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BRT System in Uberaba- MG: Service efficiency and impacts on the real estate and tertiary sectors

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Sistema BRT em Uberaba- MG: Eficiência do serviço e impactos nos setores imobiliários e terciário

RESUMO
O Bus Rapid Transit (BRT) consiste no delineamento de faixas exclusivas para ônibus em linhas de maior densidade, com intuito de aumentar a oferta e velocidade destes. O sistema tem sido propagado por promover a melhoria do transporte público e já foi adotado por diversas cidades no mundo. Apesar dos benefícios, a implantação do BRT pode trazer impactos importantes para a cidade relacionados à necessidade de uma estrutura viária robusta, como secção do tecido urbano, alterações nos usos do solo e na paisagem, redução da acessibilidade local do pedestre, além da perturbação da dinâmica viária, imobiliária e comercial estabelecida. Considerando essas questões, o objetivo do artigo é investigar as alterações no espaço e nas dinâmicas urbanas ocorridas após a implantação do BRT na cidade de Uberaba. Mais especificamente, faz-se uma análise das transformações na dinâmica comercial e imobiliária na Avenida Leopoldino de Oliveira. Lançou-se mão de análises qualiquantitativas, pesquisa de campo e entrevistas com os principais envolvidos. O estudo revela que o sistema adotado na cidade foi subdimensionado e melhorou a qualidade do transporte público em poucos aspectos. A avenida onde o corredor foi instalado apresentou aumento na vacância de imóveis e uma redução de aproximadamente 30% no valor destes. Muitos comércios fecharam ou se mudaram, e os que permaneceram relataram redução de aproximadamente 30% na receita. A presente pesquisa contribui com a discussão sobre políticas públicas de mobilidade sustentável ao levantar questões sobre a adaptação dos sistemas BRT às cidades médias.

PALAVRAS-CHAVE: BRT. Mobilidade urbana. Setor terciário.

BRT System in Uberaba- MG: Service efficiency and impacts on the real estate and tertiary sectors

ABSTRACT
Bus Rapid Transit (BRT) consists of the design of exclusive bus lanes on high-density routes, intending to increase the supply and speed of buses. The system has been popularized for improving public transport and has already been adopted by several cities around the world. Despite the benefits, the implementation of BRT can have important impacts on the city related to the need for a robust road structure, such as sectioning the urban fabric, changes in land use and landscape, reduced local accessibility for pedestrians, as well as disrupting established road, real estate, and commercial dynamics. Considering these issues, this article aims to investigate the changes in space and urban dynamics that have occurred following the implementation of the BRT in the city of Uberaba. More specifically, it analyzes the changes in commercial and real estate dynamics on Avenida Leopoldino de Oliveira. Qualitative and quantitative analysis, field research, and interviews with key stakeholders were used. The study reveals that the system adopted in the city was undersized and improved the quality of public transport in only a few respects. The avenue where the corridor was installed saw an increase in property vacancies and a reduction of approximately 30% in property values. Many businesses closed or moved away, and those that remained reported a reduction of approximately 30% in revenue. This research contributes to the discussion on public policies for sustainable mobility by raising questions about the adaptation of BRT systems to medium-sized cities.

KEYWORDS: BRT. Urban mobility. Tertiary sector.

Sistema BRT en Uberaba-MG: Eficiencia del servicio e impactos en los sectores inmobiliario y terciario

RESUMEN
El Bus Rapid Transit (BRT) consiste en la implementación de carriles exclusivos para autobuses en rutas de alta densidad, con el objetivo de aumentar la oferta y la velocidad del servicio. El sistema ha sido promovido como una mejora del transporte público y ha sido adoptado en diversas ciudades del mundo. A pesar de los beneficios, la implementación del BRT puede generar impactos significativos para la ciudad, relacionados con la necesidad de una infraestructura vial robusta, como la fragmentación del tejido urbano, cambios en los usos del suelo y en el paisaje, reducción de la accesibilidad peatonal local, además de afectar la dinámica vial, inmobiliaria y comercial preexistente. Considerando estas

