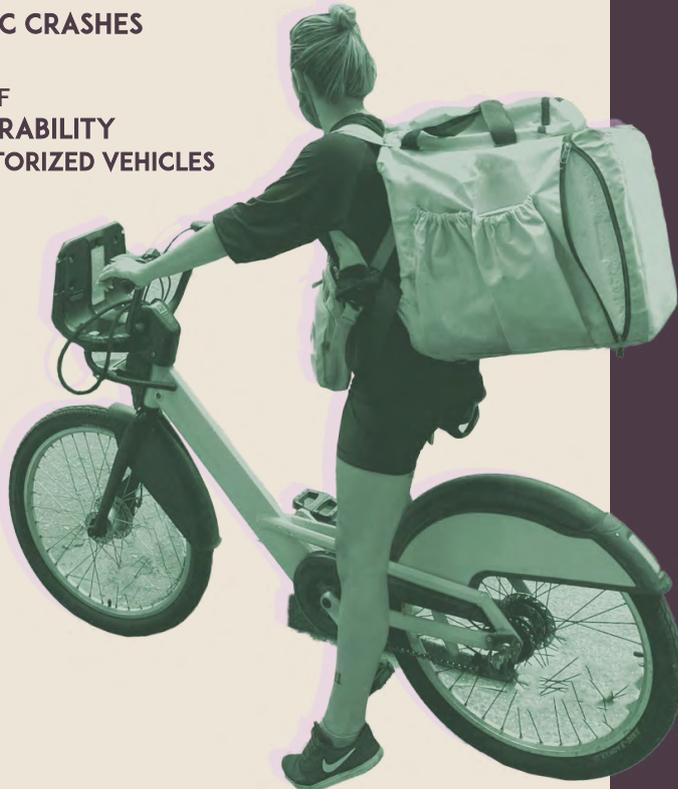
Data from surveys carried out in São Paulo with delivery cyclists using electric bikes indicate that:

- ▶ Group predominantly formed by men (92%), of mixed race (39%) or black (29%) and young - 76% are 30 years old or younger (30% are below 20 years old);
- ▶ For the level of education, 56% have completed high school and only 4% have a higher education degree;
- ▶ Three neighborhoods in the South Zone of São Paulo (Capão Redondo, Grajaú and Jardim Ângela) were highlighted as places of residence of these workers;
- ▶ The average travel distance from these neighborhoods to the Augusta bicycle pickup point is 19.6 km;
- ▶ These commutes happen predominantly by public transport;
- ▶ Most delivery cyclists work on Fridays, Thursdays and Saturdays, and during the weekend the demands increase on the night shift;
- ▶ Data found and average number of 13 deliveries per day;
- ▶ They have been using electric bikes for a relatively short time, five months on average;
- ▶ 85% do not have any personal insurance;
- ▶ 35% of the workers have been involved in traffic claims; considering their last involvement in a claim, most (63%) were slightly injured, about one-third (36%) witnessed an crash involving a car, almost three-thirds (63%) were off the bike paths - on shared streets - and almost half (45%) were on the night shift.

**THE DELIVERY WOMEN  
INDICATED FEAR OF  
THEFT | ASSAULT | ROBBERY**

**BESIDES  
TRAFFIC CRASHES**

**FEAR OF  
VULNERABILITY  
TO MOTORIZED VEHICLES**



The gender-filtered analysis shows that:

- ▶ The 24 female delivery cyclists in this group are mostly of mixed race (42%) or black (34%) and young women with an average age of 24;
- ▶ Regarding the education level of the 24 delivery women, 50% have completed high school, and only 4% have a higher education degree;
- ▶ The 24 delivery women arrive at the Ifood Pedal pickup points predominantly by public transportation (88%);
- ▶ Their work frequency is higher in the afternoon shift, especially on Fridays and Saturdays;
- ▶ The 24 delivery women indicated fear of theft, fear of traffic claims, and fear of vulnerability to motorized vehicles;
- ▶ 79% of them have no personal insurance - health, dental, or life insurance - and 58% have been involved in traffic claims;
- ▶ Through the crossings and correlation comparing gender and involvement in claims, it was possible to highlight that women suffer as many traffic claims as men.

