

## Public toilets from the perspective of users: a case study in a public place, Brazil

Fernanda Deister Moreira, Sonaly Rezende  and Fabiana Passos 

Department of Sanitary and Environmental Engineering, Federal University of Minas Gerais, Av. Antônio Carlos, 6627, 31270-901 Belo Horizonte, Brazil

\*Corresponding author. E-mail: fabiana@desa.ufmg.br

 SR, 0000-0002-5282-0938; FP, 0000-0001-7501-988X

### ABSTRACT

Public toilets are essential infrastructure to guarantee the right to sanitation in public spaces and, in more general terms, the right to inclusive and sustainable cities. Moreover, since the equipment has a direct user interface, it is important to understand their demands and needs. Given this, the present research aims to understand the perspective of public toilet users on the Pampulha Lake Shore (PLS), a public touristic place in Belo Horizonte, Brazil. For that, observations and semi-structured interviews were carried out with different public toilet users. In addition, comments posted on the Google Local Guides tool of Google Maps were used as a secondary database for understanding users' experience of PLS toilets. The analysis made it possible to identify aspects related to availability, quality (health and hygiene), security, and accessibility. Collected data showed how the conflicting choice of whether or not to use the toilet was directly related to the health and conservation of the urban equipment and interfered with social and leisure prospects. On the whole, the importance of the user's perspective was highlighted in this study with emphasis on elaborating adequate urban planning with regard to health, sanitation, and accessibility issues.

**Key words:** human rights, toilet, public health, public policy, restrooms, sanitation

### HIGHLIGHTS

- Public toilets are essential to guarantee the right to sanitation in cities.
- Users' experience was found crucial for implementing effective public equipments.
- The case study was used to link users' experience and human rights to sanitation.
- Availability, accessibility, and quality/safety were the main concerns of users.
- Google Local Guides was shown as a useful tool to complement users' opinions.

## 1. INTRODUCTION

Public toilets are essential urban equipment for reinforcing human rights to sanitation, which must be ensured in all spheres of life, beyond the household. In fact, many people spend most of their time outside their homes or in unconventional dwellings (such as prisons). However, up to date little is known on the situation of sanitation in non-home spaces (Cronk *et al.* 2015). A recent UN report (A/HRC/42/47) emphasised the concerns regarding sanitation in places beyond the household, such as schools, hospitals and medical clinics, prison units, workplaces and the street (UNGA 2019).

Even though there are plenty of spheres of life in which sanitation could be studied, the report focused on public spaces characterised as areas for social interaction and inclusion. According to the document, these spaces should promote human health and well-being, while ensuring human development and promoting social inclusion (UN 2016). From this perspective, the report sheds light on vulnerable groups, who are particularly left behind when there is a lack of toilets in public spaces.

An example of a vulnerable social group mentioned is street workers. Literature has shown how these workers have considered the lack of toilets as one of their main issues (Moreira 2008). Therefore, these users may potentially suffer health problems due to a lack of sanitation solutions and even have to leave work. This fact can lead to economic loss, as many of them are self-employed (UNGA 2019). In the case of homeless people, the lack of sanitation can reinforce the discrimination they suffer on account of lack of hygiene. These users can also be repudiated for seeking alternatives to access water or toilets in other places, such as malls, stores, or restaurants (Silva 2017; Frye *et al.* 2019; UNGA 2019).

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Another important group of users considered as vulnerable is the transgender community, as they do not conform to the binary standard imposed by a sexist and heteronormative tradition. Therefore, it is common for them to be barred from public toilets. The lack of adequate solutions can make them susceptible to abuse and reinforce them as a group left behind with regard to public policies and infrastructure (Blumenthal 2014; Plaskow 2016). Moreover, women and girls are also neglected when there are precarious toilet solutions in public places, as several studies have shown how women use toilets more frequently than men and have particular physiological needs (Greed 2016; Camenga *et al.* 2019; UNGA 2019).

Finally, another public group harmed by inadequate sanitation solutions in public spaces is people with physical disabilities or mobility difficulties, like the elderly. The lack of appropriate solutions for their needs limits their ability to use public spaces and to engage with social activities (Siu & Wong 2013; Barnett *et al.* 2015; Navarro *et al.* 2015).

According to human rights to sanitation, to adequately serve all people, five elements of the normative content must be attended to: (i) availability, an adequate number of facilities according to the public attending the public site; (ii) accessibility, equipment available to all on an ongoing basis considering their security; (iii) affordability, access not limited for the use of people independent of their socio-economic status; (iv) quality and safety, no damage to the user's health; and (v) dignity, acceptability, and privacy, ensuring that all users' demands are attended to without embarrassment or insecurity (UNGA 2019).

Research has shown public toilets as an important infrastructure for sustainable, accessible, and inclusive cities (Kitchin & Law 2001). The provision of these facilities was also shown to be crucial for public health and cleanliness of the cities since, in the absence of toilets on the streets, people urinate on walls and sidewalks (Stanwell-Smith 2010).

