# Social inequalities, territories of vulnerability, and urban mobility

## Desigualdades sociais, territórios da vulnerabilidade e mobilidade urbana

Eduardo Castellani Gomes dos Reis [I]
Maura Pardini Bicudo Véras [II]

**Abstract**

Contemporary transformations linked to technology, the world of work, unemployment, and the effects of the pandemic in Brazil have been altering territorial dynamics. However, such factors only added to the perverse stability of socio-spatial inequalities in Brazilian cities, particularly in São Paulo. By revealing the current social segregation in a city linked to the flows of global capitalism, the difficulties faced by many in the job and housing market bring scenarios of congestion and difficulties in accessing workplaces and the built environment. In addition to revealing the daily struggle of the majority due to inequality in opportunity and commuting, they indicate the important role of urban mobility, which may come to have a leading role as a public policy.

**Keywords:** social inequalities; socio-spatial segregation; vulnerability; urban mobility; public policies.

**Resumo**

*As transformações contemporâneas ligadas à tecnologia, ao mundo do trabalho, ao desemprego, e aos efeitos da pandemia de covid-19 no Brasil alteraram as dinâmicas territoriais. Entretanto, tais fatores apenas se acrescentaram à perversa estabilidade das desigualdades socioespaciais nas cidades brasileiras, em particular em São Paulo. As dificuldades de muitas pessoas de inserção no mercado de trabalho e de moradia, ao revelarem a segregação social vigente em uma cidade ligada aos fluxos do capitalismo global, trazem cenários de congestionamento e de dificuldades de acesso aos locais de trabalho e ao ambiente construído. Além de revelar a luta cotidiana majoritária devido à iniquidade das oportunidades e dos deslocamentos, indicam o importante papel da mobilidade urbana que pode vir a assumir protagonismo enquanto política pública.*

**Palavras-chave**: *desigualdades sociais; segregação socioespacial; vulnerabilidade; mobilidade urbana; políticas públicas.*



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# Introduction

The theme of this article is the relationship between socio-spatial inequalities and urban mobility in São Paulo. These multiple relationships are made clear, on the one hand, in the social segregation that is emblematic as a result of precarious insertions in the labor market, housing and differences in race and gender and, on the other hand, as it may represent the potential for protagonism as a public policy towards equity in social rights and access to the built environment. Thus, it reflects on urban mobility as a consequence of the capitalist city's characteristics governed by the actions of the State and capital in search of its valorization and, also, as a potential agent of social transformation. Based on bibliographical research and secondary sources, we seek to present a brief history of the policies developed in São Paulo throughout the 20th century and the first decades of the 21st century and their consequences, unveiling the relationships of this connection that therefore involve the reflections on the concepts of segregation, social vulnerability, mobility and public policy.

In brief, the Metropolitan Region of São Paulo – RMSP is one of the largest urban agglomerations in the world, with more than 20 million inhabitants, divided into 39 municipalities, being the largest hub of national wealth, hosting some of the most important financial conglomerates, industrial and commercial sectors in the country. The city of São Paulo, with 12,396,372 inhabitants in 2023 (IBGE), is the main hub of the RMSP.

Brazilian cities, first of all, constitute a clear example of social inequalities, regulated by the mechanisms of capitalist's space production, so well analyzed by David Harvey (2014). It is worth remembering, therefore, that all access to the built urban environment has followed a complex system of processes, in short, based on residents' income from work, depending, in turn, on their qualifications, training and study opportunities, in short, in general, thanks to an unequal distribution of opportunities. In this sense, the majority of workers do not have access to quality housing in neighborhoods well served by urban infrastructure (Véras, 2020). In the broader public sphere, permeated by neoliberalism, especially from 2016 to 2022, there was a major setback in labor and social rights, changing living conditions in the city.

In December 2022, data from the Single Registry (Cadúnico) of the São Paulo City Hall revealed that there was a 10.5% increase in families living in extreme poverty (760,386 people), which represents more than 6% of the total inhabitants of the capital. And it continues to increase, by around 4% in the number of extreme poverty, with per capita income of up to R$109 per month. But, in addition to this population, according to the data, there are another 49.5 thousand people living on the streets in São Paulo. Furthermore, 10.36% of the population lives in favelas (Pasternak, 2016), around 6% in tenements (Kowarick, 2016) and almost 6 million people on the outskirts of the capital of São Paulo (D'Andrea, 2020), highlighting the magnitude of the territories of precariousness.

Today, the city of São Paulo is a dynamic metropolis, although there has been a process of deindustrialization, with the services sector standing out as a developer. of the city's workforce. The precarious scenario that can be seen in various directions in the city, and in the metropolitan region, still coexists with urban nomadism, a multidimensional concept as an exclusionary process after social crises. In this look at socio-territorial inequalities there is the frequent discovery of vulnerabilities, in contrast to resistance movements, including political ethical suffering (Sawaia, 1999). The separation of uses in the city causes a large increase in travel across the territory, as, in addition to the commuting between home and work that takes place daily towards the center, there are also inter-neighborhood and inter-municipal movements. Long distances are traveled for other reasons: education, health, leisure, shopping. Thus, the city is also segregated in terms of mobility, offering risks, wear and tear, physical and psychological suffering to the majority of inhabitants. In this way, the themes of socio-spatial inequality, mobility and vulnerabilities are intertwined.

This article is structured, in addition to this introduction and final considerations, in three parts: the first begins a discussion not only conceptually about segregation, but also about its manifestations in the city of São Paulo, serving as a necessary stage in the development of the theme of territories vulnerability and relationships with urban mobility. From the perspective of inequality, processes of urban nomadism are presented, in exchange relationships. The second step, through research carried out on public transport users, demonstrates the intersection of economic factors with gender, race and culture, in an intersectional approach.[1] Still as a third point, it is proposed that urban mobility will become a major protagonist in public policies that favor access and equity in improving the living conditions of workers in São Paulo.

## Segregation, mobility and territories of vulnerability

Recovering the classic theme of segregation, we seek to identify the heterogeneity of the São Paulo space, especially its outskirts. with regard to the different ways of building and living, the socioeconomic characteristics and living conditions of the resident population and, therefore, it can be stated that socio-spatial segregation can be understood as the degree of separation or isolation between different social groups in the territory (Marques and Torres, 2005).