After aggregating the data obtained in the six case studies carried out in Brazilian cities, we arrived at different results from those found in the survey. Considering the 12 people interviewed, we have one group:

- ▶ Mostly men (92%), of mixed race (41%) or black (41%) and young - average age 31 years old;
- ▶ 25% of this group have had access to higher education and 33% have completed elementary school;
- ▶ Regarding work routine, all of them work at least from Mondays to Fridays, 50% also working on Saturdays and 25% also on Sundays;
- ▶ The average workload is 7 daily hours;
- ▶ Considering the group of interviewees, half of them combine their workload as a delivery person with other activities, professional and/ or academic;
- ▶ They all use the bicycle as a means of transportation besides as a work tool;
- ▶ When asked about their relationship with cyclelogistics, 41% said it is their first professional experience working in the field;
- ▶ Their motivations include financial need, lifestyle improvement, enjoying the activity/ occupation, and lack of space in another job market;
- ▶ 75% intend to continue working with cyclelogistics either as a delivery person or in another cycling-related position, and 25% consider it a temporary job;
- ▶ From the 67% who said they felt fearful about work, 87% said they were afraid of traffic claims, in addition to fear of theft;

- ▶ 50% of the 12 respondents have some kind of personal insurance, and from those, 41% have life insurance from the bank and 16% have dental insurance;
- ▶ Despite the low percentage of insurance coverage among this workers, all of the respondents have been involved in some fall, crash or have witnessed crashes involving cyclists;
- ▶ All workers indicated that there was a change in behavior after witnessing or being involved in a claim.

Regarding the behavioral and safety perception aspects, the following stands out:

- ▶ A change in behavior and the adaptation of patterns as a strategy for defense and prevention of claims were indicated by all;
- ▶ Cyclists' little or no trust in drivers;
- ▶ The need to be seen and noticed by drivers; this includes riding on the wrong side of the road and using sound resources - speakers and whistles;
- ▶ Increased sense of safety when cycling through familiar places and negative impact in places where there have been negative experiences;
- ▶ From the perspective of Julia, the only female delivery-cyclist interviewed, streets with women and children are an indication of safety, and strong male presence causes her discomfort and insecurity.
- ▶ All workers indicated a change in behavior and adaptation of patterns as a strategy for defense and prevention of traffic claims.

## SYNTHESIS DIMENSION 02

In the Bicycles and Equipment dimension, we sought to collect data on the bicycles, equipment, and accessories used by the delivery cyclists in the survey and case studies.

Data from the survey conducted in São Paulo with delivery cyclists using electric bicycles indicate:

- ▶ The use of pedal-assisted electric bicycles allows for greater convenience during the workday;
- ▶ 100% of the bikes have rear-view mirrors, bells, on-board computers, and flashlights;
- ▶ The main accessory, used by 99.7% of the respondents, is the backpack for storing the food and products to be transported by these workers;
- ▶ Regarding the use of helmets, only 42% indicated that they wear a helmet during their work;
- ▶ Almost a quarter (22%) of cyclists said they wear reflective clothing; this habit can be related to the importance of feeling visible for their safety;
- ▶ A quarter (29%) of the delivery cyclists use headphones during their commutes;
- ▶ Cross-referencing the use of audio accessories and involvement in claims, there is a slight indication that this variable needs to be further investigated in the future;
- ▶ Regarding the use of headphones or speakers, it was concluded that women tend to use proportionally more audio accessories than men.

Aggregating the data obtained in the six case studies carried out in Brazilian cities, we have different results from those found in the survey. Considering the 12 people interviewed:

- ▶ 66% use conventional bicycles and 34% use electric bicycles;
- ▶ 58% own their bicycles and 42% work with company bicycles;
- ▶ All workers said they were satisfied and pleased with the bicycle used, despite some observations about what could be improved;
- ▶ 83% wear helmets and only 2 from Fortaleza, do not.
- ▶ The other accessories most often mentioned are lights, crate, bag, backpack, bell;
- ▶ As for the use of headsets and speakers, the majority said they do not use headsets for safety reasons, as they “take away the attention” needed when cycling;
- ▶ Some workers use the speaker as a resource to be noticed;
- ▶ 66% have had their bicycle damaged in traffic claims;
- ▶ Part of the initiatives of the companies and collectives to make their cyclists feel safer involve training courses on how to ride a bike, and basic notions of bike mechanics and repairs.