cuestiones, el objetivo del artículo es investigar las alteraciones en el espacio y en las dinámicas urbanas ocurridas tras la implementación del BRT en la ciudad de Uberaba. Más específicamente, se realiza un análisis de las transformaciones en la dinámica comercial e inmobiliaria de la Avenida Leopoldino de Oliveira. Se utilizaron análisis cualitativos y cuantitativos, investigaciones de campo y entrevistas con los principales actores involucrados. El estudio revela que el sistema adoptado en la ciudad fue subdimensionado y mejoró la calidad del transporte público solo en algunos aspectos. La avenida donde se instaló el corredor presentó un aumento en la vacancia de inmuebles y una reducción de aproximadamente 30% en su valor. Muchos comercios cerraron o se trasladaron, y los que permanecieron reportaron una disminución de aproximadamente 30% en los ingresos. Esta investigación contribuye al debate sobre políticas públicas de movilidad sostenible al plantear cuestiones sobre la adaptación de los sistemas BRT en ciudades medianas.

PALABRAS CLAVE: BRT. Movilidad urbana. Sector terciario.

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1 INTRODUCTION

Bus Rapid Transit (BRT) is a public transport system that uses specially designed buses to offer a fast, efficient and high-capacity service. The main feature of this model is the design of a system of exclusive bus lanes that cross the city on strategic routes. This strategy has been adopted in many cities around the world due to the promise of increasing the efficiency of bus journeys and, consequently, their competitiveness in relation to cars (Ministério das Cidades, 2008; WRI, 2013).

The benefits of BRT have been widely documented in the literature (ZHANG; YEN, 2020; WRI, 2013; CERVERO; KANG, 2011). However, this system has some unexplored challenges related to the intrinsic need for a robust road structure that permeates the city on its main arteries. These challenges include the sectioning of the urban fabric, changes in land use and landscape, disruption of consolidated road dynamics and reduced local accessibility for pedestrians. In this sense, it is necessary to design a well-articulated plan so that the possible impacts of the model are dealt with in such a way that its benefits outweigh them.

The city of Uberaba-MG (Brazil) was the first Brazilian municipality with less than 500,000 inhabitants to implement the BRT system (MENDES, 2020). The project dates back to 2010 and included the participation of Jaime Lerner's team, and in 2015 the first phase (located on Av. Leopoldino de Oliveira) was finalised. Although Uberaba's BRT system was awarded the silver quality seal by ITDP (2016), its implementation was accompanied by various impacts on the commercial and property dynamics of the avenue that hosts it. These events have made the system the subject of discussion and criticism in the news and among the population.

In this sense, the aim of this article is to investigate the changes in space and urban dynamics that have occurred since the implementation of the BRT in the city of Uberaba. More specifically, it analyses the changes in commercial and real estate dynamics on Avenida Leopoldino de Oliveira.

2 METHODOLOGY

The cut-off for the research is Leopoldino de Oliveira Avenue in Uberaba - MG, specifically the section shown in Figures 1 and 2.

