



# TRANSPORTATION MONITORING REPORT

CITIZEN MONITORING  
FOR BREATHABLE  
CITIES

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*FIFTH EDITION*

CASA  
FLUMINENSE



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Drop me off!



Public road transport dominates travel in Brazil, particularly within major metropolitan areas like Rio de Janeiro. Despite the existing network of bays, rivers, and rails that traverse the Metropolitan Region's 22 cities, the road stands out in both street presence and pollution statistics. Faced with the most expensive subway in the country, deteriorated trains and an extremely limited ferry service, Rio's residents are forced to opt for public or private road modes — such as buses, BRTs (Bus Rapid Transit), vans, motorcycles and cars.

This scenario is an old vicious cycle, and a topic of conversation at bus stops from the Baixada Fluminense region to the East Zone of Rio de Janeiro. But, with the intensification of the climate crisis, discussions about urban mobility are increasingly present in other circles. This is because today the sector is one of the biggest contributors to the emission of polluting greenhouse gases.

Road transport is at the base of this problem from the beginning to the end of the pollution process. This begins with the category's reliance on fossil fuels — such as gasoline and diesel — and culminates in the impact of the combustion process during travel, which releases pollutants harmful to the health of people, cities, and the planet. The greater circulation on the streets, buses, and private cars not only increases air pollution but also contributes to the rise in average temperatures in urban centers.

**At the end of this line are the passengers and drivers who ultimately pay the price.**

# PRESENTATION

**De Olho no Transporte (DOT) — the Transportation Monitoring Report produced annually by Casa Fluminense** — reaches its fifth edition, focused on these people. Since 2020, we have been monitoring and advocating for structural and emergency changes in public transport for the health of people and cities. We fight for a new perspective on urban mobility — one that focuses on the urgent energy transition while also developing a new system prioritizing universal access, a right guaranteed in our Constitution. The ultimate goal is to achieve a public transport system based on the Triple Zero logic: zero deaths, zero emissions, and zero fares.

The need to remake the urban mobility agenda is urgent. This is one way to create resilient cities, year-2030 cities. Zero tariffs and energy transition are our allies in the search for social and climate justice.

**Embark on this journey!**

# THE ATMOSPHERE OF THE TRIP

The way to the bus stop, the wait for the transport, the expensive ticket, the precarious conditions of the car, the traffic jam, the heat and the fear of violence are in the daily lives of passengers — these are sensations and afflictions that are repeated at least twice a day, five times a week, four weeks a month, for 12 months, for many years. **It is possible to explain a city by the absences and presences seen on a bus trip.**



## FROM THE *WINDOW*

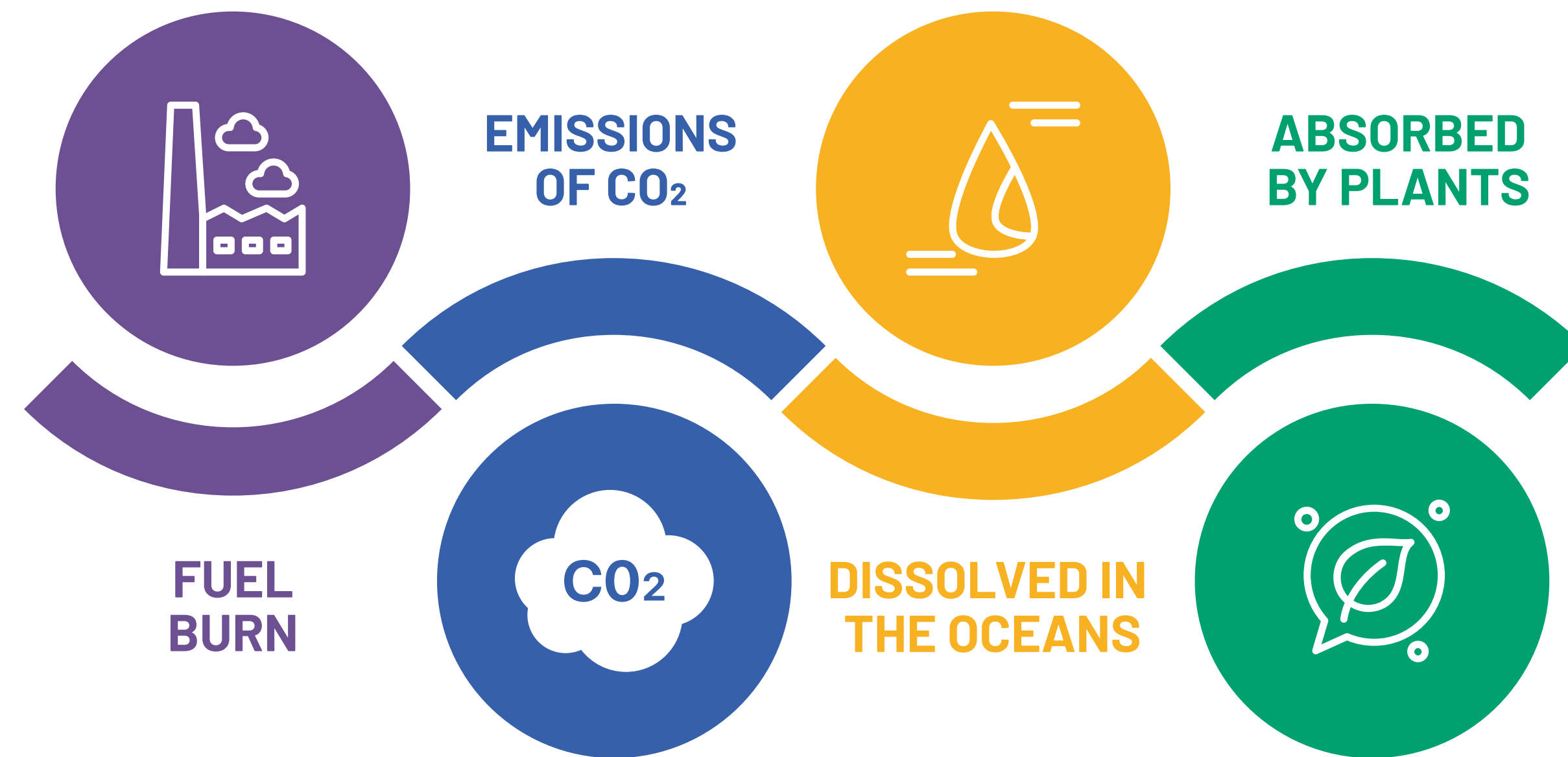
When sitting at the bus window in Rio de Janeiro, an absence and a presence are striking: there are no trees, and there is too much pollution. Without urban tree cover, most processes that contribute to air pollution It's almost invisible to the naked eye. The visible black smoke from the exhaust pipes of buses, cars, motorcycles, and vans is merely an indicator of one of the leading causes of emissions in large urban centers.

The transport sector is among the largest emitters of greenhouse gases on the planet, especially carbon dioxide (CO<sub>2</sub>). The primary source of this problem is the burning of fossil fuels — gasoline, diesel, and aviation kerosene — used daily in cars, buses, trucks, ships, and airplanes.

In the combustion process, carbon reacts with oxygen in the air and releases CO<sub>2</sub>, intensifying global warming. In large cities, road transport concentrates most of these emissions and, in addition to CO<sub>2</sub>, releases pollutants that are harmful to health, such as carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM), volatile organic compounds (VOCs), and sulfur dioxide (SO<sub>2</sub>)



# THE CICLE OF POLLUTION:



In transportation, the carbon cycle happens mainly when cars, buses, trucks, ships, and planes burn fossil fuels, such as gasoline, diesel, and kerosene. These fuels are carbon-rich, and during combustion, this carbon is released in the form of carbon dioxide (CO<sub>2</sub>) – and, if the burning is incomplete, also as carbon monoxide (CO). The CO<sub>2</sub> released accumulates in the atmosphere, where it boosts global warming, but it can also be absorbed by plants in photosynthesis or dissolved in the oceans. Consequently, transport works as a major "driver" in the carbon cycle, rapidly returning to the air the carbon that has been stored in fossil fuels for millions of years.

According to data from the [Greenhouse Gas Emissions and Removals Estimation System \(SEEG\)](#), from the Climate Observatory, the state of Rio de Janeiro was responsible for about 10% of Brazilian emissions from the energy sector in 2023, second only to São Paulo. Within the sector, Rio alone emitted 40% of the gases related to the production of fuels and about 6% of the emissions from transport in the entire country.

[According to the WHO's 2024 World Health Statistics report](#), more than 7 million people die each year due to air pollution, which goes far beyond respiratory diseases and is also linked to endocrine disorders such as diabetes. There was also an increase of up to 70% in the risk of heart attack, strokes, and gestational problems.

While there is mass pollution in the cities, there are no trees that can clean the atmosphere by absorbing their CO<sub>2</sub> and releasing oxygen into the air.