## SYNTHESIS DIMENSION 03

In the dimension Companies, collectives and apps, we sought to gather data that would provide characteristics of the management and operation of delivery companies, collectives and apps and their relationships with delivery cyclists. The case studies carried out in Curitiba, Fortaleza, and São Paulo include companies and collectives of distinct characteristics and scales.

- ▶ Three of the six companies have been working with cyclelogistics for at least ten years and entered this business motivated by advantages such as efficiency, sustainability, and the low cost of this type of delivery, and also by a personal interest in working with bicycles;
- ▶ Risk of theft, low security of delivery-cyclists, and the high prices of specialized cargo bicycle models were some disadvantages of cyclelogistics;
- ▶ Regarding the impact of the Covid-19 pandemic, within the frame of the case studies, in most cases it was possible to observe a large increase in demand during the phases of more restricted operation of urban activities.
- ▶ However, a drop in deliveries was noticed with the return of urban activities, especially for smaller and less structured companies and collectives.
- ▶ Despite the wide variety in the scale of the service provided – where delivery-cyclists make from 03 to 60 deliveries per day – a few things in common were noticed:
- ▶ Most deliveries are made on demand, with the help of a phone app to map the origin and destination of the trip and then plan the route;
- ▶ The distribution of deliveries and choice of routes take into account the experience and ability of the cyclist;
- ▶ There is a wide variety of models used – Mountain Bike (MTB), fixed, electric, cargo, speed – and of accessories to support the transport of cargo – backpacks, bags, boxes attached to the bike, crates, luggage carriers;
- ▶ In general, the maintenance of the bicycle and equipment is done or facilitated by the company;
- ▶ Two companies indicated mandatory use or provision of helmets and accessories, the others only leave it as a suggestion and offer a guideline for helmet use;
- ▶ Formal and informal links were identified between the companies and collectives and the delivery cyclists in their network;
- ▶ Four of the five companies/collectives do not provide health, dental or life insurance for workers;
- ▶ In general, the headquarters and stations are the only support points, providing a place for bicycle maintenance and storage, food, restroom facilities, cell phone charging stations, and social interaction among employees;
- ▶ The company representatives agree that the preference for routes with cycling infrastructure contributes to the safety of delivery cyclists;
- ▶ Another relevant factor mentioned was the fact that riding near familiar places positively contributes to their feeling of road safety;

## **BICYCLE MAINTENANCE, TRAINING AND QUALIFICATION OF THE DELIVERY-CYCLISTS ARE ALSO IMPORTANT TO AVOID FALLS OR CRASHES**



- ▶ Bicycle maintenance, training and qualification of the delivery cyclists are also important to avoid falls or traffic claims;
- ▶ Pressure for delivery time can negatively influence road safety;
- ▶ Some companies give workers the autonomy to choose the routes according to their individual capacity;
- ▶ The companies and collectives reported low rates of traffic claim occurrence;
- ▶ Training and reporting of claims were indicated as forms of prevention;
- ▶ Three of the six companies/collectives had a training or qualification program for their network of delivery cyclists;
- ▶ There is common agreement that the implementation and maintenance of bicycle lanes suitable for cyclelogistics activities are fundamental to road safety;
- ▶ Improved road signs, increased bicycle parking near buildings in cities, and available support points in public areas for delivery cyclists are also needed;
- ▶ The market availability of specialized bicycle models with greater load capacity, supported by public policies that facilitate the purchase of these models could help expand cyclelogistics;
- ▶ Public campaigns to encourage and publicize cyclelogistics were mentioned as a sustainable and efficient alternative;

## SYNTHESIS DIMENSION 04

In the Urban Infrastructure dimension, we sought to investigate the perspectives of these workers on the feeling of security related to urban road infrastructure in different scenarios.

Data from the survey carried out in São Paulo with cyclists who use e-bikes indicate the following:

- ▶ Poor lighting and poor signaling of streets, intense traffic and speeding, street parking spaces next to cyclists, narrow shared lanes and intersections are elements that lead to a sense of insecurity for a large part of the delivery-cyclists;
- ▶ 70% indicated that offering more bicycle lanes and tracks is one of the main things they would like to see changed in relation to the city of São Paulo;
- ▶ Some workers suggested for cycling lanes and tracks to be included even on low-speed roads;
- ▶ For 34% and 26% of the respondents, respectively, improvements in road and bike lane lighting and clear traffic signs are aspects they would like to see improved in the city to make them feel safer;
- ▶ Almost all (97%) agree that a well-lit street and being visible to other vehicles is important for their safety.
- ▶ The other aspects that were most often cited are related to improving urban infrastructure, such as paving and improving connections to the existing network of bicycle tracks and lanes;