Note the dissimilarity of poverty that is lodged in precariousness, as different social groups live under pressure from circumstances arising from the labor market and which resonate in urban conditions of housing and location, in a way denouncing their relegation in favor of the population of greater lace. Based on a bibliographic review on segregation, Marques and Torres (2005) point out three processes: isolation (if there are physical or legal barriers, which can lead to the formation of “ghettos or citadels”); the difficulty in accessing urban services, such as transport, jobs, adequate housing, and external heterogeneity, seeking to assess their rates and standards.

With other ways of approaching socio-spatial inequality, some perspectives have always ended up alternately focusing either on the identification of radial concentric circles, in terms of the aforementioned Chicago School, or on the Marxist view on the effects of capital in the southwest quadrant as a privileged vector (Pierson, 1948; Villaça, 2011).

It can be admitted that, although the concentric radial pattern manifests itself roughly in the city of São Paulo, visualizing the center, intermediate and peripheral rings, a more detailed examination will notice new contrasts, as pockets of high-income classes that self-segregate themselves in gated communities, similar to that analyzed by Caldeira (2000).

Although without legal discrimination, class inequality coexists with racial inequality in a nebulous way due to the myth of racial democracy that ends up disguising racism in the city. Black movements since the 1980s have been denouncing this fallacy that can lead to demobilization in relation to their territorialization in precariousness. Other authors claim that there is a true double social, economic and racial apartheid (Buarque, 1993; Gonzales, 1979), in addition to the separation of gated communities (Caldeira, 2000). Urban space is, therefore, revealing all the social complexities of the contemporary world.

Regarding urban mobility, it is essential to know the particularities of spatial segregations. By separating life and leisure time from work time, capitalism seeks to ensure that the worker has the necessary working hours guaranteed, which makes his salary possible, while not worrying about the loss of life time, rest or spend time with your family. Mobility, at the same time, allows citizens to reach their place of work and earn a living, but it also burdens them in terms of quality of life, removing the time to restore energy and social relationships. The definition of mobility considers, above all, the economic dimension of travel and is usually evaluated according to family income. We sought, however, to prove the hypothesis that urban mobility can acquire a significant role in urban development, thus no longer being linked only to laws of use and land planning and now having as its ultimate objective the improvement of conditions of its inhabitants, mainly in reducing vulnerabilities. As a public policy, it is necessary to evoke the concept of means of collective consumption (Lojkine, 1981), indicating the State's responsibility to offer residents better access to the city's dynamics[2] and we sought to obtain this information in research carried out.

In turn, urban space, at its various scales, can be considered more accessible the more comprehensive and adequate its access infrastructures are. Each region of the city has greater or lesser accessibility depending on the standard of road, transport and travel infrastructure. At the same time, accessibility, in its various scales, is an instrument for equalizing opportunities.[3]

The capital's growth pattern was linked to an incessant search for cheaper peripheral land and gradually moved residential areas away from workplaces, placing a burden on infrastructure, notably the transport sector. This structure generated several

economic deficits associated with distances, contradictions regarding the income division of its residents, as well as inequality in access to public spaces.

Vasconcellos (1999), when dealing with urban mobility, seeks to discuss two distinct and complementary aspects – engineering and sociology –, recalling how history also motivated a series of transformations, as the theme began to be appropriated by the Social Sciences and by urban planners, as it previously constituted an area of study more linked to techniques and engineering.

When investigating urban mobility, considering it one of the key dimensions of sociability in the metropolis, based on data from the Origin/Destination (OD) surveys of the Metro (Underground company of São Paulo) and the IBGE Census, Requena (2015) presents data disaggregated into geographic areas and characteristics of populations in the various spaces of the metropolis. There is evidence of a consolidated mobility structure, in which transport occurs predominantly using tires on roads and residually on rails. Buses are the main means of public transport in a quarter of daily trips in the metropolis, an average similar to that of trips whose main means is by car; in turn, walking is the main means of travel in a third of daily trips in the RMSP.

Among the characteristics of urbanization in São Paulo, the presence of a notable transport network in the city that was structured in the 20th century "as the largest industrial center in South America" is of great interest and, therefore, expanded to the West, East and to the Santos-Jundiaí road in the neighborhoods of Pari, Mooca and Ipiranga; and by Sorocabana in the neighborhoods of Barra Funda, Água Branca and Lapa (Petrone, 1955, p. 129). From the 1970s onwards, when the form of self-segregation emerged, already mentioned, by closed, walled condominiums, with isolation and restriction in status symbols, such enclaves also affected public transport, both as "inspirations" for public constructions of train stations. subway, often resembling fortresses, or even directly impact users of the urban bus service, as their stops, in the vast majority, are located on streets close to the walls of one of the city's thousands of condominiums or factories, making bus stops are often in deserted and unsafe locations.[4]

The concepts worked on by Jane Jacobs (2000) are fundamental for understanding cities in today's world, as well as for the safety and health of their inhabitants. Psychoanalyst Christian Dunker (2015) builds elements of psychological problems in condominium life, with different examples throughout the city, such as Portal do Morumbi, Granja Julieta, Alphaville, Chácara Flora and many others,[5] demonstrating how segregated life can harm mental health of its residents, creating a constant fear of what is on the other side of the wall.

Regarding social vulnerability, this phenomenon is one of the main elements of urban life in São Paulo, as it is marked by precarious conditions, with the working classes dilapidated in their workforce and also by the successive circumstances of transport and housing in the capital of São Paulo (Kowarick, 1980). However, it is worth opposing vulnerability, and meaning the lack of care for such segments, the concept of public policies, which are understood as "the set of actions implemented by the State and government authorities in a broad sense", according to Marques (2013, p. 24). For the author, studying

public policies means analyzing why and how the State acts as it does, given the conditions that surround it. In this sense, it is necessary to focus specifically on public urban mobility policies, since one of the strongest variables for overcoming social vulnerability is urban mobility and access to opportunities.