As can be seen, there are different users of toilets in public spaces and this diversity and vulnerabilities must be taken into account when making decisions and developing a public policy for attending to all needs. Additionally, the public perspective is an important tool to identify demands and problems in the provision of these services, as public toilets are the equipment of direct user interface. On the other hand, public managers have identified the cost of maintenance, recurring vandalism, and criminal activities as factors that interfere in their decision-making (Greed & Daniels 2002). Therefore, many cities decided to limit the opening hours of these establishments although it is emphasised that this can interfere in guaranteeing the principle of accessibility of human rights to water and sanitation in public spaces (HRWS-PS).

To date, scarce literature is available on linking human rights to sanitation and public toilets from the user's view. In Brazil, there is no federal law or regulation that makes the public toilets provision compulsory. It is the municipality's responsibility to determine this issue. Particularly in Belo Horizonte, the capital of the state of Minas Gerais, and where this study takes place, there are two laws that mention public toilets provision: (i) the Posture Code that provides for the possibility of public toilets installation, although it does not mention its obligation (Belo Horizonte 2003) and (ii) the Pedestrian Statute that refers to the need of free use sanitary facilities as a right for passers-by (Belo Horizonte 2012).

Thereby, the present work aimed at studying the particular case of the Pampulha Lake Shore (PLS), a touristic public space in the city of Belo Horizonte, Brazil, regarding the perspective of local public toilet users. To this end, interviews were carried out on-site, and secondary data were used to complement the argument raised.

## 2. MATERIAL AND METHODS

### 2.1. Site characterisation

Considering the public spaces in the municipality of Belo Horizonte, the PLS was chosen as the target of this study since it is a space of tourism and leisure of great importance for the municipality. It is part of an architectural complex recognised as a World Heritage Site by UNESCO and it was planned by the renowned architects Oscar Niemeyer and Burle Marx in the 1940s (UNESCO 2017). The PLS has an extension of 18 km and among the attractions are the Ecological Park, two museums, four viewpoints, and the São Francisco de Assis Church (Figure 1). To identify the public toilets studied in this research, site recognition and free conversations with street vendors, museum/park staff, and passers-by were carried out. PLS public toilets were located in nine points, six of them in squares or viewpoints, two of them in museums, and one of them at the park (Figure 2).

Regarding the site surroundings, there are six neighbourhoods bordering the PLS: Braúnas, Garças, Jardim Atlântico, Aeroporto, São Luiz and Bandeirantes. Moreover, the urban planning considers another 42 neighbourhoods in the Pampulha region influence. Also, the PLS is a way between these neighbourhoods and between cities in the metropolitan region (as Ribeirão das Neves and Santa Luzia) to the city centre (Belo Horizonte 2011).



**Figure 1** | PLS touristic and leisure spots (from left to right): 1. São Francisco de Assis Church; 2. Nova Pampulha Square; 3. Bem-te-vi viewpoint; 4. Ecological Park; 5. SabiaViewpoint; 6. Garça Viewpoint; 7. Bigua viewpoint; 8. Pampulha Art Museum; 9. Casa do Baile Museum. Source: Authors.

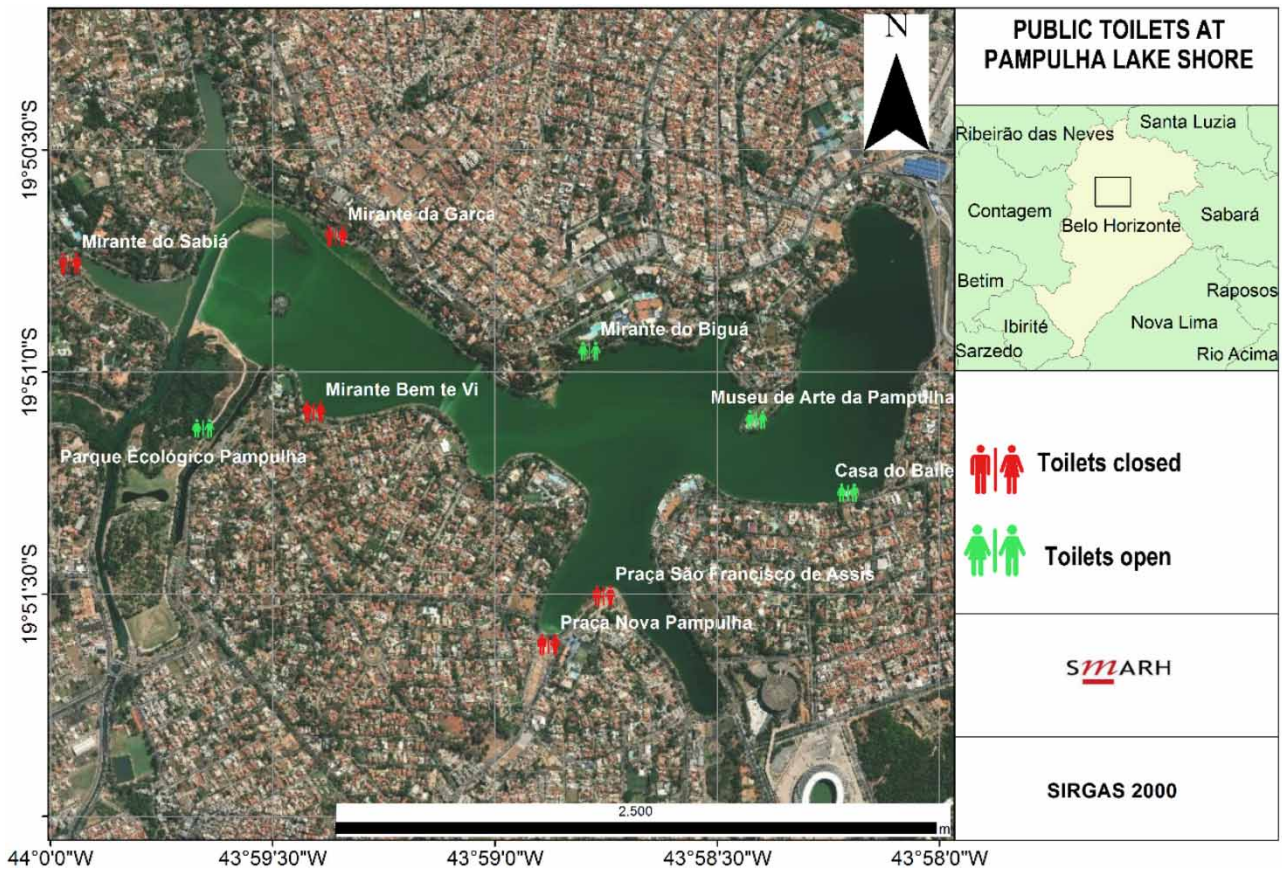
Unlike the city centre, the PLS does not have many alternative toilets nearby, such as in malls, stores, or shopping centres. This fact makes the PLS an ideal place to evaluate the experiences and attitudes that people have in situations where there are no solutions around or when they do not consider the current solutions adequate.