**73%**  
**AGREE THAT CARS  
PARKED ON ROADS  
MAKE IT UNSAFE FOR  
THEM TO CYCLE**





## CHANGES OF BEHAVIOR AS A PROTECTION STRATEGY



## SUPPORT STRUCTURE FOR STREET ROUTINES IS DESIRED

- ▶ 93% agreed with the statement that they prefer to ride in bicycle lanes or tracks;
- ▶ Of those who disagree, their justifications are: the presence of pedestrians and too many cyclists in the bicycle lanes, the existence of faster or better alternative routes, and the quality of the bicycle lanes - whether its paving, width, or lighting;
- ▶ 90% of the delivery-cyclists agree that wider shared lanes make it safer for them to get around;
- ▶ 73% agree that cars parked on roads make it unsafe for them to cycle;
- ▶ 94% agree that they are more careful at intersections for fear of claims;
- ▶ Just over a quarter of the respondents (28%) do not agree that they feel unsafe riding in the counterflow of roads;
- ▶ For 91% of the delivery cyclists, the horizontal stripes painted on the roads, are important for their safety;
- ▶ About 85% of the respondents agree that the higher the speed of the cars next to them, the less safe they feel;
- ▶ 83% agreed that they feel unsafe at times when there are too many vehicles passing by them;
- ▶ Of the 64% who have been involved in a traffic claim while riding an electric bicycle, 63% of the falls or claims occurred on shared roads, while only 12% occurred on bicycle lanes.

After Aggregating the data obtained in the six case studies carried out in Brazilian cities, we found different results from those found in the survey. Considering the 12 people interviewed, we have a group where:

- ▶ 83% agree that on a street shared with other vehicles, the wider the lane, the safer they feel;
- ▶ 83% agree that being visible is an important factor for safety as a cyclist;
- ▶ 91% agree that a well-lit street gives a feeling of safety;
- ▶ Being visible for others and having good visibility of the location is an aspect that features prominently in the interviews and follow-ups;
- ▶ 91% agree that the faster cars drive by, the less safe they feel;
- ▶ 91% agree that road markings are important for their safety while cycling;
- ▶ 75% agree that having parked cars on the road is unsafe;
- ▶ Only 41% agree that heavy motor vehicle traffic makes them more unsafe;
- ▶ For 33% of the respondents, the presence of a cycling lane or track makes them safer to ride;
- ▶ Only 25% indicated feeling unsafe riding on the counterflow;
- ▶ 91% indicate being more careful at intersections for fear of claims;
- ▶ There was no common agreement among the perceptions of the delivery cyclists regarding the feeling of safety in the presented intersection scenarios;
- ▶ If the most convenient route includes riding through a section in the counterflow, some cyclists will do so despite the risk;

- ▶ Respondents also said that they feel safer in areas that they know the most;
- ▶ When asked about changes in the cities, the most frequent suggestions were related to traffic education through awareness campaigns, both for drivers and cyclists, and even in schools;
- ▶ Regardless of age or personal background, all of the delivery cyclists have had their riding styles impacted after experiencing or witnessing traffic claims, always with the intention of avoiding going through the same or similar situations.

In general, regarding road infrastructure, the ideas for improvement from the respondents are as follows:

- ▶ Building new bicycle lanes and tracks so that people have the courage to get around by bicycle, especially in the suburbs.
- ▶ Maintenance of bicycle lanes and tracks;
- ▶ Cyclist-friendly places for the support of delivery workers: support locations.

## SYNTHESIS DIMENSION 05

In the Legislation and Public Policies dimension, we sought to investigate instruments through which the public authorities can impact the working conditions of delivery-cyclists and improve road safety through legislation, regulations, tax incentives and campaigns.