The condition of social, economic and civil vulnerability of part of Brazilian society has long been a serious issue for social scientists, identifying those who completely depend on State structures to live.[6] The concept of vulnerability goes beyond the vision of poverty based on income indices and points to the possibility of risk and the inability to react positively to it:

> It concerns the vast portion of those who are on the margins, disconnected or uprooted from the essential processes of society. This is what is conventionally called the excluded, a broad and slippery notion that has become common usage and that needs to be worked on empirically and theoretically. (Kowarick, 2009, p. 27)

Even though portions of the elites still use the discourse that the social issue is read from the angle of blaming the poor, who are unwilling to work, it is known that precarious and intermittent work, carried out on the edges of society, represents survival without a guarantee of security and stability. Nor has the State's responsibility in creating responses and solutions to this issue been accentuated, since, increasingly, the practices and discourses of volunteering and philanthropy prevail as "more effective" solutions in mitigating the "unwanted" effects of a social structure based on the production and reproduction of inequalities. In turn, processes of naturalization of events prevail as mechanisms for accommodating the interests of the capitalist system, with mechanisms for avoiding others who are subordinated. Social vulnerability must be considered, as an instrument of public policy, according to important references, many of which have already been cited, for the aggregation of good practices regarding use in the formulation of public policies.

Precisely because of this, within the scope of this work, three aspects must be highlighted: the issue of urban mobility in São Paulo, the difficulties of formulating public policies in this field and the role of data related to social vulnerability with the population involved. From this starting point, trying to measure the social dynamics of São Paulo, there were several experiences with the aim of understanding vulnerabilities and inequalities, initially including the development of indices to measure: Municipal Human Development Index (IDHM) which sought to analyze socioeconomic development and limitations to the basic living conditions of Brazilian municipalities.[7]

The IDHM is an index composed of 3 of the most important dimensions of human development: the opportunity to live a long life and to have access to knowledge and to have a standard of living that guarantees basic needs. The construction of indexes uses data from the Demographic Census in the reference year.[8] The capital, São Paulo, presents positive human development indexes compared to other cities. The capital has an IDHM of 0.805, considered very high in relation to other municipalities, as previously

mentioned, occupying the 23rd position among more than 5500 municipalities in the country, which is repeated in the education axis and others. However, the IDHM, despite being an important tool for understanding patterns related to human development in the country, allowing comparison between municipalities, does not make it possible to carry out an intra-municipal analysis, in the sense of not allowing a look at differences between regions. and districts of each city.[9]

In a recent study, Bugni and Jacob (2017) analyzed the city of São Paulo using the Social Vulnerability Index (IVS) and its São Paulo variant, the São Paulo Social Vulnerability Index (IPVS), with the aim of answering some questions:

> [...] what variations occurred in each vulnerability dimension and its indicators? How are these factors distributed geographically? Are there signs of spatial concentration of vulnerability and, if so, was there any variation between the years of the sample? Which components most influenced the improvement in indices between 2000 and 2010 in the city? (Bugni and Jacob, 2017, p. 118)

Based on these questions, the authors make it clear that the objective is to understand the city's vulnerability and which indicators can be used to formulate public policies in the area of mobility, analyzing the 1593 Human Development Units ( HDUs ) that make up the city of São Paulo. Comparing historically the 2010 survey, the last one carried out until then, with the previous one, from 2000, the authors made a point of highlighting:

> Of the regions classified as having high social vulnerability in 2000, 81% became medium vulnerable in 2010 and 8% reached low vulnerability, while 9% of them remained in the same range as in the previous decade. (Ibid., p. 127)

With the results, we can see a great advance in social issues in São Paulo during the first decade of the 21st Century. However, these achievements must have been set back during the second decade of the same century, due to the economic, political and social crises that devastated the country, as well as the coronavirus pandemic that began in 2020. In any case, the data shows, Furthermore, a segregated city, with different social conditions on the outskirts and in the expanded central area, mainly in the southwest quadrant, as called by Vilaça (2011).

Bugni and Jacob (2017) also brought to light the issue of the concentration and spatial inequality of social vulnerability in São Paulo. Using the Moran index, "an indicator that provides a formal value of the degree of spatial segregation by measuring the degree of linear association of a variable and the averages of that same variable in the regions neighboring the one analyzed" (p. 132). With this, the result is a global index, which varies from -1 to 1, which shows that the closer to unity, the greater the negative or positive relationship, that is, "the greater the degree of spatial association present in the set of data" (ibid.). In this way, they were able to prove that the index found points to spatial concentration.[10]

Regarding the infrastructure of the Municipal Bus System, during the first decade of the 21st century, 13 terminals were

opened.[11] These openings were important to give rationality to the System, as well as new bus lanes, totaling 83 kilometers in this period, allowing for a reduction in access time to work. However, despite the implementation of these infrastructures, there is utilizando a contribuição de Bugni and Jacob (2017), no variation in the Moran Index between 2000 and 2010 for the indicator "Percentage of people living in households with a *per capita* income of less than half the minimum wage and who spend more than an hour in commuting to work, in the total number of employed, vulnerable people". At this point, the criticism must be established about the lack of use of social vulnerability as an important criterion for the implementation of urban mobility infrastructures, such as terminals, corridors and stations subway. São Paulo's subway network is known for its small size, being still mostly concentrated in central neighborhoods and for being the cause of great gentrification around its stations.

## Inequalities and mobility, an intersectional analysis

Urban mobility is also uneven in the divided city. Some authors called the capital of São Paulo, in the 1960s, a "middle class city", because its basic perspective was the logic of traffic circulation and not mobility (Vasconcellos, 1999). Even if controversial, the concepts of what clearly constitutes the "middle class" make it clear that such intermediate sectors predominated in ongoing policy decisions and transformed traffic into an important social "issue", leading to intense participation by public and private organizations., in addition to civil society entities. The city's adaptation to the use of automobiles can be seen as the construction of a social sector that benefited most from the concentration of income during the authoritarian period in the country and from public investments. In this sense, for the middle class, what is important, in addition to the occupation of public space, is the traffic between private spaces, normally from work to where they live. This pattern has been repeated exhaustively for the last 60 years in the city.

Investments and public actions were directed towards increasing the number of trips exclusively, without giving due priority to other modes of transport that could share traffic routes. This meant that active mobility, on foot or by bicycle, was greatly affected in terms of quality and safety. As a consequence, the private use of public roads was expanded, as well as road space, travel time and mobility energy, as well as pollutant emissions (Vasconcellos, 2016, p. 57).

The importance of land use and occupation policies is reaffirmed, as well as the culture of prevalence in public decisions among individual motorized modes that have become the main targets of urban planning and public budgeting, to the detriment of collective public transport.