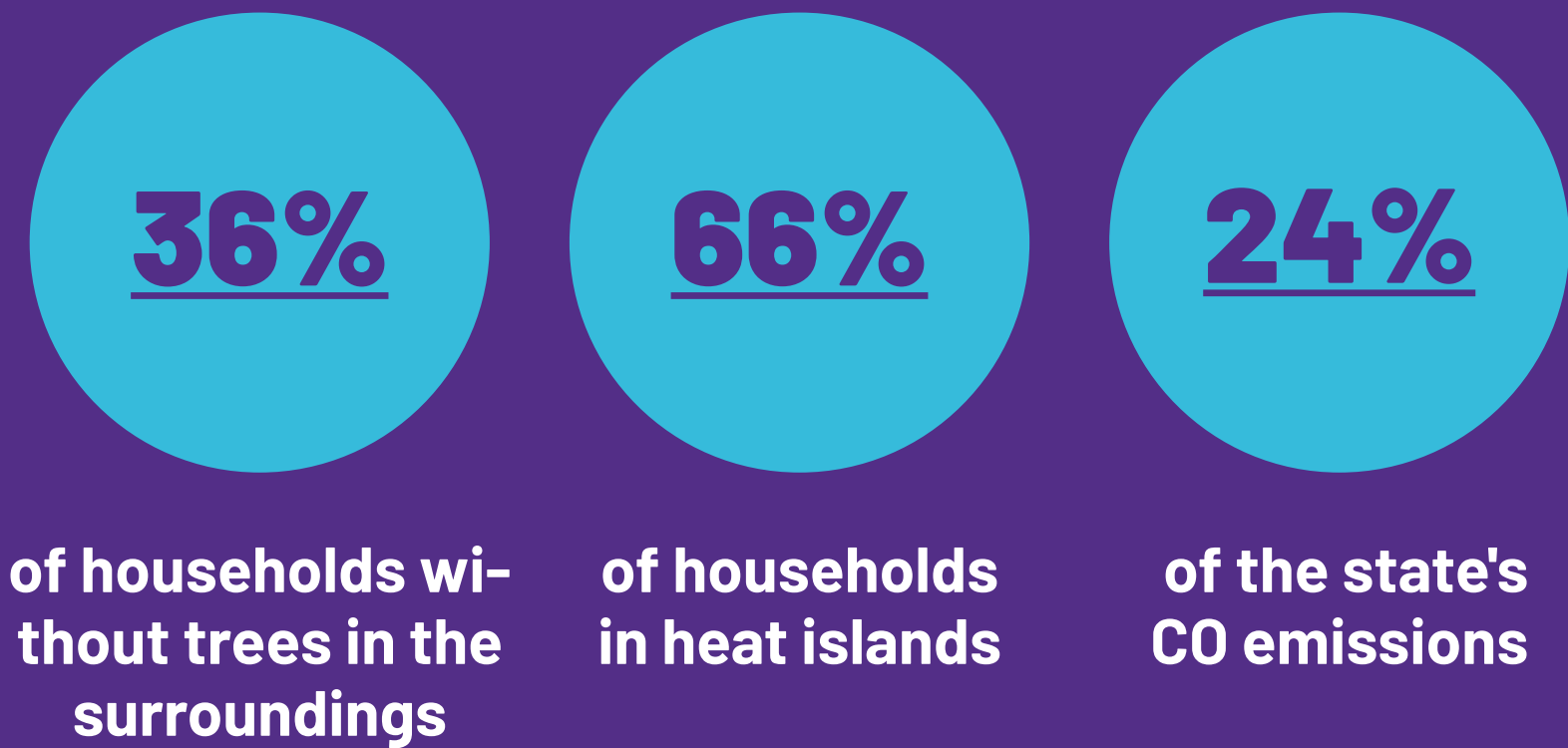
While there is mass pollution in the cities, there are no trees that can clean the atmosphere by absorbing their CO<sub>2</sub> and releasing oxygen into the air.

Afforestation – the simple act of planting and caring for trees – is much more than a detail in the landscape during a trip. It refreshes the environment, improves air quality, and helps absorb rainwater. Having trees nearby means more shade, less heat, and more life around the households.

But this is not the reality in the homes in nine of the 22 municipalities in the Metropolitan Region of Rio. Casa's monitoring identified in the 2022 Census data that in cities such as Petrópolis, São João de Meriti, Belford Roxo, Japeri, Mesquita, Nilópolis, Duque de Caxias, Itaguaí, and São Gonçalo, most households do not have trees in their surroundings. The capital alone has more than 950,000 households without any trees in the surroundings, and even where there is some vegetation, it is often insufficient. In the city of Rio de Janeiro, 1.47 million households have only one or two trees nearby. In regions such as Paracambi, Tanguá, and Nilópolis, less than 5,000 households have five or more trees nearby.

This lack of green spaces directly impacts the heat of cities. Currently, approximately 3.17 million households in the region are located within urban heat island areas—zones that are hotter and less comfortable precisely due to the scarcity of adequate tree cover and vegetation.

### The landscape of the RMRJ (Rio de Janeiro Metropolitan Area):

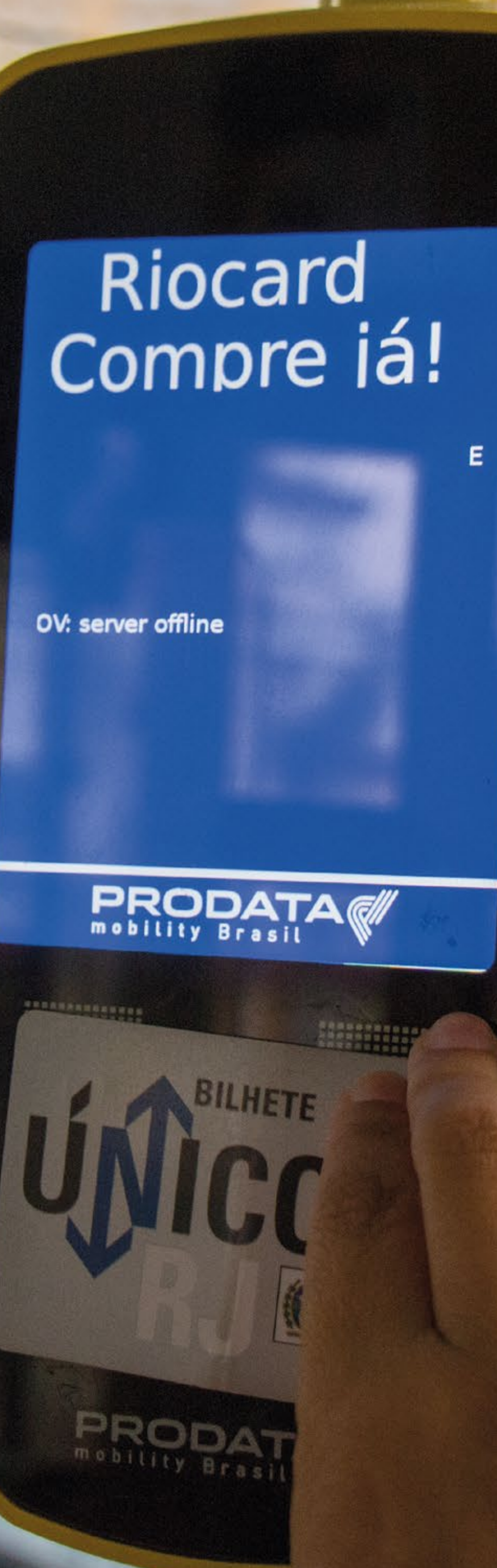


Rio de Janeiro leads the emissions, with about 6.36% of the regional total, followed by São Gonçalo (6.0%) and Cachoeiras de Macacu (5.8%). The three municipalities account for almost 18% of all carbon monoxide emitted in the RMRJ.

Tables: Afforestation: **Afforestation RMRJ | 2022 Census**

The disruption of the carbon cycle is exacerbated by the absence of other structural and urgent public policies designed to adapt to and mitigate the impacts of climate change on the daily lives of cities and, critically, their inhabitants. This crisis can only be resolved through aligned governance – from the municipal to the global level – that addresses the problem transversally, supported by genuine priority-based budgeting and political will. Therefore, we call for establishing a Climate Secretariat in every city. This body must lead the climate change adaptation and mitigation processes and the fight against environmental racism, ensuring full integration with urban infrastructure portfolios, particularly transportation. An instance that works preventively in the transition to more just cities.





# AT THE *TURNSTILE*

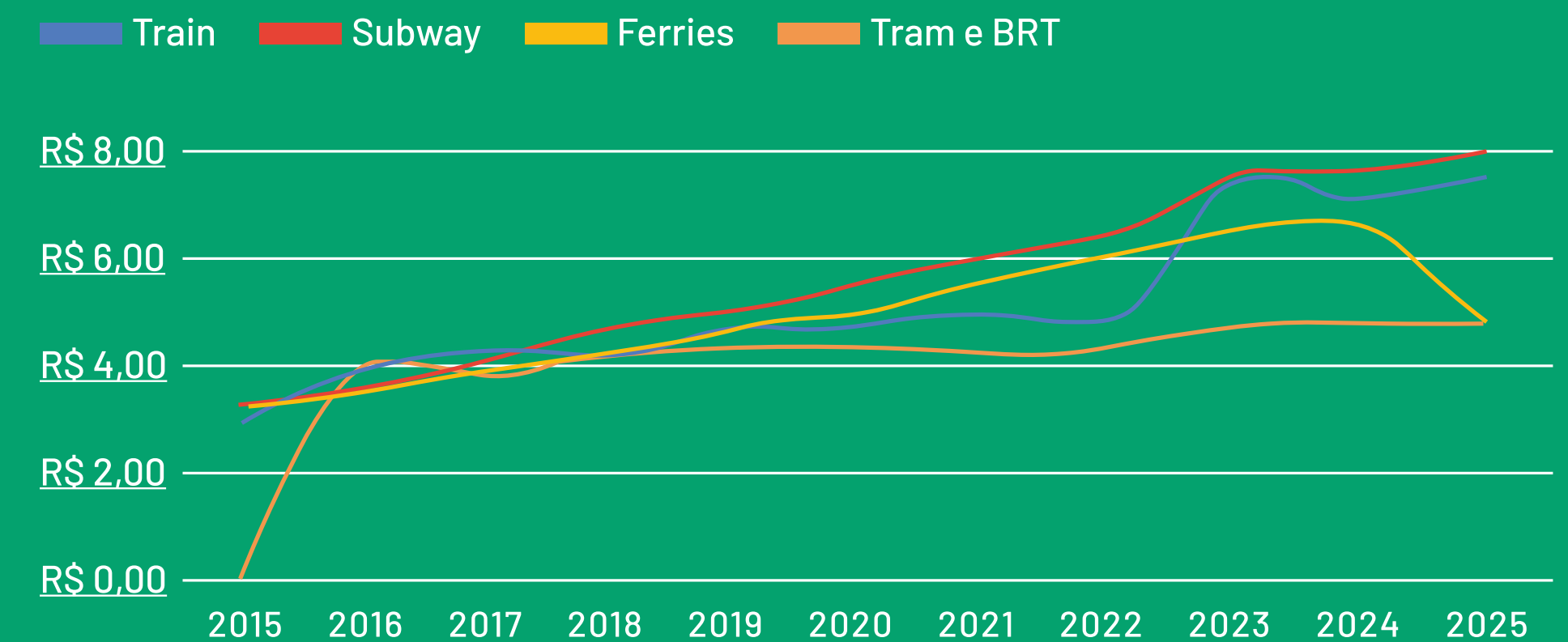
Rio de Janeiro has the most expensive train and subway fare in the country. The transports that emit the least are now the least accessible to the population, and this gap can be further aggravated. According to projections by Cobradô – a monitoring panel for the Metropolitan Region of Rio created in 2025 by Casa Fluminense – if nothing changes in the logic of remuneration and concession contracts, the train ticket may cost R\$10.10 in 2030. The impact is felt in workers' pockets daily, but also in other indirect ways, without the right to access public transport. How can other rights, such as education, health, and culture, be possible? And when the only affordable alternative is the modes that emit the most?