Secondary data were collected through documentary research to gather information regarding the regulation of cyclelogistic activity, public policies to encourage cyclelogistics, public policies for road safety, diagnosis and prevention of traffic claims, diagnosis of the problem of delivery-cyclists, educational and enforcement actions in the three case study cities: Curitiba, Fortaleza, and São Paulo:

- ▶ The Curitiba (PR) Bicycle Paths Plan already uses data from the diagnosis to define investments in areas where there is greater demand for a bicycle path network;
- ▶ The diagnosis also found that bicycles would be used more in the city if the infrastructure offered higher quality and greater safety in the cyclelogistics system;
- ▶ The Annual Traffic Safety Report of Fortaleza (CE) builds its road safety diagnosis taking into consideration official data from the Traffic Accident Information Systems (SIAT) and monitors risk factors in traffic;
- ▶ The municipality of Fortaleza (CE) has developed the Vida Platform, a digital tool for managing traffic safety in the city;
- ▶ The São Paulo (SP) Road Safety Plan holds a pioneering position on the national scenario regarding shared responsibility for traffic claims;
- ▶ The structure of the Road Safety Plan for São Paulo (SP) diagnosis is based on understanding the scenario for claims, on a cultural analysis and on the behavior of the agents;
- ▶ The municipality of Curitiba (PR) constantly carries out educational actions focused on cyclists;
- ▶ Enforcement actions that directly benefit cyclists are still a challenge in Curitiba (PR);
- ▶ The topic of urban bicycle transportation has been addressed by the municipality of Fortaleza (CE) since 2011;
- ▶ Through continuous actions that reinforce the importance of cyclelogistics, no social resistance to the implementation of new cycling infrastructure were observed;
- ▶ In Fortaleza (CE), electronic monitoring equipment was installed in bike lanes as a protective measure against intrusion vehicles in bicycle lanes and tracks;



- ▶ In the Traffic Safety Plan of the Municipal Government of São Paulo (SP) there is a sector entirely dedicated to cyclelogistics legislation and inspection;
- ▶ In Fortaleza (CE), Law no. 10,303/2014 established the Policy of Cycling Transport and approved the integrated Cycling Master Plan of the municipality that recognizes cyclelogistic activity;
- ▶ None of the three cities (Curitiba, Fortaleza or São Paulo) has a regulated cyclelogistics Law;
- ▶ The Municipal Policy for cyclelogistics in São Paulo (SP) has been approved but is not yet in effect;
- ▶ The São Paulo law obliges logistics and delivery companies and apps based in the city to make data available in order to assist in cyclelogistics policies, in addition to offering free training courses and minimum structure for delivery cyclists;
- ▶ There is no specific regulation or project in any of the three cities (Curitiba, Fortaleza or São Paulo) or in the country that oblige employers to provide insurance to delivery workers;
- ▶ In the state of Paraná, congressman Goura's bill aims to regulate the occupation of delivery cyclist.



# BEST PRACTICES

## WORKING CONDITIONS

The absence of support stations for these workers, who spend hours cycling in traffic without the opportunity to return home due to the long distances between their place of residence and their “workplaces”, was strongly addressed in the interviews and questionnaires.

### *Good practices:*

The iFood Pedal support spots are available to all users of the exclusive delivery plan. In these spaces, the delivery workers find the necessary structure for their daily breaks, including drinking fountains, toilets, microwaves, tables, alcohol gel and power outlets.

The Spot for Delivery Workers is an initiative of the Fortaleza municipality (Ceará) that aims to offer facilities to delivery cyclists or bikers. The project ensures action in road safety through educational actions and the completion of a safe driving course, with theoretical and practical classes at the AMC (Municipal Autarchy of Traffic and Citizenship) Training Center. The first station was installed in August 2021 and, by the end of the year, the City Hall intends to deliver two other points, in partnership with the company iFood.



Source: iFood Pedal / Midori de Lucca



Source: Prefeitura Municipal de Fortaleza

## BICYCLES AND EQUIPMENT

The high cost of purchasing electric bicycles and the limited supply of suitable models of cargo bicycles make it difficult to expand cyclelogistics activities. The Brazilian market offers limited options with high import fees, making cargo bicycles unaffordable. Electric bicycles are also not affordable for the majority of the delivery-cycling public.

### *Good practices:*

In December 2021, iFood Pedal initiative expanded its coverage area and now allows, besides São Paulo and Rio de Janeiro, exclusive plans for delivery cyclists in Brasília, Porto Alegre, Recife, and Salvador.

Electric cargo bike sharing system in the Netherlands - Cargoroo. The startup that created the project has received a grant from the European Union as part of a pilot program to introduce electric bikes for sharing in seven cities in Europe.