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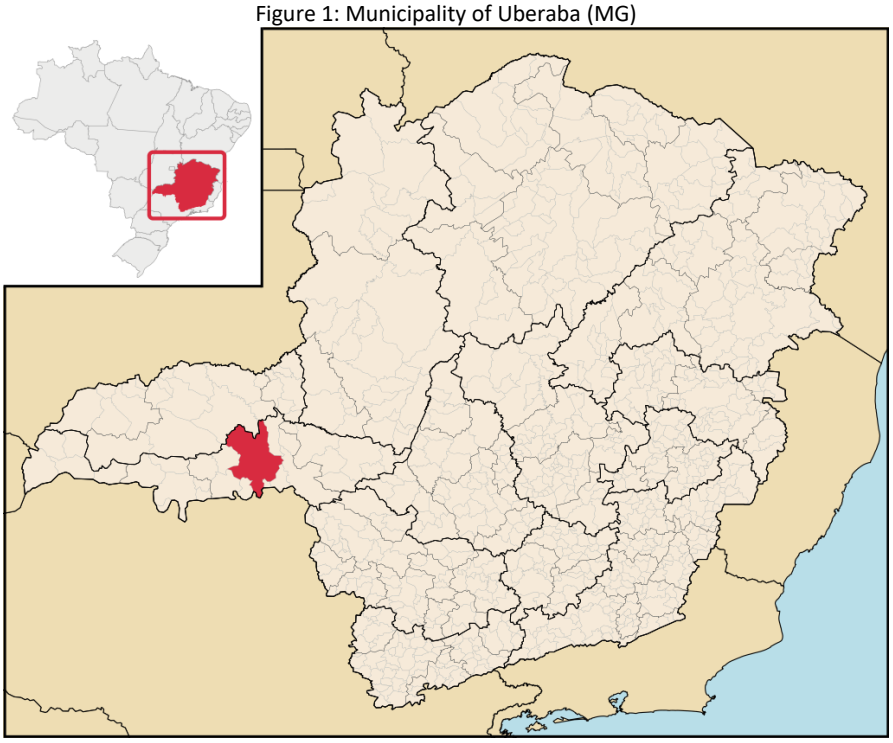
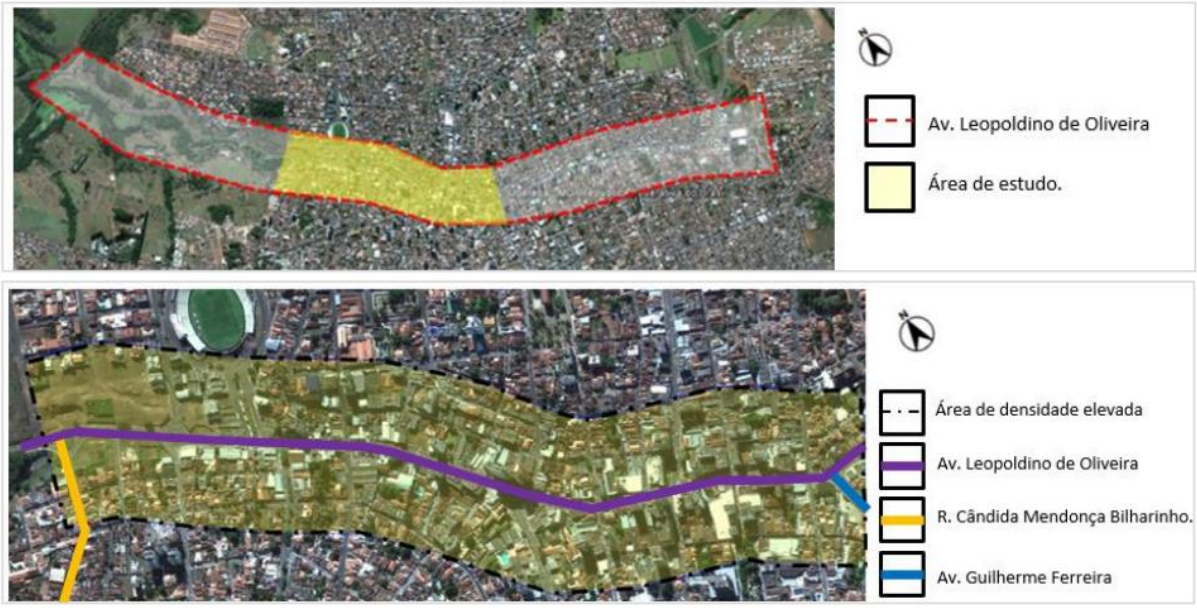
Figure 1: Municipality of Uberaba (MG)



Source: De Abreu (2006)

Figure 2: Avenue Leopoldino de Oliveira



Source: Google Earth (2020), adapted by the authors

The methodology outlined for this study is characterised by qualitative/descriptive research. For data collection, a photographic survey was carried out in field research and semi-

structured interviews were conducted with users of the BRT transport system, merchants and directors of renowned real estate companies in the city. The interviews were conducted between January and August 2020. The definition of the sample size of interviewees followed the criteria of simple random sampling, based on the size of the population, resulting in 270 interviewees for BRT users, 90 for merchants and 10 directors of real estate agencies in Uberaba-MG.

3 SEGREGATION IN THE CITY, URBAN MOBILITY AND BRT CORRIDORS

It is well known that, as in many emerging countries, Brazil's urbanisation was unplanned and problematic. Several works detail how Brazilian cities were not prepared to accommodate the growing urban population in the mid-20th century, which would become the root cause of several current urban problems. This is because the lack of planning consolidated a typically sprawling, fragmented urban environment that segregates the low-income population in peripheral locations (VILLAÇA, 2001; SANTOS, 2004, 2008; VASCONCELLOS, 2014).