The health of people and cities also **depends on the zero fare.**

Casa Fluminense believes that transportation is the right that gives access to other rights, and we are in a significant year to remember and reinforce this idea. In 2025, it was 10 years since Deputy Luiza Erundina (PSOL) decreed transport a social right provided for in Article 6 of our Constitution, from Amendment 90/2011. This change ensures that, in addition to health and food, the state has a duty to promote accessible and comprehensive transportation for the entire population. But, as 10% of residents' income is committed only to bus fare, it is possible that the State is not complying with this constitutional duty. Since it became a social right, the public transport fare has not stopped increasing.

## Getting more expensive: transport costs in RMRJ

### Train, Subway, Ferries, Tram and BRT



Source: Casa Fluminense -- GCD



**The most expensive bus fares in the metropolis**

According to the practice of Citizen Data Generation, in which residents themselves inform the value of tariffs in their municipalities

Mesquita	R\$ 5,95
Nilópolis	R\$ 5,95
Nova Iguaçu	R\$ 5,95
Queimados	R\$ 5,95
São João de Meriti	R\$ 5,95
Belford Roxo	R\$ 5,65

Source: Cobradô , Casa Fluminense -- GCD.

# ON THE SEAT

Unwanted touching, public nudity, masturbation, or ejaculation in public are examples of acts that constitute the crime of sexual misconduct under Law No. 13,718/2018, which formally added this specific crime to the Penal Code. In the state of Rio de Janeiro, 10% of the cases of harassment occur in transport, and most of the victims are Black women. In our country, until 2018, cases of sexual harassment were not considered crimes, but misdemeanors. Before, the harasser was punished with a fine, but now the crime provides for a penalty of one to five years in prison.

Women, the majority group in Brazil and Rio de Janeiro, are the main victims of this type of crime, 94% of cases, most of them Black women. In addition to this pre-existing historical scenario, DOT monitoring also identified that in recent years (from 2023 to May 2025), 23% of the recorded sexual harassment cases in the Rio Metropolitan Region's transport system involved minor victims. Another profile that was significantly impacted was girl students, 29.3% of the occurrences recorded. Age, race, and profession are essential to discuss the fight against this type of crime and its impacts, especially on Black minors and students in Rio. Who feels safe while traveling?



## WHEN IS IT MOST DANGEROUS?

**1 in 11 cases** of harassment occurred on public transport

**71%** of the cases occurred in the capital

**51%** at peaks time

**69,5%** of cases inside buses

## WHO IS IT MOST DANGEROUS FOR?

**93,7%** of the victims were women

**55,9%** Black women

**19,3%** minors

**29,3%** of them were students

**Note:** Peak hours were considered between 6 a.m. – 9 a.m. and 5 p.m. – 8 p.m.

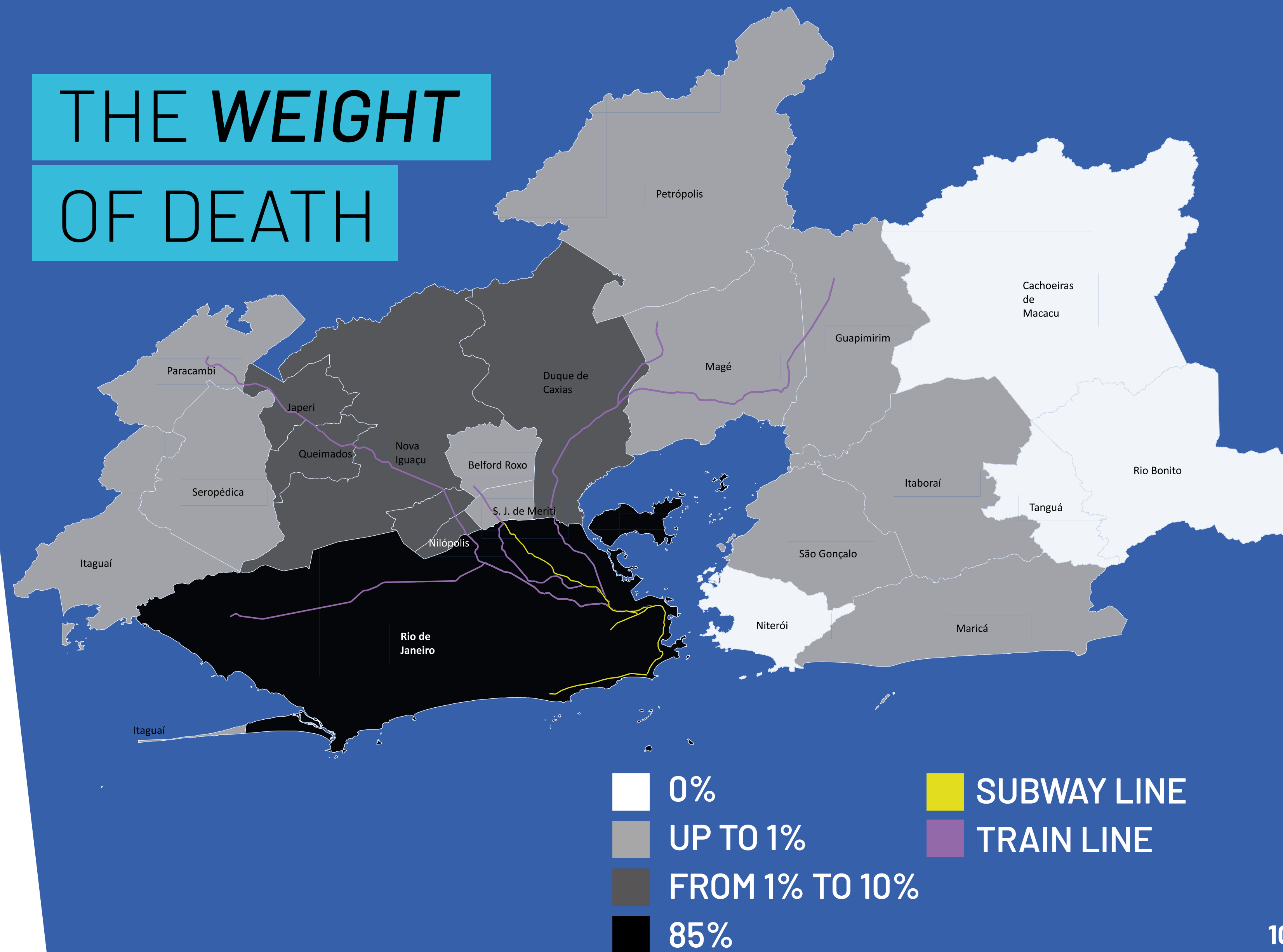
Records of sexual harassment from 2023 to May 2025 (ISP RJ Sexual harassment in transport | 7/2025).

Sexual harassment on public transport is one of the most recurrent forms of gender violence in cities, marked by a combination of overcrowding, anonymity, and the absence of effective enforcement. For many women, especially in the urban peripheries, the daily commute on buses, trains, and subways represents both a commute to work or study and a space of constant vulnerability. This daily experience reinforces gender inequalities and limits the right to safe mobility, highlighting the need for public policies that expand the protection, reporting, and accountability of aggressors, ensuring that public transport is indeed an accessible and safe right for any citizen.