## 2.2. Methodological approach

The qualitative methodological approach used in this research comprised data collection and analysis. Given the scarcity of experimental research in this field of study from the perspective of sanitation and human rights, a case study was chosen to allow a deeper understanding of the subject complexity (Simons 2014). The research was focused on the individual and their experiences related to the object of study, with a flexible approach to eventual modifications led by the data collected in the field (Simons 2014).

### 2.2.1. Sampling and recruitment

The primary database was surveyed through semi-structured interviews and observations at the five points that had operating toilets with passers-by and street vendors, between November 2019 and March 2020 (i.e. São Francisco de Assis Square; Nova Pampulha Square; Bem-te-Vi viewpoint; Ecological Park; and Biguá viewpoint). In total, 41 people were interviewed at PLS (2 street vendors and 39 passers-by). All interviews in this work were recorded and had the interviewee's consent (2.3



**Figure 2** | Map of public toilets at the PLS. *Source:* Adapted from Google Earth.

Ethics). The guiding questions for each group of users may be found in the Supplementary material (S1). The speeches illustrating this article were free translations made by the authors in order to maintain the same meaning and linearity from the original language (Brazilian Portuguese).

### 2.2.2. Secondary database

To complement the fieldwork, comments on public toilets at each of the nine PLS points were gathered through the Google Local Guides (GLG) platform, from 2017 to February 2020. This time frame was selected as it regards the same municipal government (January 2017 to December 2020). GLG comments were filtered through the terms: 'restroom(s)', 'toilet(s)', and 'drinking fountains' (in Brazilian Portuguese language) at the 9 points of the PLS: (a) São Francisco de Assis Square (13 comments); (b) Geralda Damata Pimentel Square, also known as Nova Pampulha Square (71 comments); (c) Bem-te-Vi viewpoint (23 comments); (d) Ecological Park (114 reviews); (e) Sabiá viewpoint (5 comments); (f) Biguá viewpoint (2 comments); (g) Garças viewpoint (7 comments); (h) Pampulha Art Museum (12 comments); and (i) Casa do Baile Museum (13 comments). This made a total of 260 comments, in which all of them were analysed. It is important to highlight that by considering only the user name, it was not possible to know their gender, age or other characteristics.

### 2.2.3. Data analysis

The data used in this work comprised primary and secondary data information. The primary database was analysed according to Content Analysis, described by Bardin (1977). Moreover, the categorical thematic type was predetermined by HRWS-PS elements, as known: availability, accessibility, quality/safety, and affordability. The normative element 'dignity, privacy, and acceptability' was not covered as it would require longer and deeper interviews, which was not the purpose of this study. Two categories emerged from the interviews which were not predetermined: health and conflicting choices. To guarantee anonymity, the interviewees were named by a code considering the participant's gender, where the first letter M/W refers to man

and woman, respectively. The second letter of the code refers to the relationship with the place, where T/R/V represents tourist, city resident, and vendor, respectively. The number in the code indicates the order in which the interview took place. For the vendors, the location of the interview was not identified in order to safeguard anonymity.

The secondary database was analysed according to the discourse of collective subject (DCS) technique for analysing self-expression and/or collective opinion (Lefevre & Lefevre 2003). The methodological steps to form a DCS consist of identifying central ideas or anchors and their corresponding key expressions. In this sense, central ideas equipped with key expressions allow the formation of a DCS. Therefore, every comment was read and categorised by its central idea, of which there were three: (i) availability, (ii) accessibility, or (iii) quality and safety. After that, the key expressions of comments were grouped to form a discourse that flows and converges. The comments edition gathered the key expressions of each key comment together. Although the DCS is presented singly, it represented many individuals showing the emergency of a collective opinion. The GLG platform database was treated separately for each point on the PLS, so for each spot, we have at least one DCS. The DCS was used to complement and reinforce the results from Content Analysis from the interviews.