A typical feature of this form of urbanisation is the urban mobility problems, since the distances travelled to meet daily needs get longer, as well as the difficulty of structuring public transport to meet this demand efficiently (KAKAR; PRASAD, 2020). These issues become even more imposing in the peripheries given the historical neglect of these areas when it comes to implementing urban infrastructure and policies (VASCONCELLOS, 2000). To solve this problem, the Brazilian government has resorted to policies to expand road infrastructure and popularise cars (VASCONCELLOS, 2014). Despite this, the literature on urban mobility postulates that the implementation of policies that prioritise cars creates a stifling scenario for collective modes and hostile landscapes for pedestrians and cyclists (UN HABITAT, 2022, SPECK, 2016; GEHL, 2014; JACOBS, 1961).

Faced with various current issues such as the climate emergency, spatial justice and the quality of urban life, governments have been investing in ways of connecting the city by alternative means to the use of cars, such as collective and active modes. In this context, BRT has been recognised for its promise of transporting a large number of people quickly and at a low cost compared to other public transport systems (WRI, 2013). It differs from traditional bus services, in general, by its exclusive lanes, which speed up the flow of buses, combined with integrated stations and terminals (Ministério das Cidades, 2008, ITDP, 2016).

Pioneering BRT cities such as Curitiba, Bogotá and Brisbane have achieved considerable success to the point of encouraging this concept worldwide, especially as its low cost makes it a good option for developing cities (WRI, 2013; Ministério das Cidades, 2008; ITDP, 2016). However, it is important to emphasise that these systems should not be deliberately implemented without a good analysis to understand the context in which the BRT will be inserted. This is because BRT is not a ruthless tool that works in isolation, and integration with other means of transport and equalisation with existing flows is essential (Ministério das Cidades, 2008).

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The system's chances of success are increased as it is planned in a way that is coherent with the existing reality and meets the needs of users, as the BRT Manual itself makes clear when it mentions that 'from the customer's perspective, small and simple measures that improve comfort, convenience, safety and security are more important than vehicle technologies and sophisticated designs' (Ministério das Cidades, 2008, p. 5). This convenience and comfort is the driving force behind reaching a greater number of users, while making public transport competitive with the use of private vehicles, even among high-income individuals.

In this sense, the implementation of the BRT system must be dimensioned to cater not only for the existing public, but also for the expected increase in the number of users, since demand grows with convenience. Normally, a 10 per cent increase in passengers is expected after the installation of the BRT, but this can be exceeded. In the case of Bogotá, a large part of the demand comes from a change in travel behaviour, since 20% of TransMilenio users are former private vehicle users (Ministry of Cities, 2008). This modal shift makes the implementation of BRT an ally of traffic sustainability, since it reduces emissions while reducing private vehicle traffic, a statistic that can be improved with the use of electric buses (IPEA, 2011; WRI, 2013).

A successful BRT project must also take into account economic, environmental, social and urban impacts. It is impossible to design a quality system without considering the context of roads, land use, commercial and service centres, as well as design strategies that make the implementation of this robust infrastructure compatible with the existing city. Despite the extensive and well-mapped planning process, many cities fail to meet the projected expectations because they don't follow the essential steps laid out for its implementation (Ministério das Cidades, 2008; Lindau; Hidalgo; Lobo, 2014; ITDP, 2016).

4 THE CASE OF UBERABA-MG

The long history of alterations in the Leopoldino de Oliveira Avenue bears witness to an urban policy in Uberaba that has historically favoured cars (SILVEIRA; OLIVEIRA, 2013). In 1938, the Córrego das Lages gave way to Leopoldino de Oliveira Avenue, which was conceived as a sanitary road. In 1979, the avenue was widened as part of a project to channel and plug the stream, a change that had a major impact on the local landscape (MENDES, 2020).

In 2010, with the hiring of architect Jaime Lerner's team, the city underwent several redesigns aimed at better distributing the flow of vehicles in the centre through the implementation of a road system based on binaries, trinaries and changing street directions. As one of the city's main arteries, Leopoldino de Oliveira Avenue has been deeply impacted by these changes, which have affected the city's culture, routine and outlook, as well as provoking intense dissatisfaction, mainly from private transport users (MENDES, 2020).