TRIPLE  
ZERO  
MAPS:  
THE WEIGHT  
OF THE TRIP

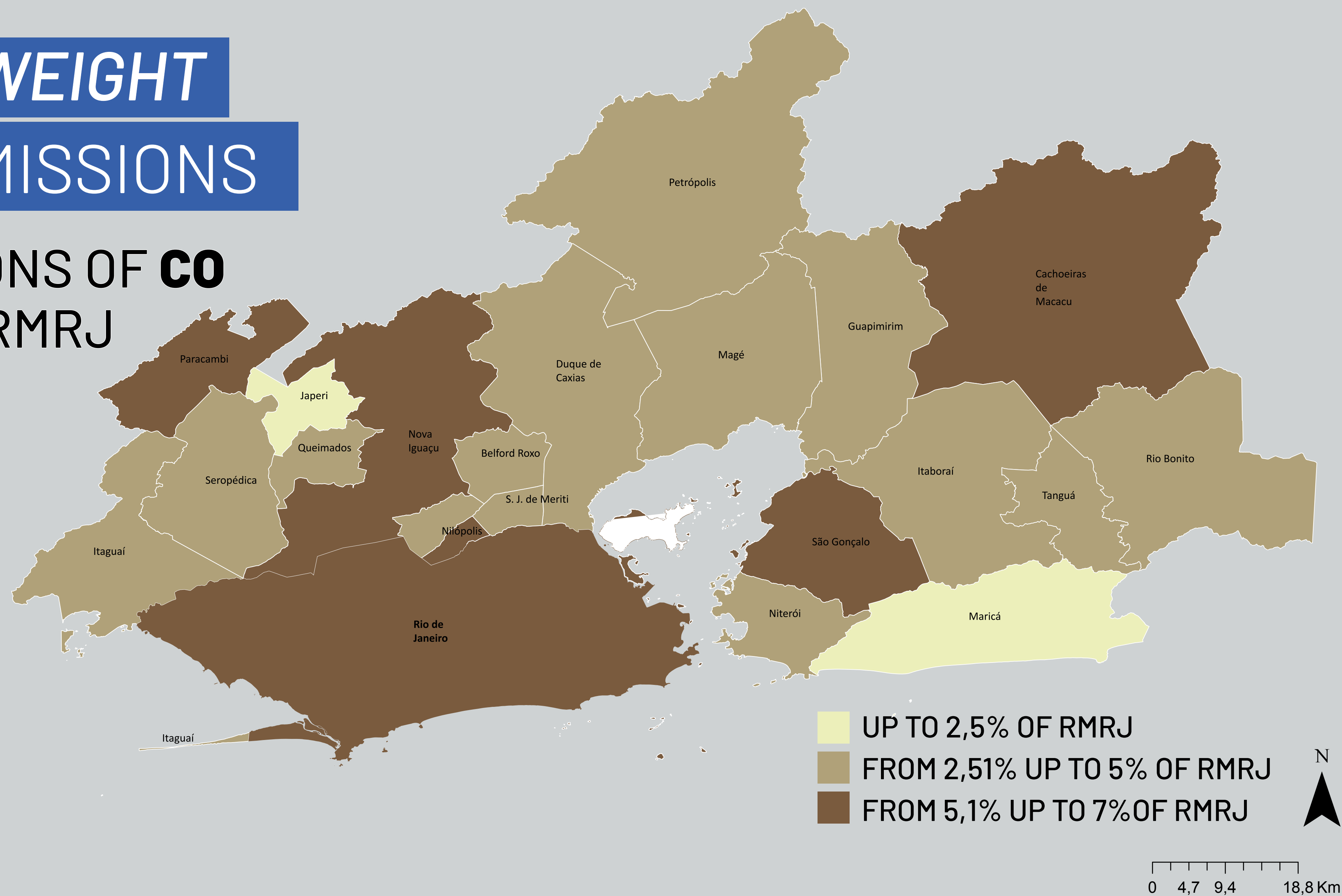
THE *WEIGHT*  
OF DEATH





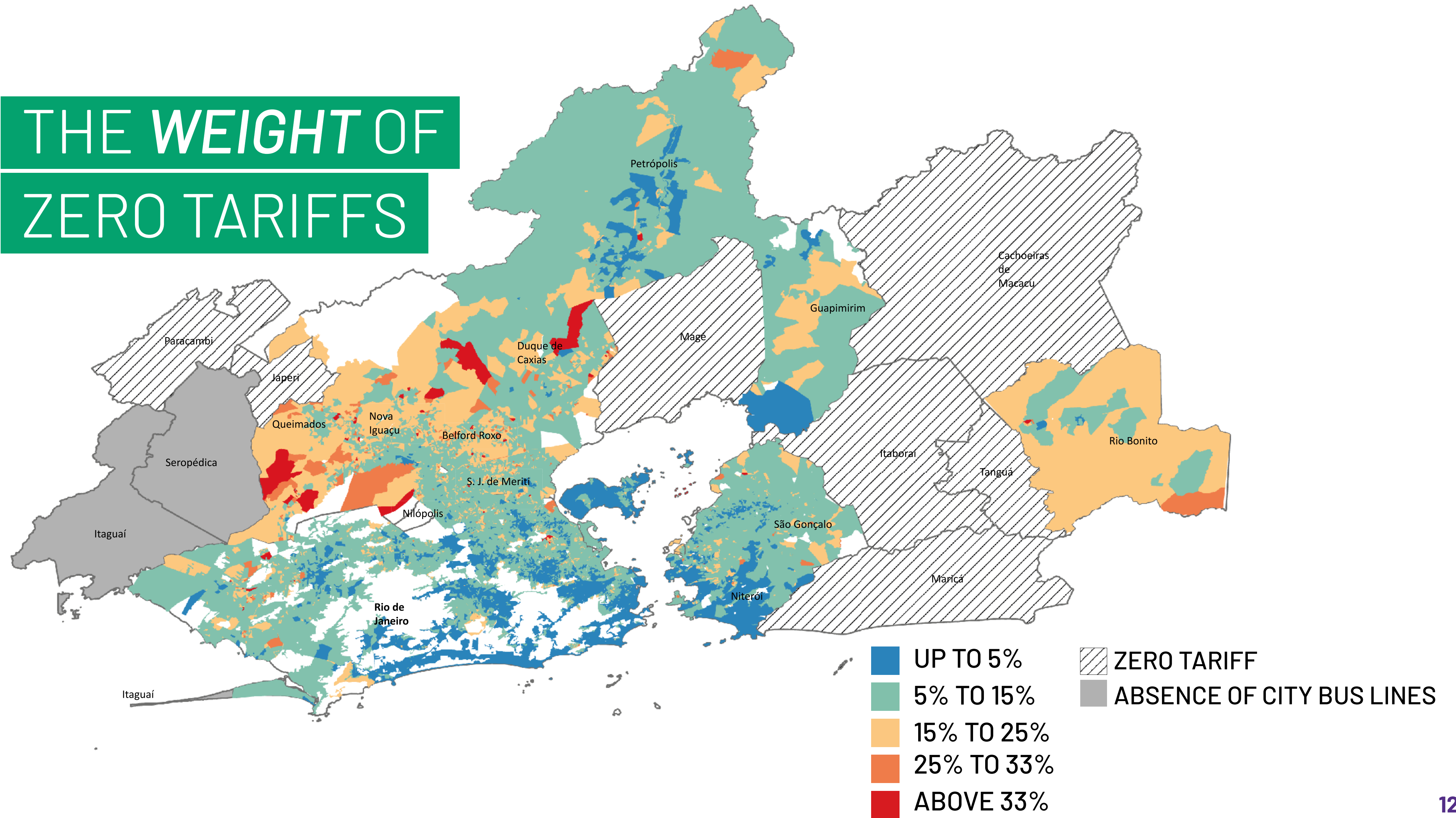
# THE *WEIGHT* OF EMISSIONS

## EMISSIONS OF **CO** IN THE RMRJ





# THE *WEIGHT* OF ZERO TARIFFS





# ATTENTION PASSENGER: BE CAREFUL WHEN BOARDING AND DISEMBARKING

**Did you know there is a New Year's Eve in Rio de Janeiro every day? Those who need to cut through the metropolis daily already know this.**

Every day, **two million people in the metropolis** feel this when traveling to the capital for work, study, leisure, or services. The volume of human congestion is visible in the traffic jams of Rio's main avenues, stations, and large terminals such as Central do Brasil. The difference is that, unlike the large-scale event at Copacabana at year's end, there is no comparable special operation dedicated to managing and ensuring the daily commute for workers. This concentration of people is the result of another huge concentration: that of opportunities. This is because there is an absence of access to rights from the Baixada to the East of Rio de Janeiro.

As shown in **the weight of the trip maps**, this cycle of inequalities is in the path of every passenger. Whether because of tariffs, insecurity, health in the face of a lack of air quality, or the weather. This cycle even placed the **Metropolitan Region of Rio first in the ranking with the highest average travel time in the country: 58 minutes per trip**. Data from the 2022 Census "Commuting for work and study" sample show that the region is where there are more people in Brazil spending two hours or more commuting.



It is 116 minutes to go and return, an average daily time that weighs for each person sitting or even standing inside the car. It is 116 minutes for more than two million passengers who are workers, students, mothers, among other people: two million stories, families, dreams, and lives. In the DOT report, we **monitor data, tariffs, and maps by looking at these people**. The challenge of achieving a just energy transition is that it needs to bring justice to the continuity of cities, but, above all, of people – of those who have already been facing the effects of climate change, which is why it needs to be a priority in the transformation we are proposing.

To avoid missing the purpose or focus, DOT 5 turned its research to passengers. We cannot think about an energy transition or zeroing fares without understanding the main challenges to boarding. For this reason, we monitored four passenger profiles for a week, who multiplied daily at the stations and bus stops. We followed the day-to-day trip of a student from the Baixada Fluminense who needs to travel to the State University of Rio de Janeiro, in the North Zone of Rio, to study; a bus driver living in the West Zone of Rio who knows well the routes and challenges of commuting time, and a self-employed housekeeper who needs to circulate through different parts of the city to guarantee her income – she is a single mother who needs to balance her journeys and those of her 7-year-old son.



## TRANSPORTATION, CLIMATE, AND EDUCATION

### MARIA CLARA SALVADOR

24 YEARS  
PHILOSOPHY STUDENT  
QUEIMADOS, RJ

**AVERAGE COST OF TRAVEL:** R\$ 298.35

**AVERAGE TRAVEL TIME:** 19H48

**MODES:** TRAIN, SUBWAY, VAN, AND  
TAXI APPS

A resident of the Brazilian city with the worst commute time in the country, Maria Clara is one of the thousands of students from the Baixada Fluminense who daily need to travel to the capital of Rio to access higher education—an education characterized by insecurity, expenses, and emotional exhaustion. Public transport mainly affects the daily lives and future of Black women.



Queimados é um dos 13 municípios que compõem a Baixada Fluminense. A região se destacou no levantamento inédito do Censo 2022 sobre uso de meios de transporte e tempo de deslocamento de casa ao trabalho. Entre os municípios com mais de cem mil habitantes, a Baixada Fluminense domina o ranking de cidades onde mais pessoas enfrentam os deslocamentos mais demorados, gastando mais de duas horas nesse trajeto diariamente.

## The percentage of the population that spends more than two hours commuting to work

SEROPÉDICA	19,4%	MARICÁ	7,9%
GUAPIMIRIM	18,5%	MESQUITA	7,2%
BELFORD ROXO	14,8%	RIO DE JANEIRO	6,8%
JAPERI	14%	SÃO GONÇALO	6,4%
QUEIMADOS	13,7%	NILÓPOLIS	6%
DUQUE DE CAXIAS	12%	SÃO JOÃO DE MERITI	6%
NOVA IGUAÇU	11,8%	ITAGUAÍ	5,7%
PARACAMBI	10,6%	NITERÓI	3,9%
TANGUÁ	10,54%	PETRÓPOLIS	0,93%
MAGÉ	10,20%	RIO BONITO	0,92%
CACHOEIRAS DE MACACU	9,23%	BRASIL	1,80%
ITABORAÍ	8,10%		

Source: 2022 Census.