### 2.3. Ethics

This work was part of the project ‘Sanitation in Public spaces: A study on public toilets at Pampulha Lake Shore’ which had the approval of the Ethics Committee of the Federal University of Minas Gerais (CAAE: 30180620.0.0000.5149).

## 3. RESULTS

### 3.1. Public toilets overview at the PLS

The nine points investigated in this study were those with the most engagement at the Shore and that had public toilets. Their infrastructure and management characteristics are summarised in Table 1, and the toilets can be seen in Figure 3.

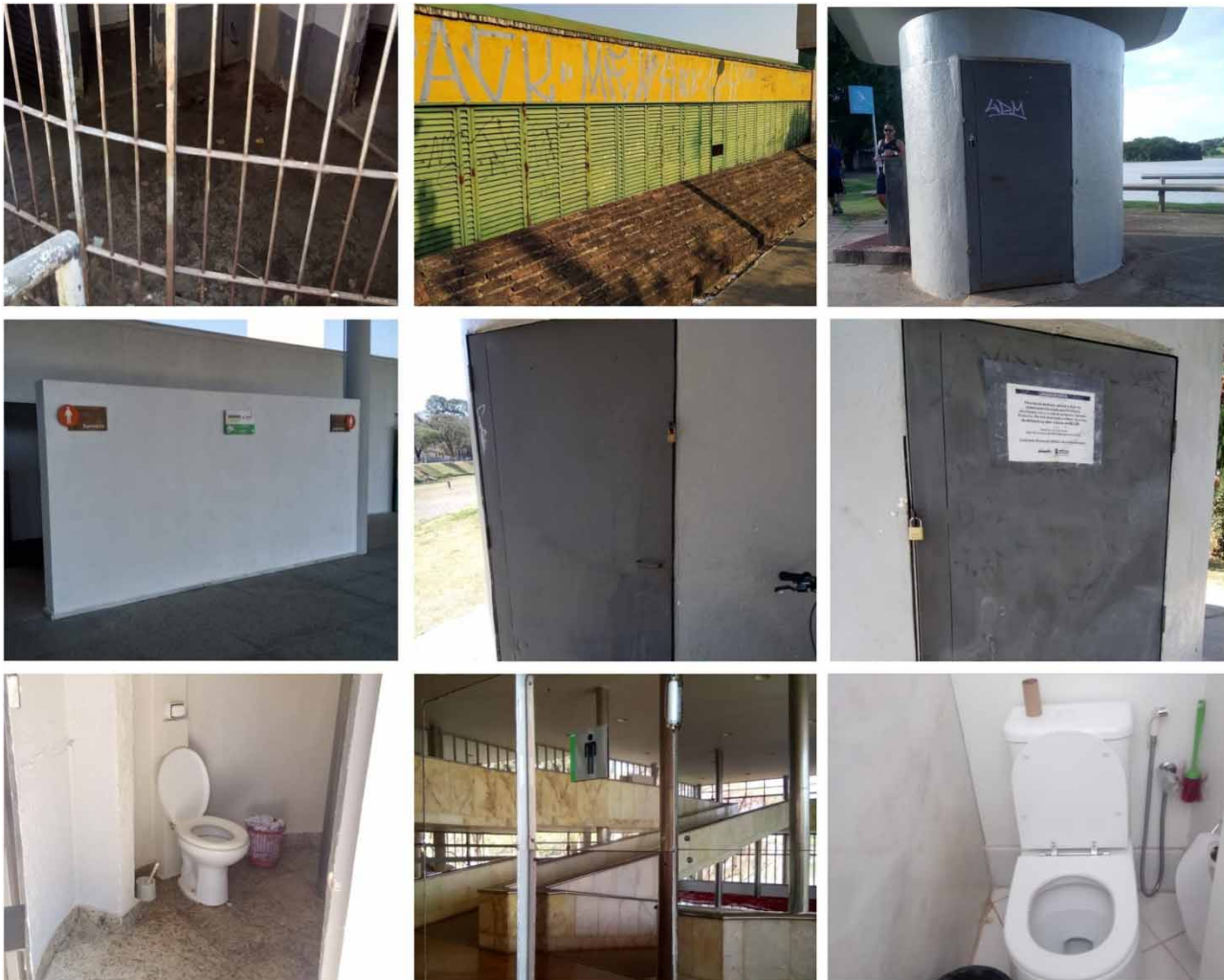
As can be observed, four of the nine points with physical toilets built in the PLS were out of order and closed. Considering the remaining solutions, all of them had opening hours limited to business hours, which did not represent the busiest time at the PLS on weekdays (from 7 am to 11 am and from 5 pm to 9 pm). During the weekends, the city hall provided chemical toilets all along the PLS to meet the needs of people that attended especially on those days for sport and/or leisure.