In the Metropolitan Region of São Paulo, 42 million trips take place every day, distributed between active, public and individual modes. As Giannotti, Pizzol and Logiodice show us

(2020), "it is estimated that in 2019, São Paulo residents lost an average of 154 hours in traffic jams", which represents almost a month of work in the year. These authors briefly address the aforementioned lack of prioritization of public and active transport in favor of car-centric individual transport. Using the Origin and Destination Survey (OD Survey) developed by São Paulo Metrô (São Paulo, 2018), the authors compared the distribution of trips between modes in the last five editions of the Survey, showing that, historically, despite individual transport having a smaller proportion of trips than other modes, it is the object of the main public investments in the area of mobility.

In the same article, the authors continue to analyze OD Research from the perspective of criticizing the model of transport and mobility development in the city. Thus, they reinforce the importance of active and public modes, citing that they correspond to 33% and 36% of trips in the RMSP ,respectively. Milton Santos (2009, pg. 82) considered the relationship between family income and the choice of using a certain mode, reinforced by the data and graphs brought by OD. It is observed that the higher the monthly family income, the greater the choice for the individual mode, being inversely proportional to the choice of other modes.

In 2011, as a result of the 2008 crisis, several political movements began, influenced by anti-capitalist thinking and the contradiction of recent urbanization. The role of the city in social transformations was also brought to the table, due to several international influences.[12]

In recent decades, the idea of the right to the city has resurfaced with strength and developed in the struggles of social movements, resuming the legacy of Henri Lefebvre (2009), due to the inherent necessity of these practices that are born in the streets, neighborhoods and squares; These struggles reinforce Harvey's (2014) argument[13] that the urban is a space of segregation, separation and domination, but it is also a space of encounter, simultaneity and reunion. These political practices have filled the significant void in the right to the city to favor the course of the urban revolution, challenges presented by Lefebvre and taken up and updated by Harvey.[14] When arguing that the political task is to reconstitute a new type of city, he recalls how the traditional city was "imploded and killed" by capitalist urbanization, through the unbridled process of capital accumulation that finances and expands its reproduction.[15]

Therefore, claiming the right to the city implies appropriating the shaping power of the urbanization process, currently in the hands of fractions of the dominant class represented by the real estate and financial sectors, by revealing that such power to produce the city comes from a small elite in conditions to shape it according to your particular interests. It was in this context that public urban mobility policies became more active: from 2012 onwards, São Paulo City Hall developed a series of policies that changed the city's mobility structure, encouraging the use of public transport, through the implementation of more of 400 kilometers of roads with exclusive lanes,

another 400 kilometers of cycle paths and cycle lanes and a set of programs that encouraged the permanence and appropriation of public space by the population, such as the "Centro Aberto" and "Paulista Aberta" programs.[16]

Giannotti, Pizzol and Logiodice (2020) point out that inequality between modes of travel is not only present in urban planning, but also in the construction of transport infrastructure, which is based on the concept of urban roads, which considers only the roadbed, but which should include sidewalks (paths for pedestrians) and cycle paths and cycle lanes (paths for cyclists) . In the collective imagination, when one chooses to invest in infrastructure for active modes, there is necessarily a reduction in the use of roads by vehicles, which has not been the current choice. Several studies have already shown that, through urban redesign, it is often possible to increase the number of people per hour who travel on a street, even if the number of lanes for vehicles is reduced. With these measures, it is clear that urban design influences people's behavior, causing many to stop walking when there are no good quality sidewalks that encourage walking, just as it is known that the number of cyclists in the city will only increase with the implementation of adequate, safe, articulated and integrated cycling infrastructure with other modes of transport.

It is essential to reference studies with this approach developed by women who think and plan urban mobility despite the androcentric institutional structure[17] (Harkot, Svab e Santos, 2021; OD-Metrô Research 2017; SPTrans, 2020 and 2021).

These researches are fundamental, as they bring an updated and new look at the issue of gender, which has been expanded in the last 5 years, with several initiatives, mainly in relation to the active stance of international institutions, such as the Institute of Transport & Development – ITDP, cited, from the World Bank – which produced the work led by Svab, Harkot and Santos – and which has also been important for expanding the debate.

Authors of the World Bank study (Harkot, Svab and Santos, 2021) bring an important reflection: urban mobility planning in the vast majority of cities in the world is based on a gender-neutral vision, often with discourses in which this is seen as positive, as "it does not privilege any user, as mobility is a right for everyone". However, it is already known that women have different expectations, needs and limitations in mobility. Among the needs, the authors highlight (ibid., p. 22): "(1) travel patterns, (2) security restrictions, (3) participation in the transport operation sector and (4) access to transport". And these gender differences in the field are often overlooked:

> Saying that there are different travel patterns means recognizing that there are specificities in terms of modes, reasons, times, distances and chain of travel. Activities related to home and family care generally attributed to women generate a demand for specific trips, for example, more complex and/or more chained trips, also with greater participation in off-peak periods and origins/destinations that they do not simply follow the neighborhood-center patterns typical of work trips in the

> RMSP. Although data collection for transport planning should record these types of trips, much of the information about short and chained trips is often disregarded. (Ibid.)

Especially the main difference is ignored: their perception of safety in accessing or using the public transport system or choosing active modes. As the authors reinforce, "based on their perceptions, these users can alter their behavior, changing their route, their schedules or even their mode of transport to minimize risks" (ibid.). And it is clear that in more extreme and serious cases, many women stop going somewhere due to lack of security, even if this choice brings financial losses (Gomez, 2000). In addition, the World Bank report also cites a study by the Thomson Reuters Foundation that brings fundamental data to the discussion: six in ten women in the main cities of Latin America report that they have been physically harassed while using transport systems. Therefore, the need to plan urban mobility structures that offer all types of users safe public transport options from their origin to their destination remains evident: "mobility restrictions will only be remedied if such measures also include the reduction of risks considering walking sections and access to bus stops and metro and train stations" (Harkot, Svab and Santos, 2021, p. 23).

Another study (Svab, 2016) shows us that women were the majority in using public transport during the last 20 years, as well as being the ones who walked the most – even if their trips were not often considered, as trips to walking distance of less than 500 meters or to a subway or train station are not counted by the OD Survey.

For reasons of saving time and simplicity of collection, the RMSP OD Survey records walking distances of less than 500 meters only if the reason is work or study. Other movements on foot, such as going to local shops, are not recorded. However, as we have already seen, these are precisely the trips made most frequently by women. It can be noted, therefore, that the methodological guideline of not recording walking distances of less than 500 meters hinders the understanding of women's movement patterns.