The Community of Madrid (Spain) subsidizes the purchase of up to 5 electric bicycles by self-employed professionals and micro-enterprises<sup>1</sup>.



Source: Cargoroo

<sup>1</sup> <https://www.comunidad.madrid/servicios/urbanismo-medio-ambiente/ayudas-fomento-movilidad-cero-emisiones-comunidad-madrid>

## INFRASTRUCTURE ADAPTATION

Issues related to urban road infrastructure were highlighted in the analyses that were conducted. When asked about the perception of safety related to the infrastructure offered by the cities, the delivery cyclists expressed their desire for changes and the improvements they find necessary, according to their experiences. Intersections appear as the main problem in the delivery cyclists' sense of insecurity. Many say they adopt prevention strategies and defensive behavior as a way to avoid involvement in traffic claims.

### *Good practices:*

The city of Fortaleza installed parapet-like structures for cyclists in 8 streets of the city. These structures are items that serve as foot and hand support for the cyclists when waiting at traffic lights.



Source: Prefeitura Municipal de Fortaleza

## EDUCATION AND TRAINING

Many delivery cyclists pointed out education and awareness campaigns as strategies to increase the perception of road safety. According to reports, many drivers are careless and unaware that they can seriously injure a pedestrian or a cyclist. According to the Brazilian Traffic Code, educational campaigns must be constantly developed by the responsible offices.

### *Good practices:*

The adoption of traffic education in the curriculum of São Paulo state schools<sup>2</sup>.

Interactive actions that show how cyclists feel when in traffic, to encourage respect for vulnerable users<sup>3</sup>.

The project Viver de Bike (VdB)<sup>4</sup>, developed by the Aro Meia Zero Institute offers training for those who want to use the bicycle to generate income. The courses offered and actions developed address four main contents: basic bike mechanics, riding in the city, entrepreneurship and financial management.

The municipality of Recife (PE) promotes an event on road safety for delivery cyclists. In the “Bora de bike, Recife?”<sup>5</sup> delivery cyclists received guidance on road safety and personal safety items such as helmets, jackets, first aid kits, flares, and maintenance tools, as well as a mask, alcohol gel and bicycle maintenance manuals.

<sup>2</sup> <https://www.jornalosemanario.com.br/governo-vai-incluir-educacao-para-o-transito-na-grade-curricular-das-escolas-estaduais/>

<sup>3</sup> <https://www.onsv.org.br/experiencia-interativa-mostra-como-ciclistas-e-motociclistas-se-sentem-no-transito/>