Along with the 2010 proposals came the idea of the BRT, which was implemented in 2015 on Leopoldino de Oliveira Avenue. The section relating to the study area is the East/West axis, which

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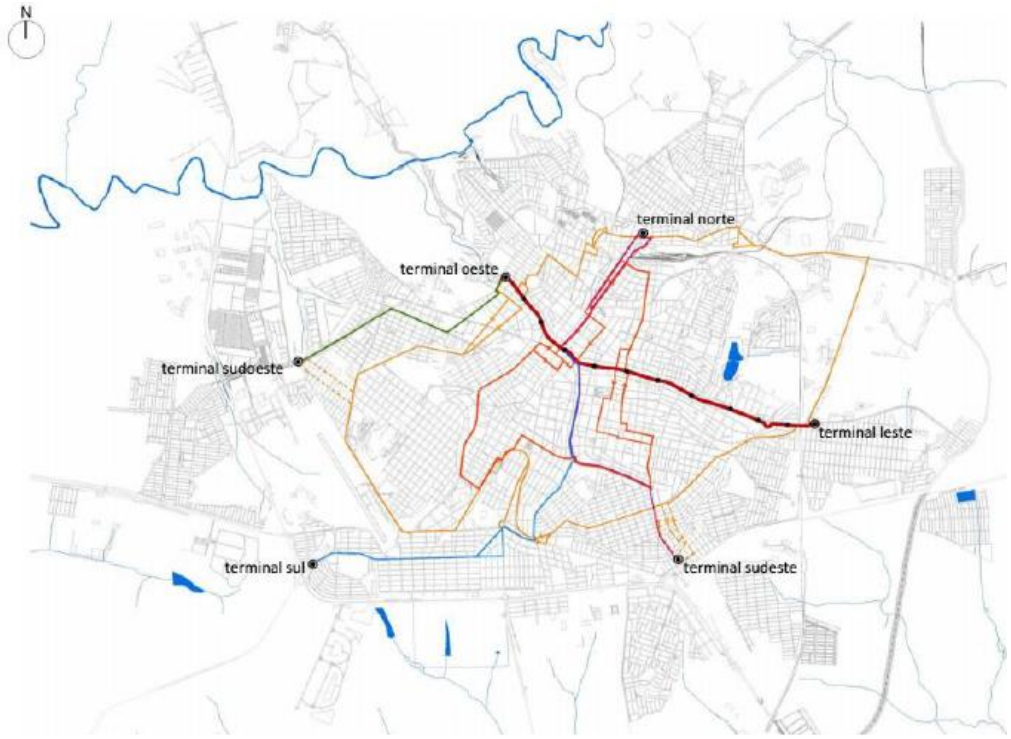
has terminals at each end, as well as ten stations of varying distances installed along the road (figure 3).

Figure 3: Jaime Lerner's team's road proposal



Source: Mendes (2020)

In 2014, before the implementation of the BRT project, the image of Av. Leopoldino de Oliveira was a 4.8 km long road, with an average width of 25m, made up of two mirrored sides separated by a central median. Each side had two lanes for the flow of vehicles and a parking lane. There are some important considerations about the avenue: (1) it is located in a region of high density, permeated by vertical buildings; (2) it is one of the municipality's main centres of street commerce, with a great diversity of uses and bringing together the city's main establishments; (3) it is home to the oldest buildings in Uberaba, including historic mansions belonging to important families; (4) it has narrow side-walks that make pedestrian access difficult; (5) it is a predominantly impermeable region with few green areas; (6) it is prone to flooding during periods of rain.

4.1 Infrastructure

The main change on this section was the elimination of the two parking lanes to allow the implementation of two exclusive lanes for the flow of buses related to the BRT system (figure 4).

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Figure 4: BRT system at Leopoldino de Oliveira Avenue

Source: Jornal da Manhã Online

The design of the stations is similar to that adopted in Curitiba (figure 5). Despite this, the model of the buses purchased by Uberaba is different from those in Curitiba, and they do not have the docking platform enabling the connection between station and vehicle (MENDES, 2020). This incompatibility has resulted in a 40 cm gap between station and vehicle, which can cause unsafe situations for users, especially those with mobility restrictions.