In relation to the time dedicated to caring for people and household chores, women, especially black women, work more than men. Data from 2018 from the Continuous National Household Sample Survey (PNAD Contínua) from IBGE reveal that, in Brazil, men dedicate 10.5 hours per week to these tasks (black men dedicate 10.6 hours, and white men, 10.4 hours). Women, in turn, spend 18.1 hours per week on domestic tasks (black women dedicate 18.6 hours per week, and white women, 17.7).

Travel for care purposes tends to have a greater diversity of destinations, moving away from the home-work commuting pattern, as women are responsible for taking children, relatives and assick people to school and health units, in addition to accompanying them. them on visits and other activities. This has a direct impact on the possibilities of access and use of transport modes, in addition to causing extra transport expenses.

Data from the Women and Family Arrangements in the Metropolis — RMSP survey by Seade indicate that female heads of families travel less frequently to visit relatives and friends or carry out leisure activities and sports (20% of activities) than men heads of families (26% of activities). Furthermore, women travel more frequently to take or pick up people from school/work (5% of women's activities *versus* 3% of men's activities) and to use health services (8% *versus* 4%).

According to the 2017 OD Survey for the city of São Paulo, disaggregated by sex, travel for work reasons is the main reason for men to use urban transport networks (representing around 50% of daily trips), followed by trips to educational equipment (29% of total daily trips). For women, the percentages of total trips for work reasons (40%) and education reasons (35%) are balanced. Disaggregating these trips by whether they were made for themselves or to accompany another person (serving a passenger) clearly shows a pattern of "mobility of care": more than a third of women's trips to an educational facility, for example, were to accompany other people As for traveling to work, most men use cars (32%) (mostly driving), with no greater need for reliable bus service and safe sidewalks even more so than men (Harkot, Svab and Santos, 2021, p. 36).

Considering, therefore, the 2017 OD data analyzed and the World Bank report, it is concluded that it is necessary to focus on female travel in the planning of public transport, as well as active transport, such as cycle paths and sidewalks. More than that, this planning should not only be guided by a gender perspective, but also consider the vulnerability of these women, especially younger women, single mothers and, consequently, with more domestic responsibilities. It is precisely this vulnerability that some public policies and research focus on, respecting the intersectionality between gender and race among users of public bus transport in the city of São Paulo. The 2021 SPTrans User Profile and Habits Survey,[18] municipal manager of public transport, already mentioned, was fundamental, during the period of the covid-19 pandemic in the city of São Paulo, as one of the instruments that helped in the attempt of not making women invisible on public transport who were regular users (who used it three or more days a week) before and during the pandemic (2020 and 2021).

It is important to know that women, in general, do not use other means of transport to complement the trip, depending more on buses than men (46.90% versus 36.34%). Among women, black women are the ones who least use other means (49.67% compared to 43.87%), with the subway being the main means of complementing travel for everyone (75.29%). This information is also consistent with previous analyses, as well as in relation to the greater mobility of men compared to women, especially black women.

In addition to the research and reports mentioned, another contribution must be made:[19] Paula (2021) comments on a series of factors regarding mobility and its intersectionality. As a starting point, it recalls how Brazilian cities were structured in post-abolition capitalism and that, therefore, there

is a much greater negative impact on the black population who live in their outskirts. The difficulty of moving within the logic of urban added value, based on the possibility of access to the city, to jobs, to decent housing close to the center, is only for those who mostly hold economic power – the white population of large cities, mainly the São Paulo (Villaça, 2011). With this analysis, Paula (2021) brings out the clear relationship between the low quality of public transport in the history of the development of large cities and their structures and their origin related to the black population and the socially excluded in these cities, always living on the fringes of urban fabrics. The aforementioned data from the SPTrans Usage Habits Survey and the World Bank report reinforce this view on public transport, demonstrating that the burden of double shifts for women, especially black women, is that they are the ones who, at the same time, are responsible for making short trips to help other family members get around, in addition to being mobile for work.

The 2021 Inequality Map, organized by Rede Nossa São Paulo based on data from various sources such as the Census, HDI and others, ,addresses the factor related to mobility, listing three items: "Accessibility", prepared by the Center for Metropolis Studies (CEM), and "Traffic Occurrences" and "Traffic Deaths", prepared by Instituto Cordial, with data sources such as the 2017 OD Survey and the Seade Foundation.

The OD Survey also shows us that black women are 36%, but represent 43% in public transport, while white women represent 59% of the female population, but are only 53% of public transport users, confirming the perception that, proportionally, black women use public transport more than white women.

Due to this entire scenario of complexity of actions and the breadth of scope that public mobility policies can have, it is extremely necessary to consider the elements that were presented, namely: social vulnerability, gender and race. It is for this population that public transport must be planned, operated and analyzed. It is the duty of mobility managers, operators and researchers to always consider these factors when developing their projects and actions.

The item "access to mass transport" on the Inequality Map is of particular interest when we examine the map with georeferenced data and the map with "Black population" data. The data by districts clearly demonstrate that the relationship between access to mass public transport and where the black population lives still remains. The population of the central districts of the Republic, Sé and Santa Cecília are those that proportionally live 1km away from high-capacity public transport stations (88%, 86.4% and 73.2%, respectively). On the other hand, 29 districts do not reach 1% in this same condition, all in peripheral regions of the city. Most of these districts (19) are also those with the largest presence of black population. This data is also corroborated when we observe the 2018 Family Budget Survey (POF) and the proportion of public transport use by the black and white population in São Paulo, crossed by gender.

# Equitable public mobility policies

Mobility has been seen as an adjunct, a consequence of the zoning and economic development process in the city of São Paulo. However, it can become the main protagonist in urban public policies for the transformation of the city, seeking to improve the lives of its inhabitants by reducing inequalities and vulnerabilities. Several initiatives can reverse and make it is an equitable distribution, whether in access to jobs or the city's health, cultural and educational facilities, as well as in the city's own budgetary distribution or the modal choice of its inhabitants. Furthermore, historical inequalities between locations, such as the center and periphery, are also the subject of initiatives to design effective public mobility policies. To achieve this, it is necessary to understand and prioritize two factors: social vulnerability as an instrument for formulating public policies and urban mobility as an element of transformation and reduction of these inequalities and vulnerabilities.