<sup>4</sup> <https://www.aromeiazero.org.br/viverdebike>

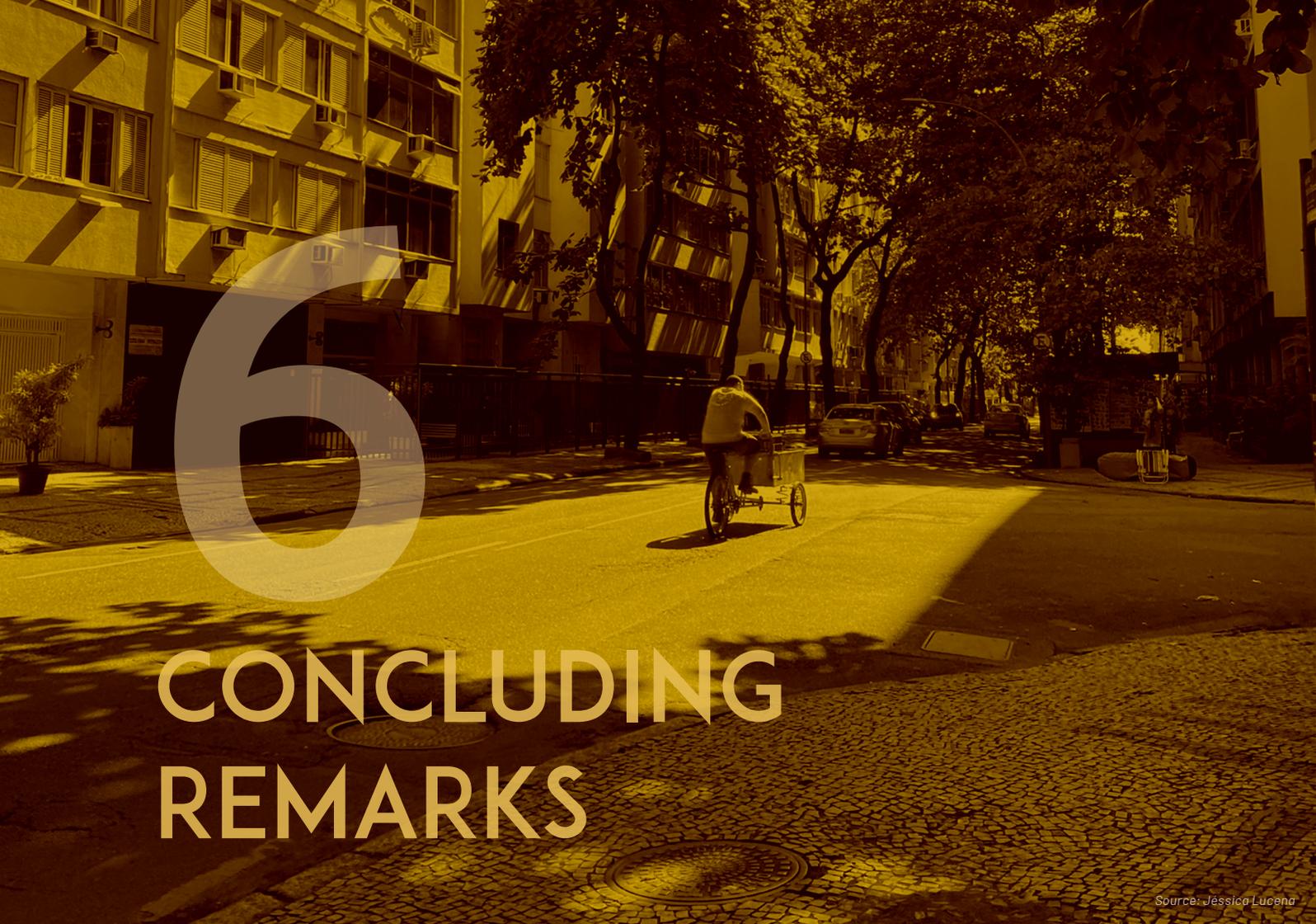
<sup>5</sup> <https://www.diariodepernambuco.com.br/noticia/vidaurbana/2021/08/prefeitura-do-recife-realiza-evento-sobre-seguranca-viaria-para-entreg.html>



Source: Observatório Nacional de Segurança Viária



Source: Prefeitura da Cidade do Recife / Daniel Tavares



6

# CONCLUDING REMARKS

# CONCLUDING REMARKS

Since 2019, the volume of delivery cyclists on the streets has followed the intensification of the delivery industry and the increasing number of people working with delivery. Therefore, considerations about the road safety of these delivery cyclists, who spend a large part of their day in traffic, are essential for the improvement of their living and working conditions, as well as for the growth of cyclelogistics – an essential activity in the energy transition and decarbonization of transport in cities.

The study reaffirms some points already seen in previous research (ALLIANCE BIKE, 2019; LABMOB, ALLIANCE BIKE, 2020), but is unprecedented in its approach through the lens of road safety and from the “voice” of the delivery workers.

Road safety appears as something desired by delivery cyclists, but it is secondary to economic needs and the search for efficiency and productivity in order to meet daily goals linked to their financial income. In short, these professionals tolerate many risks. The perceived feeling of job insecurity, combined with the risks of the occupation and lack of assistance, have a direct impact on their decision of whether or not to keep this occupation.

The analysis of the data collected shows that there are still challenges to overcome on aspects related to the theme, such as working conditions of the delivery cyclists, urban road infrastructure relevant to cyclelogistics activities, access to vehicles and equipment, lack of specific regulations and public policies aimed at the category.

Far from exhausting the discussion on road safety, this study highlighted aspects that are sometimes secondary, in addition to connecting issues that are part of different dimensions. Further, it is necessary to highlight the importance of a systemic approach and a collaborative process in the promotion of cyclelogistics and road safety, with the participation of urban logistics players, public authorities, associations, academia and the third sector.

1 *Although they reflect reality, the photos do not necessarily illustrate the recommended use of bicycle prevention equipment.*

2 *The opinions of the interviewees do not necessarily reflect Fundación MAPFRE’s position on cyclelogistics.*

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