According to the study, it was noticed that during the week, the public was smaller and more restricted to residents of the surrounding neighbourhoods. Peak times occurred in the early morning and after working hours when people went to practice physical activities. During the weekends, the public expanded, and people from other regions of the city and from cities nearby frequented the site for leisure.

During this research, the aim was to understand the experiences of users and their relationship with the elements of the normative content of human rights. To that end, the results were discussed according to the categorisation made in the data analysis, i.e. availability, accessibility, conflicting choices, safety and quality, and affordability.

**Table 1** | Characteristics of public toilets at the PLS

Points	Quantity	Accessibility (wheelchair)	Fee	Chemical toilets availability	Sex segregation	Opening hours	Distance to next point (m)
São Francisco de Assis Square (P1)	2	No	–	Yes (2)	No	Closed	400
Nova Pampulha Square (P2)	11	Yes	–	Only in events	No	Closed	2,100
Bem-te-vi Viewpoint (P3)	1	Yes	–	No	No	Closed	900
Pampulha Ecological Park (P4)	2	Yes	Free	External (2)	Yes	8:30 am to 6 pm (except Monday)	5,100
Sabiá Viewpoint (P5)	1	Yes	–	No	No	Closed	2,600
Garças Viewpoint (P6)	1	Yes	R\$ 2.00	No	No	Closed	1,300
Biguá Viewpoint (P7)	1	Yes	R\$ 1.00	No	No	8:30 am to 7 pm	1,200
Pampulha Art Museum (P8)	2	No	Free	No	Yes	9 am to 7 pm (except Monday)	2,600
Casa do Baile Museum (P9)	2	Yes	Free	No	Yes	9 am to 6 pm (except Monday)	2,500



**Figure 3** | Toilets at the PLS (from left to right): 1. São Francisco de Assis Church; 2. Nova Pampulha Square; 3. Bem-te-vi viewpoint; 4. Ecological Park; 5. SabiaViewpoint; 6. Garça Viewpoint; 7. Bigua viewpoint; 8. Pampulha Art Museum; 9. Casa do Baile Museum. *Source:* Authors.

### 3.2. Availability

As previously mentioned, only five from nine public toilets studied in this research were in operation. If all the existing toilets in the PLS were in operation, the availability factor would probably not appear so often in the speech of the participants. It was noticed during the study that due to this lack of toilets, people avoided consuming liquids in order not to need to urinate, as shown in the following statement.

*'I drink it after I leave. Because during the activity there is no way for you to drink water because otherwise, you feel in need to pee.'* **WR02\_7**

According to the information found on the GLG platform, the lack of toilets also appeared in the comments for PLS Points 1, 2, 3, 4, 6, and 8. In particular for Point 1, 12 comments of a total of 13 were unavailable. This collective discourse may be expressed as:

*'There is no public toilet on-site or nearby. It is inexplicable that there are no toilets available to visitors. Without enough toilets to assist passers-by, going with a child who is unfurling is somewhat complicated. There are no toilets (they had just*

*removed the chemicals) and I couldn't find water to drink at midday. People were leaving and commenting the same thing.'* (C1-C11 – Point 1)

The research showed that when people expressed dissatisfaction related to availability, they would interrupt their tour. However, other alternatives were public urination behind trees or in vacant lots, or paying to enter an amusement park (close to Point 1). In fact, public urination was repeatedly cited by the interviewed group and was also observed in the field, mainly by children and homeless people. During the field phase, no embarrassment was perceived by people when explaining their experience of public urination, since it was justified by the lack of toilets on-site or the inadequacy of the existing solution, not being considered a criminal act. At Point 2, there was an abandoned food truck, which the homeless and local workers hid behind and used as a 'toilet' – a fact observed and confirmed in an interview with the vendor at that point.

In the context of PLS toilets, availability was also related to accessibility, since the existing infrastructure was frequently not in operation. However, even at Point 5, where the physical toilet was working, there was dissatisfaction with the number of toilets.

Chemical toilets adopted in the weekends by the municipality were observed as a controversial solution, pleasing only a few of the interviewees and perceptibly did not solve the problem of demand. The temporal equipments were found inadequate itself or also insufficient in number. In fact, only two modules were placed in São Francisco de Assis Square (Point 1), which also had to meet the demand of the Nova Pampulha Square (Point 2), with no chemical toilets. When sporting events took place at Point 2, organisers had to place chemical toilets in the square as a counterpart. On the other hand, some people who expressed contentment with chemical toilets explained that the solution was better than no solution at all.

In respect to the street vendors, the study showed how the lack of toilets affected their own need for a toilet, since the PLS is their place of work, but how also it affected their economic income. People stopped consuming products, such as coconut water, because they knew that there were not any on-street toilets. During the observations, it was possible to notice that some vendors adopted alternatives as to the Lagoinha Church, the snack bar, the club, and the Guanabara Park, or other commercial establishments. However, opening hours were restricted and the vendors generally stayed longer working at the PLS. In Point 2, it was observed that one of the 11 abandoned toilets had a padlock. The key was with one of the vendors for his own use and his family members who helped him in the vending.

### 3.3. Accessibility

Locked toilets represented lack of accessibility in our study, as observed in field and from the interviewees and GLG comments. In this case, failure on accessing the toilet converged with the unavailability, already discussed in the previous topic. Therefore, in this item, the issue of accessing functioning toilets will be discussed.