The analysis of public policies often tries to resolve impasses in an exclusively technical way, however, it must be considered as a complex process, full of conflicts and generated by several dynamic centers. According to Marques (2013, p. 25), the formulation and analysis of public policies consider at least two types of causality:

> [...] one about the causes of the problem to be the subject of the policy and the other about the intended effect of the policy on that problem. Most intervention proposals contain these two causalities implicitly (and not proven), which perhaps explains at least part of the failures that are frequently achieved.

While the analytical models that serve as a basis for the same author (ibid.) must explain such causalities independently of the ultimate policy objectives, avoiding risks and confusion. And he states that it is already possible, today, to have accumulated knowledge to understand the processes that surround the State's actions. Marques also shows that the trajectory of studies on public policies stands out, firstly, for the loss of the centrality of rationality and the decision-making process in policies. In this way, the process of formulating these policies was seen as increasingly political, "requiring a political analysis to understand the policies" (2013, pp. 43-44). In the analytical models proposed and used, we must increasingly incorporate the actors and contexts involved, their strategies and conflicts, as well as their beliefs and relationships. In the end, it ends up being more important to adapt solutions to problems, but also to local conditions in terms of implementation and actors present.

The aim is to analyze urban mobility as an element of transformation and reduction of inequalities and vulnerabilities, thus analyzing its impact as a tool for social transformation. To this end, based on several authors who discussed public mobility policies and their impact on everyday life, in addition to their importance in the lives of their users, it is stated that mobility should not be thought of only as an element that allows access to work, but as a determining factor for access and the right to the city.

The importance of effective urban mobility policies, mainly related to investment in public transport micromobilidadeand accessibility for the poorest population in the city, represents investing in exclusive lanes, implementation and qualification of cycle paths and sidewalks as fundamental actions. So, what can be the elements and tools to qualify these policies? Some important conceptual elements and indices to consider are the IPVS – São Paulo Social Vulnerability Index or the Job Accessibility Index. However, how to structure mobility in other areas than just those related to work?

Furthermore, techniques already consolidated in the social sciences are being brought to the transport environment as solutions and innovations, such as qualitative research, for example with listening groups or focus groups.[20] It is through this practice that some city halls and transport agencies can "rediscover the same subject from different points of view", in which "people bring, from their diverse experiences, many lessons learned, questions and ideas that can inspire innovations" (Petzhold and Corrêa, 2021).

The journey begins at the door of the person's house, passes through potholed sidewalks, stations, stairs, alleys until reaching the final destination, which could be school, work, the doctor, physiotherapy, church, club, football stadium. football, etc. It can be seen, however, that attempts to improve the quality of transport are always structured on the logic of the relationship between customer and consumption, or even more specifically, on offering the service to a customer. However, public transport is a public service, a right guaranteed by the 1988 Federal Constitution. Therefore, it is not about defending a quality service to attract demand within capitalist logic, but rather about ensuring the best provision of a public service as a guarantee of a right.

Fagnani (2016) makes an analysis regarding this logic established in the quality of Brazilian public transport, being a direct result of the peripheral capitalism that is present here. The author divides the subject into four elements: the first is related to the nature of public transport in developed countries, pointing it out as the main alternative for the movement of their population on a daily basis; the second is the opposition of these public transport models in developed countries to the model developed in peripheral capitalism, as in the Brazilian case, of the underdevelopment of urban mobility; in the third axis, the author criticizes the mobility policies that were established here, mainly the non-development of the rail network in São Paulo and the increase in fares; The fourth element is that these real characteristics are the result of a pattern that has been in place since 1950, in the most varied political models that the country has structured – be it national-developmentalism, military regime or another.

It is precisely as a consequence of this economic model of public transport that the possible logic for considering how effective the system is is the indicator of accessibility to jobs. A recent CEM study (Santos and Giannotti, 2021) shows that only " 16% of families have access to at least 50% of existing jobs within 60 minutes of their home via public transport" (ibid., p. 2). Analyzing the group of families that have access to opportunities, the study authors

realized that "44% of the group is made up of families with a family income above ten minimum wages (SM), only 20% is equivalent to families with a family income below 3 SM" (ibid., pg. 2).

In the comparative analysis, it is possible to note that areas with a predominance of lower-income families coincide with the lowest levels of accessibility:

> Quantitatively, the median accessibility of these lower-income areas indicates that only 3% of jobs in São Paulo can be accessed in 60 minutes. On the other hand, while areas with a predominance of middle-income families have access to 23% (median), those with high-income families have access to 43%. (Ibid., p. 3)

The same source brings proposals on how to significantly change this critical situation, increasing the decentralization of jobs, creating more sub-centralities close to places of residence; population density in areas with large amounts of job offers and, finally; expand the transport system network. If only the expansion of the public transport system network is achieved, it will still be necessary to expand the metro rail network in the city, going from the current 101 kilometers to the standards of global cities, such as Tokyo, London, New York, Paris or Buenos Aires, all references for networks of this type; in addition to expanding the prioritization of public transport over tires in the city, as the number of bus lanes could increase significantly if what was stipulated in the Mobility Plan is fulfilled, going from the current 130 kilometers to the proposed 580 kilometers.[21]

The axes included in the Master Plan (2014) are entire blocks close to mass transport stations such as trains, subways and monorails (if within the area of influence, between 400m and 600m) or bus corridors (if within the area of influence, between 150m and 300m) with guidelines that enable densification around the transport infrastructure (art. 75, 2014). However, all the solutions proposed by the Strategic Direct Plan (PDE) were not sufficient to increase the ETU, they were classified as Habitação de Interesse Social (HIS) or Popular Market Housing (HMP), on the contrary, they were all categorized as high standard, with launches of housing units of more than 150m².

The Access to Opportunity Project (Pereira et al., 2021) and in partnership with the Institute of Applied Economic Policy (Ipea) and ITDP, has, among its objectives: to annually estimate the population's access to job opportunities and the urban accessibility conditions in Brazilian cities. The project has a necessary approach to understanding accessibility in large cities: it includes, in addition to access to employment opportunities, access to relevant public services, such as health and education. This approach tries to separate itself from the economistic and even market vision of the need to think of public transport only as a means of transportation for a mass of workers.

The research results show marked levels of social and spatial inequalities in access to opportunities in Brazilian cities. In all 20 cities studied, the concentration of activities in central urban areas combined with greater precarious development and because they are

less served by urban infrastructure and public transport . These inequalities also manifest themselves both as inequalities by income levels and by color/race, as the results indicate that the white and high-income population has, on average, more access to work, health and education opportunities than the white population. black and poor in all cities analyzed, regardless of the means of transport considered.