About to graduate, Maria knows very well the challenges the research points out. For the last four years, she has been making the daily journey from Queimados, where she lives, to the State University of Rio de Janeiro (UERJ), where she studies. According to the monitoring carried out by the DOT, the student spends an average of R\$ 300 on tickets and 20 hours a week just on commuting. Among the modes most used by her is the train; this is one of the means of transport that has accompanied her since her birth:

"MY RELATIONSHIP WITH PUBLIC TRANSPORT BEGAN IN THE MATERNITY WARD. I WAS BORN IN PARACAMBI, AND SOON AFTER, MY MOTHER TOOK A TRAIN TO QUEIMADOS. YOU CAN SAY THAT I HAVE ALWAYS NEEDED TRANSPORTATION TO GET AROUND,"  
CONCLUDED MARIA.

Years later, it is still the train accompanying the student: every day she boards at the Queimados station towards Maracanã, and it takes at least three hours to go to and from the university. Maria reported the physical and mental fatigue that commuting time causes, impacting her study routine and time for other care activities. This situation is even more complex, combined with other issues such as the insecurity of being a young Black student embarking alone. As presented in the previous chapter, the primary victims of sexual harassment are students and Black women. With this scenario, Maria always needs to be more attentive to every step she takes — this extra attention directly impacts her academic journey.

"IN THE PERIODS WHEN I NEEDED TO TAKE CLASSES AT NIGHT, I NEVER FELT SAFE. THIS REALLY IMPACTED MY ROUTINE. I USED TO FEEL THE ADRENALINE OF BEING ON THE TRAIN AT THAT TIME, OR EVEN IN THE CLASSROOM, TRYING TO DECIDE WHICH MODE WAS SAFER. AFTER THAT, I OBVIOUSLY WOULD COME HOME VERY STRESSED, AND IT WOULD TAKE ME A LONG TIME TO SLEEP," SAID THE YOUNG WOMAN.

Despite the concentration of public universities in Rio's capital, the state still does not offer a free bus pass for students from the Baixada, Leste, and other regions outside the city. Therefore, the daily cost of travel for these young people who are starting their journey is their own responsibility. After she started working, Maria said she used taxi apps mainly to get around at night because they were faster and more comfortable. Cars are currently the primary means of transportation in the country. Private transport stands out for different factors that people like Maria face daily, such as travel time, insecurity, fare value, and low supply. To escape this context, in many moments, she spends more than 30% of her salary on taxi apps. Personal investment - the consequence of the lack of public investment - is the emergency way to escape the routine that might frequently delay your life.

"THE TRANSPORTATION EVEN CHANGES MY COLLEGE CURRICULUM. EVERY SEMESTER, BEFORE CHOOSING THE SUBJECTS, I TALK TO MY COLLEAGUES FROM THE BAIXADA TO COMBINE THEM. FOR EXAMPLE, THERE WAS A CLASS ON MONDAY NIGHT, BUT I DIDN'T TAKE IT EVEN THOUGH IT WAS MANDATORY BECAUSE NO ONE WOULD RETURN WITH ME. ALSO, I ALWAYS MISS THE FINAL 30 OR 40 MINUTES IN THE EVENING CLASSES BECAUSE I HAVE TO LEAVE AND CATCH THE LAST DIRECT TRAIN. THIS GREATLY IMPACTED MY STUDIES AND EVEN THE WAY I INTEGRATED INTO COLLEGE AND CELEBRATIONS. THIS WAS ESPECIALLY TRUE AT THE BEGINNING OF COLLEGE WHEN I HAD NO INCOME," EXPLAINED THE PHILOSOPHY STUDENT.



# WHAT ABOUT OUTSIDE THE CLASSROOM?

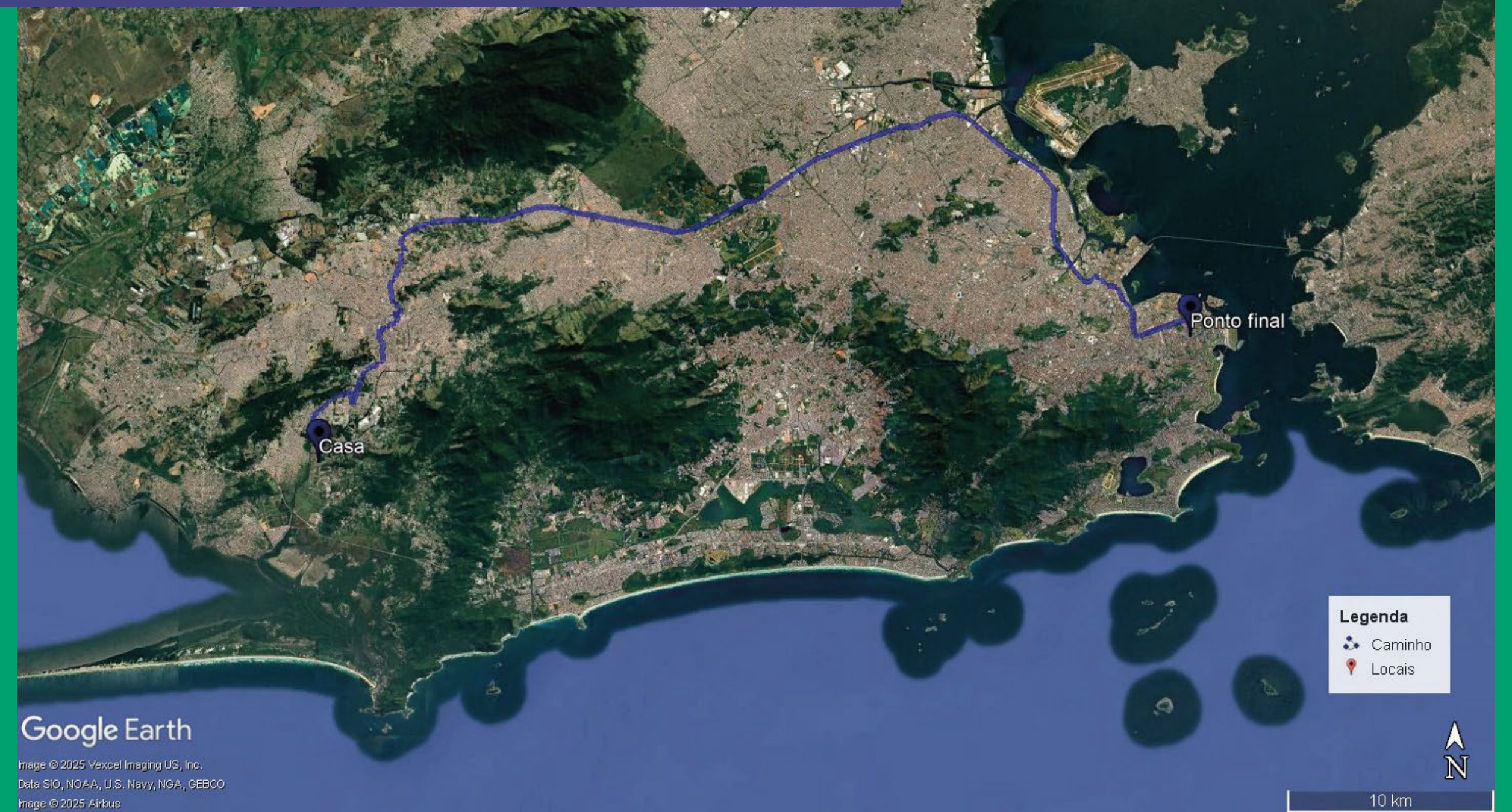
Like every young woman, Maria also uses public transport in her leisure time, which is often not just moments of calmness. The commute through the RMRJ, searching for culture, leisure, or other services beyond work and study, is also exhausting.

"EVERY TIME I GO OUT, I CALCULATE NOT ONLY THE TIME SPENT GOING AND ACCESSING THAT PLACE, BUT ALSO THE TIME I NEED TO LEAVE BEFORE OTHER PEOPLE. THIS DEMANDS CONCERN, SO HANGING OUT IS NEVER JUST LEISURE; YOU MUST ALWAYS DOUBLE-CHECK AND PLAN. I KEEP PLANNING HOW TO DO IT AS BEST AS POSSIBLE, BUT I END UP STRESSING OUT," MARIA DISCLOSED.



## Route Cristiane Souza de Oliveira

Path of greater contact with CO of the character Cristiane



## TRANSPORTATION, CLIMATE, AND CULTURE

CRISTIANE SOUZA DE OLIVEIRA

47 YEARS

HOUSEKEEPER

GUARATIBA

**AVERAGE COST OF TRAVEL:** R\$ 83.07

**AVERAGE TRAVEL TIME:** 53H47

**MODALS:** BUS, TRAIN, VLT, BRT,  
MOTORCYCLE TAXI

**How long does  
it take from  
your home to  
the museum?**





The DOT report accompanied Cristiane's journey to the Museum of Tomorrow on a Sunday. A resident of Guaratiba, she left home at 11:20 a.m. and arrived at her destination at 3:28 p.m. It took her four hours to travel in three different modes, and she spent R\$ 17. This is a common routine for residents of the West Zone of Rio. Despite being the most populous region of the city, it also has the fewest job offers, so in addition to needing to go out to access museums, its residents also need to go to the Center or South Zone of the city every day for jobs.

"I HANG OUT A LOT, BUT NOT AS I WANT. SOMETIMES, BECAUSE OF THE PUBLIC TRANSPORT, I DON'T STAY LATE IN PLACES,"  
**REPORTED THE GUARATIBA RESIDENT.**

Access to public transport is a constitutional right guaranteed to all. People also have access to other rights, such as culture, employment, and income, through transportation. As a housekeeper since she was 17, Cristiane has commuted intensely to serve her clients. Moving from Guaratiba to neighborhoods in the South Zone takes about two hours to get to work.

Among the four people monitored by De Olho no Transporte, Cristiane spent the most time commuting during the week — more than 50 hours. It's as if two days a week were used only for commuting.