During the observations, it was noticeable that long lines formed at points with agglomeration in chemical toilets. The bigger and longer lines were in the female modules. Accessibility issues were also noticed in the case of fathers or mothers who were alone with children and had difficulty entering the toilet cabin with carrying objects (as bag/backpack, water bottle, toys, bicycle, etc.). It was common for them to ask someone outside to look at their belongings or to keep the door slightly open, to observe the objects left outside. The difficulties in taking children in the chemical toilets were noticeable when observing mothers and fathers who tried to go with children to the toilet and often gave up and went somewhere else or even interrupted the tour.

The fear of leaving the child to go alone to the toilet was also reported. The main concern was regarding the adult toilet's design, as children could fall into the hole. Another recurring problem for families with young children was the difficulty in changing diapers, as may be seen in the following statement:

*'There is no appropriate place to change...either lie on the floor or lie on your lap.'* **WR03\_2**

In addition, access was also hampered due to restrictions on opening hours. In the case of the toilets at Point 4 (Ecological Park), which were requested in high frequency, access was restricted to the Park's opening hours (8.30 am to 5 pm). However, similar to Points 8 and 9, people arrived early for toilet use, long before opening time. During the week, the users were people in physical activity, who frequented the PLS out of business hours (before or after work time).

In the case of the viewpoint toilets (Points 3, 5, 6, and 7), the opening hours depended on the time the street vendor, responsible for the key, arrived and left the place. At Point 7, Mirante do Biguá, the street vendor arrived around 8:30/9 am. However, again the place was frequented much earlier, around 6:30/7 am, as stated in the following:

*'The good thing is if we don't need to use it, but you can imagine an emergency like that. An emergency, the toilet locked.'*  
**WR02\_7**

For the street vendors, the same situation was shown from a different perspective. According to them, during the long time working in the PLS, they have witnessed several situations that led the municipality to limit the functioning of the toilets or decide to make them inaccessible to the public (Section 3.5). Regarding the availability of the toilet, the vendor was shown emphatic and mentioned not denying the use of the toilet to anyone, whether or not they could pay the maintenance fee (Section 3.6).

To sum up, the PLS toilets did not attend the requirement of accessibility concerning the opening hours of most toilets, since they did not serve the public that frequented the PLS during the busiest hours on weekdays. The chemical toilets, in addition to being available only on weekends, were seen as an insufficient solution with improper access for children, women, and the elderly.

### 3.4. Conflicting choices

During the observations and interviews, conflicting issues were noticed concerning the motivation for using or not using the public toilet, especially chemical units. The first perception was that in severe moments of need, the sex (male/female) sign at the door was ignored. Although the formation of lines in female toilets was mentioned, when there was no line in the male modules, women would also use that module or vice versa.

Besides the sex sign, what truly seemed to matter when making a decision on which toilet to use was its internal conditions related to cleanliness and odour. These conditions were so crucial, that people often decided to wait until they could find another solution if they considered that one inappropriate. In that case, they often looked for other options, or even interrupted their walk and left.

It was noticed that the degree of need was what guided the trade-off between using and not using the toilet. Each person's trade-off point seemed to be particular, but when asked why they would not use public restrooms, the answer was quite similar. Bearing in mind that there was a conflicting choice in the decision to use the toilet, some scenarios were noticed: (i) using the toilet regardless of hygiene and cleaning conditions due to a high degree of need, (ii) denying the toilet use due to hygiene and cleaning conditions and wait until finding another solution close by (as in bars/restaurants or public urination), and (iii) denying the toilet use due to hygiene and cleanliness and interrupting the tour. From the different scenarios, our study reinforced that there was a line between what is bearable and what is unbearable, concerning the quality and conservation of the infrastructure and the person's physiological need.

### 3.5. Health

The questions raised by interviewees related to health can be divided into two topics: (i) the toilet hygiene and (b) the lack of toilets, both of them affecting their health. The issue surrounding toilets' hygiene stood out in the speech of the PLS users, as previously mentioned. However, understanding why hygiene was a determining factor involved the interaction between hygiene and health. Some people explicitly demonstrated the issue of health and hygiene when citing possible consequences of using a public toilet.

The fear of urinary tract infection or contamination risks was reported by a pregnant woman interviewed. Also, some people feared the risk of being infected, as illustrated by the following statement:

*'You run the risk of going there and catching a very strong bacterium. I know that, at least, in these event toilets, during carnival or stuff like that, you can't touch anywhere. You have to be very careful.'* **MR02\_3**

Besides, the lack of toilets was also related to health issues by interviewees. For instance, elderly people reported a need to go to the toilet more often because of pressure medications, as mentioned in a recent study (Navarro *et al.* 2015) and observed in the following interview excerpt:

*'Oh, I'll tell you, this is sad...even my mother sometimes wants to come, she says 'Son I won't go'. My mother, who is elderly, takes medicine for pressure and feels the necessity to use the toilet. I feel sad, I can't even bring her here.'* **MV\_01**



Moreover, people with health issues, such as bladder and belly problems, also avoided going to the PLS, knowing that toilets were currently locked. It was clear how the toilet provision was important in promoting the circulation of people in public spaces.