Unequal access to opportunities is directly related to the efficiency of the transport system, as it is capable of overcoming geographical barriers. When analyzing the 20 largest Brazilian capitals, the authors (Pereira et al., 2021) showed that medium and high capacity transport, such as Bus Rapid Transit (BRT), were central to expanding opportunities to distant regions (ibid., p. 29). Finally, the study also highlights how public transport systems play a central role in reducing inequalities in access to opportunities. These inequalities would be significantly greater if the spatial distribution of public services and the patterns of spatial segregation of the population were considered purely and simply.

## Final considerations

In general terms, as we have seen, the pattern of development during the city's history was directly linked to the way the population moved, initially on foot, then with trams, buses and, more recently, in a complementary way via rail. Furthermore, these patterns perpetuated the phenomenon of peripheralization and segregation of the poorest population, generally black or brown.

Understanding the vulnerabilities and difficulties of this part of the population is the main task of the planner of public transport policies in the city, so that mobility is an effective tool for equity and improvement of the population's living conditions. The analysis of these inequalities by class, gender and race made this need clear, as the vulnerable population is the most affected by the difficulties of public transport, such as access to systems and opportunities, security in the surrounding area, protection from harassment, longer intervals and other factors.

The public manager of urban mobility cannot deprive himself of having equity as a basic principle in the planning of infrastructures and transport systems, focusing on the specific needs of each of these groups. For women, it is known that a city planned considering this perspective would be a safer city for everyone, not only for women, but also for the elderly, children, the LGBTQIAP+ population and even for men, considering that the majority of public transport users are women, especially black women. Especially regarding the black population, it is clear how these transport systems were influenced by the segregationist formation of slave cities, from the 19th century to the present day. Due to the current mode of production and land occupation in the city, black populations were increasingly expelled from city centers, provided with urban infrastructure, to the outskirts, not being considered in public

transport planning, but only to increase the effectiveness of the workforce, not as a right to have access to the city.

It is precisely this transformation in the role of urban mobility in confronting inequalities and segregation that is proposed, not only as a consequence of urban planning and land use in the city, but to affirm the perspective of urban mobility as a protagonist, first in relation to a widely used indicator – accessibility to employment opportunities –, but also the need to consider other accessibility, such as public health and education services, cultural and leisure facilities, among others. Finally, the barriers on which the greatest mobility efforts should focus are identified: socioeconomic, geographic, physical (or individual) and transport barriers. This identification was important so that the effective actions and measures that are already being taken in São Paulo and other cities could be analyzed. In this way, the present work seeks to contribute to the debate and change in the understanding of the importance of urban mobility in sociological and urban studies regarding inequality and segregation, and, moreover, favoring articulated views on other urban themes, such as housing and the environment.

Urban mobility and its policies have a great influence on the population's quality of life. By structuring urban planning, in relation to land use (as set out in the São Paulo Master Plan, approved in 2014), mobility has the potential to reduce social vulnerabilities through actions that seek to bring the population and different opportunities closer together, employment, health, education and culture, measured through indices such as job accessibility. Furthermore, it is also with the improvement of transport systems that users can gain more leisure time with their families, as happens with the expansion of prioritization of public transport on the city's roads. In this way, the significant impact that mobility can have on the lives of the entire population, but more specifically, on the lives of the low-income population who live in the peripheral regions of the city, is, in a way, rapid.

**[I] https://orcid.org/0009-0006-9032-2215**
Pontifícia Universidade Católica de São Paulo, Faculdade de Ciências Sociais, Programa de Estudos Pós-Graduados em Ciências Sociais. São Paulo, SP/Brasil.
eduardocgreis@gmail.com

**[II] https://orcid.org/0000-0003-3927-6787**
Pontifícia Universidade Católica de São Paulo, Faculdade de Ciências Sociais, Programa de Estudos Pós-Graduados em Ciências Sociais. São Paulo, SP/Brasil.
mauraveras9@gmail.com

# Notes

(1) Some sociodemographic data and their respective sources cited as research resources, as well as their institutes: the 2010 Census Survey, Pnad (National Household Sample Survey), both organized and executed by IBGE (Brazilian Institute of Geography and Statistics). In addition to these, technical notes and the Profile Survey of São Paulo Municipalities from Ipea (Institute of Applied Economic Research) were also used, relating urban mobility as an element of transformation and reduction of inequality and segregation. The Seade Foundation plays an important role in the genesis of one of the indicators used: the IPVS – São Paulo Social Vulnerability Index, which was fundamental in understanding the issue of vulnerability in a georeferenced way.

(2) As a representative of professional activities in the public management of municipal public transport in several researches with Banco Mundial, Institute of Transport & Development Policies (ITDP), World Resources Institute (WRI) and others, one of the authors of this article had access to and participated in projects of this nature, providing important information about this.

(3) For example: an avenue with universal accessibility on sidewalks, with priority for public transport on the road system and served by high-capacity transport guarantees excellent accessibility conditions. As an attribute of space, accessibility is distinguished from mobility. To understand urban mobility, therefore, one must rescue the historical social segregation of the city of São Paulo, as already introduced, with its particularities.

(4) In a 1961 writing, Jane Jacobs (2000) outlined the necessary elements for a new practice related to the planning of large cities, becoming the reference for urban planners on issues related to quality of life. Sidewalks and streets are the vital organs of the city, as they are where all the integration of society and the coexistence of its inhabitants take place, with them being the main protagonists of its uses. Jacobs also came up with the concept of 'Eyes of the Street', which is essential for greater safety for pedestrian inhabitants, a concept that simply refers to the reciprocal act of people observing each other on the streets, reinforcing safety, ownership and belonging. of people .

(5) Dunker, when listing several calls for the sale of units in these condominiums, warns of problems brought about by the large consumption pattern for the rising middle class, a kind of prototype of what a life as an American would be like. way of life. The city's diversity begins to have to be “organized” in the logic of the condominium, with the construction of walls. The psychoanalyst brings up a series of pathologies that develop within a condominium, such as boredom, loneliness, including the Freudian concept of “narcissism of small differences”, and others. There is violence within the walls and space of the condominium. To try to resolve it, some hypertrophy of internal law seems to have been advocated for this, with laws, rules and schedules for all forms of social life that could develop there (Dunker, 2015).