"WHAT BOTHERS ME THE MOST IS THE DISCONNECTION BETWEEN ONE MODE OF TRANSPORT AND THE NEXT. I'VE SERIOUSLY CONSIDERED RELOCATING BECAUSE OF THAT FACTOR ALONE. I'VE STOPPED TAKING WORK BECAUSE OF THE DISTANCE, TOO. EVEN AT THE END OF THIS YEAR, I INTEND TO STOP WORKING IN A HOUSE BECAUSE IT TAKES MORE THAN THREE HOURS OF TRAVEL TO GET THERE",  
**SAID CRISTIANE.**





## Route **Roberta Ferreira de Souza**

Path of greater contact with CO of the character Roberta



## TRANSPORTATION, CLIMATE, AND CARE

### **ROBERTA FERREIRA DE SOUZA**

37 YEARS OLD

STUDENT, TOUR GUIDE, AND STREET  
VENDOR

NÓS POR NÓS/CUIDADOTECA

SÃO GONÇALO AND TABAJARAS

**AVERAGE COST OF TRAVEL:** R\$ 83.07

**AVERAGE TRAVEL TIME:** 21H41

**MODALS:** BUS, FERRY, SUBWAY, MOTORCYCLE  
TAXI, AND VAN

Raised in São Gonçalo, in the East of Rio de Janeiro, Roberta's relationship with transport changed drastically after she became a mother. This change was so huge that she had to leave the territory where she lived. Those responsible for transporting children on public transit understand the difficulty of ensuring this right, even though it is guaranteed by law. For instance, Article 39 of Decree No. .9,579/2018 secures the free transportation of children up to six years old; despite this, Roberta frequently had to fight to uphold this right.



"IN 2023, WHEN MIGUEL TURNED FIVE, WE STARTED GETTING QUESTIONS WHEN TRYING TO BOARD, LIKE: 'WHERE'S HIS CARD?' AND 'HOW OLD IS HE?' WHEN HE TURNED SIX, THESE CHALLENGES ESCALATED, AND I WAS DIRECTLY TOLD, 'HE DOESN'T GET ON MY BUS ANYMORE'. EVERY DAY I WALKED WITH HIS BIRTH CERTIFICATE TO PRESENT, BUT THERE WAS A DRIVER WHO STILL DIDN'T ACCEPT IT BECAUSE OF THE COMPANY REQUIREMENTS," SAID THE MOTHER.

According to Brazilian law, the right to a free bus pass for children is generally revoked at the age of six. Due to this change, compounded by the lack of integration in metropolitan transport policies, Miguel began running the risk of being unable to attend school. Despite living in São Gonçalo, he started studying in Niterói due to the lack of schools close to home, and even though it is a neighboring municipality in the same region, he was not entitled to free schooling. At that moment, Roberta found herself facing an impasse. For her son to continue studying, she had to move.

"WHAT INFLUENCED MY MOVE THE MOST WAS THE TRANSPORTATION; HAVING TO PAY A FARE TO GO TO SCHOOL? THE FINANCIAL IMPACT WOULD BE AT LEAST R\$ 400 MORE; I DON'T HAVE THAT MONEY. IF THERE HAD BEEN AN INTEGRATION IN TRANSPORTATION, I WOULD NEVER HAVE MOVED – LEAVING OUR TERRITORY AFFECTED ME AND MY SON A LOT. THERE WERE NUMEROUS KINDS OF VIOLENCE, INCLUDING PASSENGERS COMPLAINING ABOUT HIM SITTING ON THE SEAT BECAUSE HE HAD NOT PAID FOR THE TICKET, THIS AT DAWN, 5:30 AM. I WOULD LEAVE WHILE IT WAS STILL DARK WITH HIM, HAVING TO FACE THE DANGERS OF THE STREET—AND ONCE I GOT ON THE BUS, I HAD TO DEAL WITH ANOTHER INSTANCE OF AGGRESSION. I REACHED MY LIMIT, AND I WAS EXHAUSTED. I TRIED FULL-TIME SCHOOLS IN SÃO GONÇALO, BUT IT WASN'T POSSIBLE. I GOT SICK IN THIS ROUTINE," SAID ROBERTA.



# OS TRINTA DEGRAUS

As a single mother, transportation and care routines directly impact her work and study possibilities. Today, Roberta has no fixed income because she has a limited support network. She needs to prioritize jobs that can be done on weekends or large events — when she can work as a street vendor — or such as university research scholarships, an occupation that

does not change her routine of caring for her son.

The move from Santa Luzia (São Gonçalo), where she lived, to Ladeira dos Tabajaras (a favela in Copacabana) meant covering more than 50 kilometers and enduring at least an hour and a half of travel, plus an

extra 30 steps to go upstairs. This up and down happens every day, early in the morning to take the child to school and then cross the city to the Fluminense Federal University (UFF), where she studies Pedagogy. After her class, she must attempt to return to Rio de Janeiro in under an hour to pick up her child at school on time.

Although Miguel has free tuition today, this is still not Roberta's reality: as she studies in Niterói and lives in Rio, she has not accessed free public higher education. Again, the lack of integration impacts her life. Considering this, to be able to study and also ensure that Miguel goes to school every day, she spends an average of R\$ 340 just on tickets.

"THE ONLY ONE WHO HAS FEE  
EXEMPTION IS HIM, BUT THAT  
DOESN'T MAKE SENSE. A  
6-YEAR-OLD CHILD DOESN'T  
WALK ALONE – I'M THE ONE WHO  
TAKES AND PICKS HIM UP AT  
SCHOOL, AND I HAVE NO PLAN B.  
IF I CAN'T AFFORD TICKETS ONE  
DAY, DOES THIS MEAN MIGUEL  
WON'T GO TO SCHOOL?" **ASKED  
ROBERTA.**

On some days of class, she returns to Rio to pick up Miguel, and they both return to UFF together. The university now features a Cuidadoteca—a dedicated after-school care space that guarantees many mothers the possibility of continuing their studies.

**But this coming and going  
between three cities has a  
cost that does not end at  
the turnstile.**

Before moving from São Gonçalo to the favela of Rio, which reduced her son's commute time from almost an hour to less than 20 minutes, Roberta says that her son was often sick. In the same year, Miguel had several respiratory problems such as bronchopneumonia, pneumonia and bronchiolitis, in addition to presenting symptoms such as headache and vomiting frequently.



"MY SON LIVED WITH CRISES; HE HAD TO DO NEBULIZATION OR USE A PUMP ALMOST EVERY DAY. WE SPENT A LONG TIME IN TRANSPORT WITH SUDDEN TEMPERATURE CHANGES, AND WERE EXPOSED TO A LOT OF POLLUTION. I NOTICED A GREAT IMPROVEMENT IN HIS HEALTH AND MINE AFTER WE MOVED", **CONFIRMED**  
**ROBERTA.**

## OUR CHILDREN'S HEALTH BOX

According to the World Health Organization (WHO), children are among the most vulnerable groups in the face of diseases linked to air pollution. The most common ones affecting kids up to 5 years old are asthma and acute respiratory infections.

According to her, commuting time and air conditions also affected her. Nowadays, she spends 80 hours a month commuting—but this number was almost double before. As a result, Roberta became pre-diabetic at that time, always felt very exhausted, and even thought about dropping out of college. Even with the improvement in the commute after the move, the family still dreams of returning to their territory.



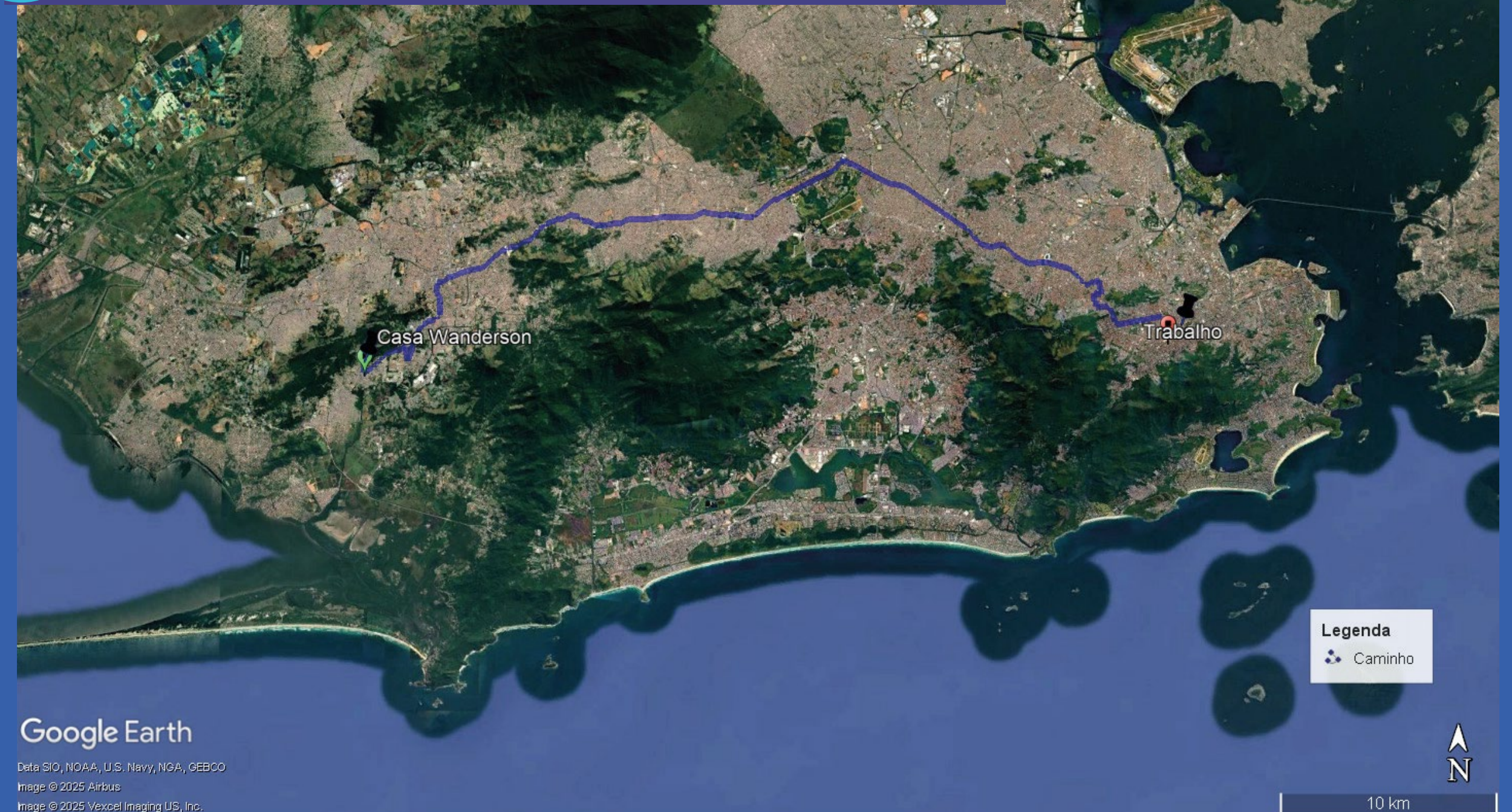
"EVERY WEEKEND WE RETURN TO SÃO GONÇALO. MIGUEL'S DREAM IS TO MOVE BACK THERE," SAID ROBERTA.