In fact, some accidents have been recorded. In 2019, an elderly man broke his leg when he fell from the bus at the East Terminal, and in the same year a 37-year-old woman was run over by a bus at the BRT West Terminal when she fell from the platform (G1 TRIÂNGULO E ALTO PARANAÍBA, 2019; JORNAL DA MANHÃ, 2019).

In addition, the photographic diagnosis revealed that most of the stations are in disrepair due to weathering and depredation, as well as a lack of maintenance, especially in the air conditioning units. This analysis is supported by the ITDP report (2016), which also recognised maintenance as a vulnerability of the Uberaba BRT.

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Figure 5: Uberaba station platforms

Source: The authors (2020)

The choice of paving material for express lanes varies according to vehicle weight and environmental conditions, but in general the most suitable material is concrete. The advantages of concrete paving include a low-deformation surface, better visibility, better adhesion between tyres and surface and resistance to chemical attack from oils. Concrete corridors require maintenance every 10 years, while asphalt ones deteriorate more quickly and have this period reduced to 2 years (Ministério das cidades, 2008). This greater durability justifies the more expensive initial investment in concrete and guarantees the quality of the BRT system for longer, considering the instability of municipal administrations.

For the bus corridors along Leopoldino de Oliveira, the paving was of the flexible type, consisting of a 17 cm layer of gravel, plus 3 cm of hot-machined bituminous concrete (CBUQ) (MENDES, 2020). Due to the choice of this material and maintenance issues, numerous deformations were identified in the paving along the entire length of the corridors, especially near the stations, caused by high vehicle loads and braking (figure 6). The issue of paving is another vulnerability also corroborated by ITDP (2016).

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Figure 6: Paving of the BRT corridor on Avenida Leopoldino de Oliveira.

Source: The authors (2020)

In short, it can be concluded that Uberaba ended up making some of the mistakes that the BRT manual (Ministério das Cidades, 2008) considers to be the most common. These include under-dimensioning the infrastructure, designing a project that focuses more on technology than on the user, and failing to adapt to the local context. These errors would prove to be decisive in the impact caused to commerce and the property sector, as will be detailed in the next section.

In addition to the issues mentioned above, the ITPD report (2016) incisively points out the lack of compatibility and integration of the BRT system with the use of bicycles. Despite this, the Uberaba BRT received a silver rating from the institution and is considered a good model for medium-sized cities (ITDP, 2016).

4.2 Target audience, efficiency and satisfaction

The interviews showed that the BRT system in Uberaba is predominantly used by low-income people, with 84.8 per cent of users earning up to two minimum wages. This result is very similar to the survey carried out in 2016 (MENDES, 2016), which showed a percentage of 88.15% of users in the same condition. In addition, 83.7% of users claimed not to own private vehicles and 93.3% said they already used public transport before the BRT was implemented. Unlike the Transmilenium, which was successful in changing travel behaviour (Ministério das Cidades, 2008), this scenario shows that the Uberaba BRT ended up reaching the same public that has historically depended on public transport, demonstrating limited capacity to change travel behaviour.

To analyse the efficiency of the BRT in connecting the city, an analysis was made of the need for users to integrate the BRT journey with other buses. It was found that only 7.8 per cent of users did not integrate and only used the BRT system. Most users (51.1 per cent) integrated with

two buses, followed by 28.9 per cent who integrated with three buses. Even so, the survey carried out by G1 shows that the majority of users said that 'the BRT-Vetor system was characterised by its agility in reaching its destination'.

In terms of travelling time, the questionnaires revealed that approximately 40% of people manage to complete their journeys in up to 40 minutes, making it possible to infer that, in general, the BRT fails to promote fast journeys. The longest journeys were identified on the edges of the city, with journeys of up to two hours. In the centre of Uberaba, however, journeys take around 30 minutes.

Part of the questionnaire sought to investigate users' general satisfaction with public transport, in a comparison of the service before and after the implementation of the BRT. With regard to the line's service, 60.7 per cent of users said that the service had improved after the BRT system was implemented, while 24.8 per cent said that the standard had remained the same. When analysing vehicle capacity, 44.8% claimed that it had 'got worse' or 'got much worse', followed by 30.4% who perceived the same levels of capacity, while 24.4% reported an improvement.