### 3.6. Safety and quality

The safety and quality category consisted of the experiences of users regarding the conservation, maintenance, and safety of public toilets in operation at the PLS. Observations showed that chemical toilets, in particular, were more mentioned in concerns involving conservation and maintenance issues, as illustrated by the following interview statement:

*'These toilets here don't work at all. It would have to be something more adequate, with more hygiene. It should have an employee who would clean regularly. Because these chemical toilets for me seems a real lack of respect.'* (WR03\_3)

The interviewees who made comments on the maintenance and conservation of the toilets were mostly women (12 of 17 people). During the research, it was noticed how women felt generally more unsafe than men using chemical toilets. In almost all of the observations, they asked someone to hold the toilet door or to be 'on guard', while they used the equipment. This may indicate that the chemical toilet solution was embarrassing, although further research on that aspect should be carried out. Also, some men showed comprehension regarding gender difference, as may be noticed in the following statement: *'Normally men don't go to the toilet as much as women do... Concerning the cleanliness, it is inadequate. People are not careful, you know, it's cultural. We, as men, suffer less, it's complicated for women as they have to sit.'* MR02\_3

When interviewees showed dissatisfaction with the quality of service regarding maintenance or infrastructure, it was asked about which solution would best suit their needs. In this sense, users explained that it could be a simple solution, but with constant maintenance. Also, most people commented that a fixed solution would be much more suitable than a mobile toilet, i.e. a solution that has a sink and toilet paper. Some users argued on the importance of the toilet being closed, so that there was no vandalism and depredation of the infrastructure.

According to the users, it is the government's duty to provide toilets and to keep the equipment clean. Some of them cited the fact that the Pampulha Complex is a World Heritage Site and is a city's interest in tourism. Therefore, it should have more attention from the municipality or other federated entities. Others have reiterated the argument affirming that the government has responsibility to provide these services due to the high taxes paid by the population.

The perspective that the maintenance of the service did not only depend on the government or on the vendors was also noticeable in the research. Users brought the responsibility to the toilet users, as *the population should understand that it belongs to the people* (WR02\_5). The speech below also illustrates how public toilet maintenance should be collaborative, gathering different sectors of society and the government.

*'There is this issue of hygiene [...]. People sometimes do not take care [...]. If you see, there is a public toilet in the new square, everything is disabled, everything is broken [...]. There is no way to blame only the municipality, some things we have to call the responsibility on our side too [...] It has to be that way because people are not aware, you know, the toilet will get dirty and then who will clean? [...]. It's something that requires a lot of collaboration from everyone.'* MR02\_3

The poor care of the infrastructure by users was also mentioned by local vendors. According to one of them, the motivation of the city council to close the toilets was due to the lack of care, such as episodes of drug use. Another vendor added other unpleasant situations in the toilet he was responsible for, such as depredation and theft of toilet paper, trash cans, and soap.

Regarding the maintenance, the two vendors understood that they could be responsible, since the toilet operation is their interest. In the case of the vendor who was responsible for one of the toilets, he revealed that the city hall provided maintenance after infrastructure depredation and that there was a direct contact between him and the person responsible for maintenance. However, he emphasised that cleaning, conservation, and purchasing the toilet paper were his responsibility. As to the cleaning of the toilet, the vendor explained that he cleaned frequently, but the users' collaboration is crucial.

However, only four spots at the PLS are managed by the street vendors. At museums and parks along with the PLS, the toilets were managed by outsourced services. The government fails in its essential part, the management, when giving the the key to street vendors as it seemed to be a partial solution.

### 3.7. Affordability

The category affordability was related to payment for public toilet use. Generally, opinions were divergent among the interviewees, in which some of them considered the charge for toilet service in public spaces as absurd, while others believed that charging for toilet use is important for people to value the public infrastructure.

Interviewees who considered charging for the toilet unnecessary argued that service should be the city's responsibility, through taxes paid to the government. Moreover, the data analysed showed that the acceptance of the charge was associated with the feeling that this would improve maintenance and quality. Also, many people suggested that users would value the toilet if it was charged. Additionally, in respect to the fee users would be willing to pay to use a public toilet, many described it as a symbolic amount. In this way, everyone would be enabled to pay. In contrast, others said they would pay up to 5 Brazilian reais (approximately 0.80 euros) to use a public toilet. According to a user, *the issue is not the price, it is the quality of the service you offer (WR02\_2)*.

According to the street vendor responsible for the toilet maintenance, the fee charged was important for its cleanness. However, he understood when some people complained about being charged for using the toilet. Moreover, he realised that it was not worth arguing since he could lose a potential client.

## 4. DISCUSSION

Based on the results found from primary and secondary databases, there are key factors to be considered when planning public toilet services. The first one is the provision of toilets. In this context, it was clear that the element of availability is not met in the PLS, either by the number of toilets provided or by the distance from each other, resulting in recurrence of public urination or interruption of the walk by passers-by. Public urination was also observed by other researchers who sought to understand the consequences of public toilet insufficiency (Greed 2006; Stanwell-Smith 2010).