Roberta is among the thousands of single mothers who find little care and support from public policies in boarding and disembarking public transport. Her history is not unique - the last Demographic Census pointed out that São Gonçalo was the city that lost the most inhabitants in the country, proportionally. One of the gaps that explains this massive departure - even among residents who, like her, love their territory - is the lack of integration of public policies across the Metropolitan Region of Rio. Recently, the people of São Gonçalo were also surprised by one of the biggest fare increases in recent times: the city will have one of the most expensive fares in the metropolis.



### Route **Wanderson da Silva**

Path of greater contact with CO of the character Wanderson



## TRANSPORTATION, CLIMATE, AND EMPLOYMENT

### WANDERSON DA SILVA

38 YEARS OLD

BUS DRIVER

CAMPO GRANDE, WEST ZONE OF RIO

**AVERAGE COST OF TRAVEL:** R\$ 80

**AVERAGE TRAVEL TIME:** 51H58

**MODES:** PRIVATE CAR AND BRT

As a bus driver for approximately eight years, Wanderson's routine begins before sunset. His first trip of the day starts at four o'clock in the morning, and to be in the garage at that time, he must leave the house every day before three. During the early hours, no bus service is available to the driver, so he has to use his own vehicle. This is an everyday reality not only in Rio but throughout the country. Data from the last census indicate that, currently, the car is the primary means of transportation for Brazilians to work. According to the new survey, 21.4 million people commute by car to work, while



# In the Metropolitan Region of Rio, for instance, the average is two people for each vehicle.

Source: Inequality Map 2023.

"WHEN I HAVE TO LEAVE, NO BUS IS AVAILABLE, AND THERE IS NO RIGHT TIME FOR ANY BUS TO PASS. THEN I WOULD RUN THE RISK OF LOSING THE TIME TO CATCH THE OTHER BUS THAT TAKES ME TO THE COMPANY'S LOCATION, SO I NEED TO GO WITH MY OWN VEHICLE," EXPLAINED WANDERSON.

If Wanderson did not use his own vehicle to go to work, he would be late, which would affect the thousands of people he transports daily. As a driver, he travels about 38 hours a week, making an average of three round-trips daily. The route from Campo Grande to Deodoro has a large variation, which is responsible for peak-hour trips. During monitoring, he made the same route in 40 minutes, but also in more than two hours. This routine has a direct impact on the driver's health.



**"I HAVE HEART PROBLEMS THAT ARE EXTREMELY IMPACTED BY THE DAILY STRESS OF CATCHING TRAFFIC. THIS IS A VERY COMPLICATED FACTOR IN MY SITUATION. THAT'S WHY, IN MY FREE TIME, I TRY TO RECOVER PHYSICALLY AND PSYCHOLOGICALLY TO RETURN TO THE WORK ROUTINE AS RESTED AS POSSIBLE THE NEXT DAY. WANDERSON REPORTED, "AS THERE IS ONLY ONE DAY OFF PER WEEK, BETWEEN REST AND LEISURE, I CHOOSE TO REST EVEN AGAINST MY WILL."**



# THE INVISIBLE CAUSES THAT CHANGE OUR HEALTH

Breathing on the way to the bus stop, waiting for the modal, when boarding, and disembarking. It is a movement made automatically, and little is discussed in the face of the many transportation challenges. But this act hides one of the huge problems of the current system: the impact that the lack of energy transition in the sector has on our health. With each burning of fuels, urban dust, industrial processes, and burning, a set of solid and liquid microparticles, called particulate matter (PM), is suspended in the air.

These particles vary in size — the most concerning are PM<sub>10</sub> (diameter  $\leq 10 \mu\text{m}$ ) and PM<sub>2.5</sub> ( $\leq 2.5 \mu\text{m}$ ) — as they can penetrate deep into the lungs and reach the bloodstream, causing respiratory, cardiovascular, and inflammatory problems.

1 micrometer ( $\mu\text{m}$ ) = 0.000001 meter

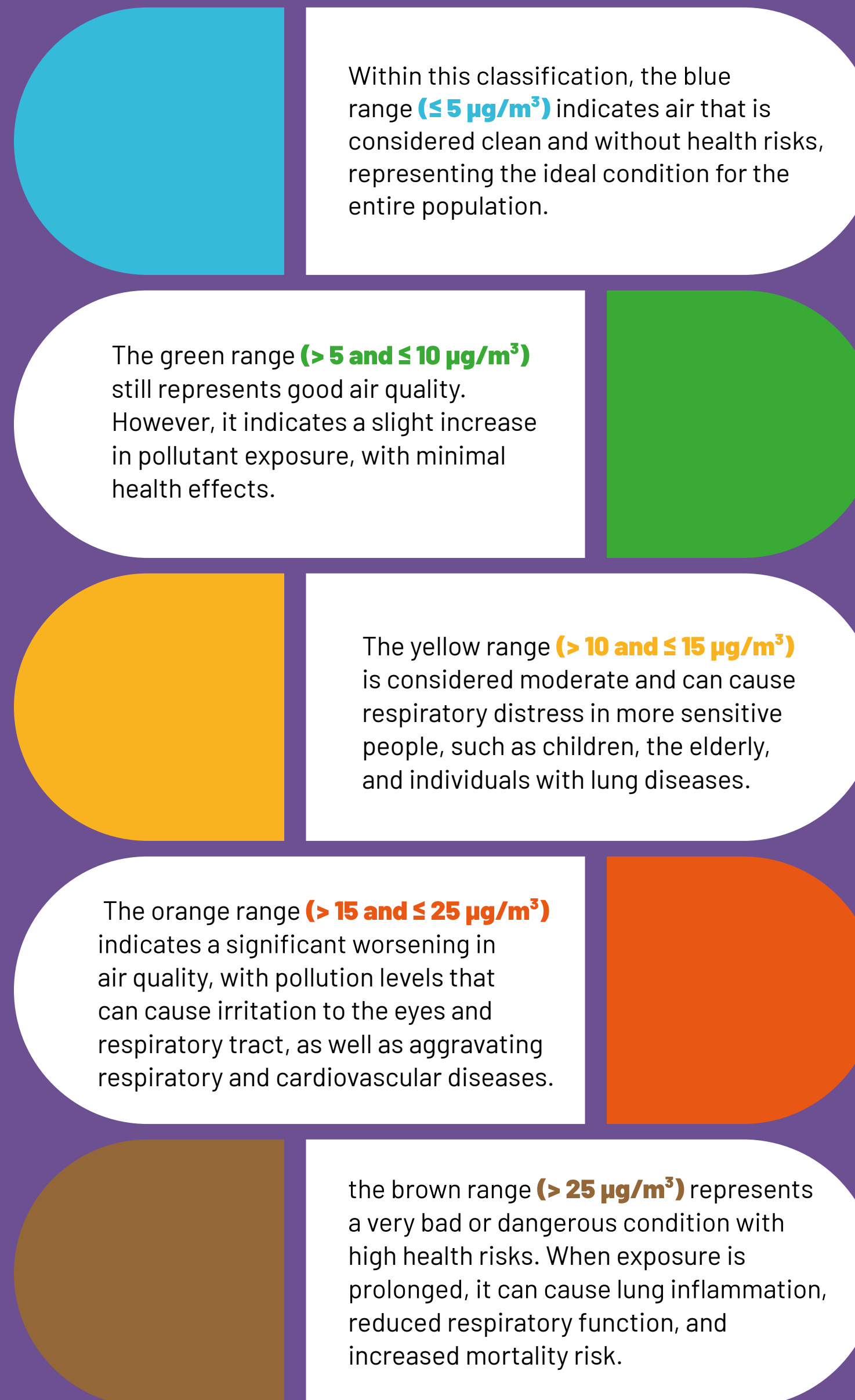
Thickness of a human hair (ranges from about 20  $\mu\text{m}$  to 200  $\mu\text{m}$ )

$\mu\text{g}/\text{m}^3$  (micrograms per cubic meter) = indicates the amount of a substance in the air. For example, if the air contains 10  $\mu\text{g}/\text{m}^3$  of fine dust (PM 2.5), this means that in a space the size of a one-cubic-meter box, there are 10 micrograms of these particles.

PM = MP (particulate matter) is the set of small solid and liquid particles suspended in the air, such as dust, smoke, and soot. They come mainly from burning fuels, industries, and vehicles, and can be inhaled, affecting the lung and heart, especially when they are very thin, such as PM 2.5.

$\text{mol/m}^2$  = (mole per square meter)  $\text{mol/m}^2$  shows how much of a gas is "spread" over an area. For example, imagine a bed sheet lying on the floor with 1 square meter. Now, think there is a "smell of smoke" over it. The value in  $\text{mol/m}^2$  indicates how many molecules of that smell (or gas) are "on top" of that sheet—that is, how much of that gas is in the air column above that area. The higher the value, the more concentrated the gas is in that region.

The Painel VIGIAR (the Air Quality Monitoring Panel of the Ministry of Health) uses a classification based on ranges of values that follow the recommendations of the World Health Organization (WHO, 2021), defining  $5 \mu\text{g/m}^3$  as the safe limit for prolonged exposure. The data presentation illustrates the concentration ranges of fine particulate matter (PM 2.5) measured in micrograms per cubic meter ( $\mu\text{g/m}^3$ ). These values are color-coded to indicate air quality and associated health risks.