The comfort of the buses divides opinion: 47 per cent of users reported that the standard remained the same as the old model, 34.8 per cent reported improvement and 14.1 per cent reported worsening. Regarding comfort while waiting, 64.8 per cent reported an improvement with the implementation of the BRT, 20.7 per cent claimed not to notice a change, and 10.7 per cent reported that comfort levels had worsened. With regard to safety at the station, 61.5 per cent of users reported an improvement, 22.6 per cent maintained the same level of satisfaction and 11.9 per cent reported a deterioration in safety. With regard to travelling safety, the majority of users (52.2%) perceived an improvement with the implementation of the system, followed by 37.4% who perceived the same standard and 7.4% who reported a worsening.

When compared with the survey by Mendes (2016), there was a reduction in satisfaction levels in relation to the line service and internal comfort. On the other hand, the perception of satisfaction increased in relation to comfort and safety at the station, as well as safety during the journey.

4.3 Real state impact

The implementation of the BRT has had a strong commercial impact on the properties located on Av. Leopoldino de Oliveira, especially after the exclusion of the parking lanes. Parking lanes are known adversaries of sustainable mobility, as they are yet another way of favouring cars over pedestrians, as they occupy a noble space on the street without at least favouring fruition (ITDP, 2017). Despite this, the planning of a new mobility system must take into account the study of current conditions in order to propose changes that do not lead to another urban problem. The specific case of car parks in the context of BRT, for example, is the subject of a large chapter in the BRT Manual (Ministério das Cidades, 2008), which proposes strategies for compatibility and gradual replacement.

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Despite this, in Uberaba, the parking lanes were removed drastically and without proposing an impact mitigation measure. Considering that, as seen in the previous section, the BRT has not significantly reduced car traffic in Uberaba, the parking lanes continue to have the same demand, but the local supply on the avenue has been eradicated.

Analysis in the field and interviews with the property sector indicated a major devaluation of Leopoldino de Oliveira Avenue. There has been an increase in the number of empty properties, as well as a reduction in rental and sale values of approximately 30 per cent, according to the average of those interviewed. The study carried out by the Chamber of Shopkeepers (CDL) also noted the closure of shops on the road (G1 TRIÂNGULO MINEIRO, 2016). The interviewees and the CDL attribute the reported impacts directly to the implementation of the BRT and especially to the issue of car parks.

In response to the devaluation of Leopoldino de Oliveira Avenue, Prudente de Morais Street, another important road located in Uberaba's main sub-centre, is undergoing a process of appreciation. This indicates a possible redistribution of commercial centres, considering that the tertiary sector is extremely dynamic and adaptive.

It is worth pointing out that this result goes against the grain of the extensive literature that points to land appreciation around BRT (ZHANG; YEN, 2020; CERVERO; KANG, 2011), which suggests that the Uberaba project did not work as it should have.

4.4 Impact on the tertiary sector

Finally, we analysed the interviews conducted with the managers of businesses located on Av. Leopoldino de Oliveira. Considering the objective of understanding the change in commercial dynamics caused by the BRT, most of the interviewees are merchants who settled on the avenue before the system was implemented (82.2 per cent). The rest (17.8 per cent) settled on the avenue after 2015.

The majority of traders interviewed (74.2 per cent) claimed that they suffered a negative impact on their income after the BRT was implemented. Of these, 32.2 per cent reported a drop of between 15 and 30 per cent, followed by 28.7 per cent who reported a drop of over 30 per cent. In addition, 24.1 per cent said they had not suffered a drop, and 4.6 per cent preferred not to answer. The analysis drawn up by the Chamber of Shopkeepers (CDL) corroborates this result, pointing to a drop of up to 30 per cent in sales. There has also been a change in the shoppers profile, who have generally become more low-income (G1 TRIÂNGULO MINEIRO, 2016).

When asked specifically about the removal of the parking lane, 71.1 per cent of respondents claimed that this action had an impact on their business, while 28.9 per cent reported that it had not. In this analysis, it is important to note that several of the businesses interviewed had their own car park, which acts as a regulator of the impact of the removal of the lanes. It was also found that 20% of those interviewed had undergone renovations to add parking to their businesses,

a relatively high number considering that Leopoldino de Oliveira is a narrow road, with narrow pavements and already consolidated properties with no front setback.