(6) With regard to the precarious ways of living in the city of São Paulo, the book Living at risk: on socioeconomic and civil vulnerability ( Kowarick, 2009) outlines the tensions that mark the lives of thousands of citizens who inhabit the tenements, outskirts and favelas of the largest metropolis on the Latin American continent. The author constructs, through the "sociology, history and ethnography of popular neighborhoods", a narrative that interweaves socioeconomic data, history, discourses and practices of these residents, public authorities and other inhabitants of the city, such as businessmen and traders organized around of proposals to discipline and clean up the central area, and social movements that demand the transformation of large empty properties in the central districts into housing for the poorest sections of the population.

(7) Like the Global HDI, the Brazilian HDI is a measure composed of indicators of three dimensions of human development: longevity, education and income. The index varies from 0 to 1, the closer to 1, the greater the human development. However, he adapts his methodology to the Brazilian context and the availability of national indicators. Although they measure the same phenomena, the indicators taken into account in the IDHM are more suitable for evaluating the development of Brazilian municipalities. Thus, the IDHM – including its three components, IDHM Longevity, IDHM Education and IDHM Income – tells a little of the history of municipalities in three important dimensions of human development during two decades of Brazilian history.

(8) Access to knowledge is measured by the level of education of the municipality's resident population, the standard of living is measured by the municipal income *per capita*, that is, the average income of each resident of a given municipality. It is the sum of the income of all residents, divided by the number of people living in the municipality – including children and people with no income record.

(9) In 2015, Ipea, in partnership with the United Nations Development Program (UNDP), created the Social Vulnerability Index (IVS), in an expanded perspective of understanding poverty situations, including information on well-being (considering indicators in the areas of work, education, health, family, infrastructure and mobility) linked to the issue of insufficient income in order to map whether there are substantive improvements in social conditions in the country between 2000 and 2010, the years for which the IVS was calculated. This is important to confirm changes in society in a period of great expansion of social policies in a decentralized manner. However, territorial analyzes – inter and intra-municipal – on the spatial distribution of these indicators point to the persistence of regional disparities and do not deny the challenges that still lie ahead.

(10) One observation is important: income, work and urban infrastructure indicators suggest that the spatial concentration of values has increased over these ten years. From the analysis of each of the IPVS indicators, we can conclude que trends in urban planning and public mobility policies developed between 2001 and 2004 brought a positive change to these indicators.

(11) Amaral Gurgel (2003), Lapa (2003), Parelheiros (2003), Pirituba (2003), Grajaú (2004), Guarapiranga (2004), Jardim Ângela (2004), Varginha (2004), São Miguel (2006), Sapopemba ( 2006), Mercado (2007), Sacomã (2007) and Campo Limpo (2009).

(12) Like the students on the streets of Santiago in Chile, occupations and strikes in Greece and Spain and revolts in the suburbs of London, here in Brazil, the days of June 2013 were also guided by criticism of the financialization of transport, based on the increase in 30 cents off the bus fare, but later sparse and non-cohesive agendas demobilized the movements.

(13) By arguing that “only when politics focuses on the production and reproduction of urban life as an essential labor process that gives rise to revolutionary impulses will it be possible to realize anti-capitalist struggles capable of radically transforming everyday life” (Harvey, 2014).

(14) Harvey highlights: a) the process of *Haussmannization* – urban reform in Paris – which expelled poor workers from the center, established the *boulevards* and was the basis for the urban revolution that culminated in the Commune of 1871; b) suburbanization in the United States in the post-war period that reconciled the society of home ownership, cars and household appliances, resulting in the urban crisis of the 1960s and the consequent fight for civil rights for the black population; c) and the recent crises of 1997 in Asia and in 2007 in the USA, Europe and in part of the emerging countries with the real estate *boom*.

(15) In this way, the author highlights "the creation of urban commons" by showing that the city is the space for the production and reproduction of common life and that it enables collective organization on a small scale, based on experiences such as people's homes and occupation of squares as spaces that can reverse capitalist urbanization.

(16) The Centro Aberto projects created coexistence areas in places that were previously abandoned, creating leisure and rest spaces for citizens, and the "Paulista Aberta", which prohibited vehicle traffic on Av. Paulista during every Sunday, creating a new leisure structure for thousands of São Paulo residents.

(17) The androcentric view is related to the culture around the male figure as the center of concerns regarding the work function, without focusing on the use of public facilities by different genders and their specific needs. The report "Baseline study on gender and transport in São Paulo, Brazil" (Harkot, Svab and Santos, 2021) is an important reference. Marina Harkot, one of the authors of the study, unfortunately, was a victim of this uneven dynamic in our traffic while cycling and which was her object of study during her academic life; in addition to this, there is also Kelly Cristina Fernandes Augusto's chapter on *Anti-Racist Mobility* (Santini et al., 2021) as an important look at the issue of gender and its intersectionality with race, which will be a further explored concept. We will analyze a series of data that were based on two large quantitative and qualitative surveys of public institutions that manage the city's mobility, such as the São Paulo Metro Origin and Destination Survey, from 2017, whose data had already been used previously, but now with a gender cut that will bring a new vision, the SPTrans System Usage Habits Survey, from 2020 and 2021, which brought important data regarding the use of public transport under tires by black women and young people before and during the pandemic covid-19 and also another important work by ITDP – Institute for Transportation and Development Policy, the report "Sensitivity of sociodemographic variables in urban mobility", from 2021.

(18) The Profile, Habits and Intentions of Use Survey during the covid-19 pandemic was obtained through the Access to Information Law (LAI).

(19) The chapters " Gender, race and city: a new urban agenda is necessary", by Tainá de Paula and "It is also through transport that a black woman cannot get where she wants: intersectional perspective on logics in which the city's transport system of São Paulo is subject", by Kelly Cristina Fernandes Augusto, in the book *Mobilidade antiracista* (Santini et al., 2021). The book is an organization of texts that address the two themes mentioned here: urban mobility and the concept of race, more specifically the right of black people to move around the city by appropriating transport systems.

(20) See Petzhold and Corrêa (2021).

(21) The study also reflects on the objectives proposed by the review of the Strategic Direct Plan (PDE) and actions related to land use and occupation: the 2014 one, in addition to updating existing tool parameters in the 2002 PDE, also brought new instruments that seek to increase the population's access to the city, one of them being the Urban Structuring and Transformation Axes (EETU).

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