According to VIGIAR, in the Metropolitan Region of Rio de Janeiro, 19 of the 22 municipalities are classified in the orange zone. This means they have concentrations of particulate matter ( $\text{PM}_{2.5}$ ) ranging between 15 and  $25 \mu\text{g/m}^3$ , most of which are near the upper limit ( $25 \mu\text{g/m}^3$ ). In this condition, there is an increased health risk, especially for people with respiratory diseases, the elderly, and children. The air contains fine particles at levels that can cause irritation and aggravate respiratory problems.

**In the Metropolitan Region of Rio de Janeiro, 19 of the 22 municipalities are in the orange zone — with concentrations of  $\text{PM}_{2.5}$  between 15 and  $25 \mu\text{g/m}^3$  — indicating polluted air and increased health risk, especially for children, the elderly, and people with respiratory diseases.**



# KEEPING AN EYE ON THE PASSENGER



The monitoring of passengers Cristiane, Roberta, Maria Clara, and driver Wanderson, conducted for the study De Olho no Transporte 5, measured not only the time and costs associated with their weekly commutes, but also kept an eye on the exposure levels experienced during these trips.

During the days of August 10 to 16, 2025, passengers in the DOT study sent all their locations throughout their day: from leaving home, returning from work, information on fares and expenses, places they frequented. Monitoring was organized and these locations became georeferenced points within the RMRJ. Using data from the Sentinel-5P Carbon Monoxide satellite, it was possible to quantify the average CO concentration (in  $\text{mol/m}^2$ ) of the routes taken during the week of all the individuals studied.

Check out the analysis of each of the profiles.

## **ROBERTA:** THE LOWEST VALUES, BUT WITH HIGH PEAKS

The route taken by Miguel's mother showed the lowest average CO concentration among the routes analyzed. Its total average was approximately  $0.0235 \text{ mol/m}^2$  in one week of DOT analysis. Overall, her route had the lowest amount of carbon monoxide (CO). Despite this finding, she experienced a very high pollution peak of approximately  $0.0271 \text{ mol/m}^2$  on the Rio-Niterói bridge.

## **MARIA CLARA:** LONG JOURNEYS WITH CONCENTRATED POLLUTION PEAKS

Maria traveled a route with a medium level of pollutant exposure, but with specific stretches of concentrated pollution. Spot sample measurements indicated, that along the way, there were some strong spikes in carbon monoxide (CO). The total average pollution in Maria's route of approximately  $0.0238 \text{ mol/m}^2$  shows that, considering all the routes and the period analyzed, the air quality remained between low and moderate. However, in Mesquita, Maria passed through a point with a maximum value of approximately  $0.0250 \text{ mol/m}^2$ .

## CRISTIANE: THE PORTRAIT OF THE USE OF MANY MODES

In general, the air quality was moderate during the monitoring, the total average being 0.024 mol/m<sup>2</sup>. This value indicates a carbon monoxide (CO) level classified as low to moderate in satellite measurements. The point with the highest concentration registered 0.0248 mol/m<sup>2</sup>, about 14% above the cleanest point. This difference indicates that Cristiane passed through areas with "pockets of pollution" – defined as localized accumulations of pollutants in the air, formed in areas with little atmospheric dispersion and high emissions (e.g., in areas of intense traffic or in confined urban spaces). The cleanest stretches are likely to be on freeways or more open regions, while the most polluted may be near major transport stations or high-traffic areas – typical places for bus, BRT, and train use.

## WANDERSON: THE CLEANEST ROUTE WAS FOR THE BRT DRIVER

The results show that this route had the cleanest air among the routes evaluated, although there were still some pollution peaks. The total average was about 0.023 mol/m<sup>2</sup>. This indicates that, between August 10 and 16, 2025, the air mass over Wanderson's route maintained a relatively moderate air quality. Even so, there were important variations: the most polluted point reached about 0.025 mol/m<sup>2</sup> in Tijuca, a neighborhood in the North Zone of Rio. This peak shows that, despite the good average quality, there was a stretch of the route with a higher concentration of CO – possibly in an area with heavy traffic or congestion. This point represents the highest potential risk of human exposure to pollution at street level.

## MAXIMUM FOR EACH PASSENGER

ROBERTA	0,0271 MOL/M <sup>2</sup>	RIO-NITERÓI BRIDGE
MARIA	0,0250 MOL/M <sup>2</sup>	MESQUITA (RJ)
CRISTIANE	0,0248 MOL/M <sup>2</sup>	DOWNTOWN RIO (RJ)
WANDERSON	0,025 MOL/M <sup>2</sup>	TIJUCA, NORTH ZONE OF RIO

- LOW: < 0.020 MOL/M<sup>2</sup>** – CLEAN ATMOSPHERE, TYPICAL OF RURAL, VEGETATED AREAS OR WITH LITTLE HUMAN ACTIVITY.
- M MODERATE: 0.020-0.030 MOL/M<sup>2</sup>** – LEVELS COMMON IN URBAN REGIONS AND METROPOLITAN AREAS, INDICATING VEHICULAR AND INDUSTRIAL EMISSIONS, BUT NO CRITICAL ACCUMULATION.
- HIGH: > 0.030 MOL/M<sup>2</sup>** – EPISODES OF GREATER POLLUTION, USUALLY ASSOCIATED WITH THE INTENSE CIRCULATION OF VEHICLES, FIRES, OR WEATHER CONDITIONS THAT MAKE DISPERSION DIFFICULT.




# DROP ME OFF!

The year 2030, for a long time, was the mark of the end of a trip – a trajectory that, like those of our characters, was very long. For over a decade, we have defended accessible, safe, and clean public transport, monitoring the weight of travel in the lives of those who depend on the system to access all other services and rights. The signal to drop off from a fossil-dependent and exclusionary transport system has already been given by previous editions of the [Transportation Monitoring Report \(DOT\)](#). This direction was cemented globally when, in Dubai, **COP28 approved a historic agreement to end the use of fossil fuels and achieve carbon neutrality by 2050.**



We are in the critical decade to comply with the Paris Agreement and limit global warming to 1.5°C, which in 2024 was projected to reach 2.7°C by the end of the century. To make sure the atmosphere of this trip improves – locally and globally – commitment and ambition need to grow. **Brazil needs to cut its greenhouse gas emissions by at least 92% by 2035**, according to a proposal by the Climate Observatory network. However, the new Brazilian Nationally Determined Contribution (NDC) committed to only 59% to 67% by the same year. In this sense, advancing the transport sector—one of the largest global emitters—requires a multi-pronged strategy. This includes replacing fossil fuels with electricity and biofuels, upgrading urban transport routes, and implementing sustainable urban development actions that utilize nature-based solutions. These are the strategic steps necessary to achieve the goals ahead.

**For local leaders in states and municipalities, the next stop of the transport system must be the just energy transition due to the risk to the health of people and territories.** As revealed in the new edition of the DOT, in the Metropolitan Region of Rio de Janeiro, residents of 19 of the 22 municipalities are at increased health risk from air pollution, especially for people with respiratory diseases, the elderly, and children. The city of Rio de Janeiro, which accounts for 7% of the region's transport emissions, postponed the deadlines set by decree No. 46.081/2019. The city then announced in its new 2025-2028 strategic plan the updated goal of renewing 100% of the bus fleet with low-emission vehicles by 2028, including zero-emission vehicles – beyond the existing **Low Emission District initiative in the Center of Rio de Janeiro**, which must bring advances in air quality monitoring and the requalification of public spaces with increased green areas, **a change that we hope will advance from the center towards the peripheries.**



If the guarantee of a healthier future for passengers with more breathable air in their commutes should be a policy with a preferential seat in the discussions, the universalization of access to transport is side by side in this priority. Recently, the Ministry of Finance commissioned a study on implementing the national zero-fare policy for the Ministry of Cities. Already, more than **130 cities have implemented some form of the zero-fare policy**; within the **metropolitan region of Rio de Janeiro alone, nine municipalities now utilize** a full or partial zero-fare system. In the race for decarbonization, reducing dependence on individual transport while valuing public transport is a premise. The announcements at the beginning of every year projecting fare increases – for buses, subways, and trains – go against the stimulus needed to promote public transport use. These price hikes are the most significant obstacle to guaranteeing this constitutional right, which celebrated its 10th anniversary in 2025.

Caring for the safety of passengers also attracts more users and this action, combined with the zero-fare policy, provides the answer to reverse the decline in public transport users across Brazil. As this report points out, in the Metropolitan Region of Rio de Janeiro, 1 in 11 cases of harassment occurred on public transport. Of these, 69.5% of the cases occur inside buses. Ensuring safer routes for women – especially Black women and children, as exemplified by our characters Cristiane, Roberta, and Maria Clara – is **taking care of the atmosphere of this trip** and the right to movement towards the cities we aspire to create.



Brazil, the country that previously hosted Eco 92 and Rio+20 in Rio de Janeiro, is now writing a new chapter in global socio-environmental and climate history by holding the presidency of COP30 in Belém. Five years before the long-awaited 2030, it is urgent to achieve the goals of the Paris Agreement with an emphasis on climate finance, adaptation, and multi-lateral cooperation agendas. This is a call for global efforts to implement a transition agenda at the local, regional, and national levels, embracing the spirit of the "mutirão" (a collective effort or joint task force).

Despite the immense challenges inherent in diplomacy and negotiation, as well as the contradictions and consequences of territorial violations committed in hosting an event of this size, the critical question remains: COP30 will pass, but what long-term legacy will remain? What will be your legacy for Brazilian cities and peripheries?

Our ambition is born from the priorities of the Rio 2030 Agenda. It is materialized in the contribution of the new edition of the report De Olho no Transporte (Transportation Monitoring Report), which examines the implementation of the triple zero policy (zero emissions, zero fares, and zero deaths) in urban mobility and the improvement of air quality for more resilient, sustainable, caring, and inclusive cities for people.

**ZERO EMISSIONS  
ZERO TARIFF  
ZERO DEATHS**



**FUTURE, WE  
WON'T GIVE UP  
ON YOU!**

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