Finally, when asked if the BRT system had made it easier for people to get to the centre and if it had boosted commerce, 90% of the interviewees said it had not. When asked about any observations not covered, the traders generally criticised the implementation of the BRT and proposed solutions to mitigate its impact on commerce. These results run counter to the study by Deng and Nelson (2010), who, in interviews with traders along BRT corridors, reported a generally positive opinion of the increase in accessibility and business opportunities. Despite this, the comparison is limited because there are few studies linking BRT and the prosperity of commerce.

5 CONCLUSION

The BRT system is a model known worldwide for being a tool that brings positive impacts on urban mobility. There is extensive literature reporting the increase in capacity and speed of public transportation, improved accessibility and promotion of sustainability, all at a very reasonable implementation and operation cost when compared to other systems. On the other hand, when poorly designed, the BRT can have severe urban consequences, impacts that are still little explored in the literature.

In this sense, this research sought to delve deeper into the implementation of the BRT system in the city of Uberaba, specifically in the corridor of Leopoldino de Oliveira Avenue, which is the main arterial road in the city. The structure, the impacts on the real estate and tertiary sectors, as well as the efficiency and satisfaction of the system when compared to the model prior to implementation were analyzed.

The case study of Uberaba-MG proved to be an example of how the lack of in-depth studies on the specific characteristics of the city can result in an inefficient structural design and in a dynamic that “kills” commerce along the corridors.

In terms of infrastructure, it was found that the paving used in the corridors was not the most suitable for the case, which resulted in several deformations that are present most of the time, as well as high maintenance costs. In addition, the stations implemented are incompatible with the chosen vehicles, resulting in a 40 cm gap for boarding that makes the system unsafe, especially for people with limited mobility. Finally, attention is drawn to the abrupt removal of parking lanes, a measure that goes against the recommendations of the BRT Manual and demonstrates disregard for local road dynamics.

The BRT user population is mostly composed of low-income people (up to 2 MW) and who do not own their own vehicle, that is, people who have historically depended on public transportation. This finding reveals that the implemented system was not able to reach new audiences and change travel behaviors in order to promote more sustainable travel.

The analysis of the operation also revealed important issues. The system has not proven to be sufficient in connecting the city as a whole, since 92.2% of users need to use at least one more

bus in addition to the BRT to reach their destination. Furthermore, more than 60% make trips longer than 40 minutes, especially on the outskirts of the city. Despite this, in surveys conducted by third parties, the population recognizes the system for its agility.

The perception of user satisfaction when comparing the old system to the BRT varied greatly according to the topic analyzed. Regarding the service on the line, safety during the trip and comfort and security at the station, between 50% and 65% of users reported improvements. Regarding comfort inside the vehicles, approximately half of the users reported that the service remained the same, while 34.8% reported improvements.

When asked about crowding, the majority of respondents (75.2%) mentioned that after the implementation of the BRT system, the vehicles used continued to circulate full, in some cases even more than before. This result is extremely important and shows the under dimensioning of the system. Considering that the BRT did not attract new audiences, as discussed above, it is possible to say that the project fails to meet existing demand. Furthermore, overcrowding is a factor that generates extreme discomfort for users, which may explain the failure to promote changes in travel behaviors, since it makes the system uncompetitive with cars.

In the analysis of the real estate impact of the BRT, it was found that the case of Uberaba goes against the extensive literature that reports an increase in the value of properties near the corridors. This research found a large vacancy in the area and a drop of approximately 30% in the sale and rental prices of properties. The real estate sector reports that this impact occurred after the implementation of the BRT and believes that it was caused mainly by the removal of parking lanes.

In the tertiary sector, the results were no different. Many businesses closed or moved, and those that remained reported a reduction of approximately 30% in sales. Business owners attribute this impact directly to the BRT, especially to the issue of the removed parking lanes. Most of the sector agrees that the BRT system has not improved accessibility to the city center, much less boosted commerce.

It can be concluded that, although the Uberaba BRT has indeed brought improvements in some aspects for public transport users, it is far from being considered ideal and does not reach the expected potential. This is because the negative impacts have affected the territorial dynamics in large proportions, while at the same time not promoting a more sustainable modal share. This result invites urban planners to rethink mobility models considered “universal” and to carry out more in-depth diagnoses before promoting such robust interventions.

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