For a touristic point such as the PLS in our study, this is a negative issue that can influence the time people spend in the site or even whether they go there or not, impacting trade and tourism. Among the interviewees, the tourists only knew about the mobile chemical toilets and were not aware of the constructed ones, due to their passage there only on weekends. Anyhow, not even all the city residents were aware of the constructed toilets at the PLS and they related the lack of toilets with the public authorities' neglect, especially considering it is a UNESCO Heritage site. Although there are some few options as alternative private toilets in the surroundings (as in restaurants, amusement parks, and clubs), public toilets cannot be disregarded as a need. It should be emphasised that it is the responsibility of the government to attend to all users of public toilets (Greed 2006).

The lack of toilets in a public place was also reported in a study carried out in Rua Uruguaiana, an important trade centre in the city of Rio de Janeiro (Moreira 2008). The author showed how the lack of toilets was the main difficulty expressed by street workers and was also the infrastructure that people felt was most lacking. A recent study also showed the relationship between the lack of toilets for street workers and the development of urinary tract diseases, confirming it as one of the main causes of the problem, especially for women (Meher & Ghatole 2020).

Regarding the accessibility of existing toilets, it should be taken into account that chemical toilets were not considered as the best solution for the location. Despite being implemented as a temporary solution, they have been there for over a year. The chemical toilet solution, despite being better than no equipment at all, was described as an embarrassing solution, especially for the elderly, children, and wheelchair users, since the solution is dimensioned for the adult public without adaptation. Physical accessibility issues were limited for the elderly and children, and people with physical or visual disabilities were not observed or interviewed in the field. Women also had more difficulty than men in using the chemical toilets because, generally, they were carrying bags or other objects, while the modules did not have adequate infrastructure for this, as also reported previously (Afacan & Gurel 2015). In this study conducted in Turkey, results showed a significant difference in the response of men and women. In our research, it was observed how a particular woman placed her belongings on the floor outside and went into the chemical toilet, trusting that no one would pick up her objects. This situation confirmed one of the main issues mentioned in the literature regarding urban planning, i.e. infrastructure privileges men when not considering the biological difference between sexes (Flanagan 2014).

Regarding physical toilets, it was observed that during PLS peak hours most of them were still closed, reducing the options for users. In that case, people frequently had to search for alternative solutions in the surroundings, such as public urination, restaurants, and clubs.

The issue of hygiene and the fear of contamination were persistent and even determined a trade-off between the use and non-use of the equipment. The lack of cleanliness and security were also reasons shown in previous research (Delabrida 2010; Siu & Wong 2013; Bellanthudawa *et al.* 2018; Navarro *et al.* 2015; Wu *et al.* 2019). The issue of sanitising and cleaning public toilets has already been addressed as essential by other authors concerning the toilet use (Afacan & Gurel 2015; Navarro *et al.* 2015; Camenga *et al.* 2019; Wu *et al.* 2019). However, these authors missed out on discussing in-depth the motivation for people using or not the toilets or for being dissatisfied with the urban equipment. Our research showed how lack of cleanliness was the most reported reason.

The lack of public toilets raised difficulties, such as holding back the urge to urinate and the health consequences. This was an issue particularly for the elderly population, who are more willing to go to the toilet for health-related issues, such as the intake of blood pressure medication. In the literature, a work showed how toilets could be an incentive for older adults to spend less time sitting (Barnett *et al.* 2015). Moreover, the lack of toilets discourages people from using sustainable transport, such as walking, cycling, or using public transport (Greed 2004).

The issue of gender was observed, but not thoroughly investigated. Some constraints were noticed and some interviewees commented on the need for more adequate toilets, as it is disadvantageous for women to sit down to urinate and the chemical toilet solution is not favourable. This perception has already been stated in previous literature. Woman's need to use a toilet is more frequent, particularly due to menstruation, pregnancy, childcare, and breastfeeding purposes (Camenga *et al.* 2019). In addition, previous research has also reported that the fear of sitting and alternatively using voiding postures in public toilets can cause health problems in women, such as lower urinary tract symptoms (Yang *et al.* 2010; Xu *et al.* 2016; Meher & Ghatole 2020).

In the context of charging for toilet use, different responses were observed. For instance, the users who live in the surrounding area (higher socio-economic status) commented that they would pay up to R\$500 (~US\$1) to use a toilet, as what matters is the quality of the service. In this case, it was noticed that the perspective of this audience was focused only on their user profile and did not consider people living on the streets and informal workers. Other users pointed out that paying to use a public toilet would be absurd given the amount of taxes that are paid to the city every year. Still, some people were in favour of paying for the service, so that people would value the public infrastructure. Little discussion was found in the literature regarding the affordability of public toilets. The authors have previously stated that charging for the use of public toilets reduced access, since not everyone can pay for this service (Stanwell-Smith 2010).

The street vendors and homeless people were the most vulnerable public in a context of lack of toilets, as they stayed longer in the PLS. Passers-by, mostly local residents, showed dissatisfaction with the current solution. However, the latter users had more alternatives due to better socio-economic conditions to access restaurants, clubs, and amusement parks. Some tourists interviewed showed satisfaction with the chemical toilets available, while others, in contrast, do not believe chemical toilets are the best solution.

According to this study, the main issues to be resolved are related to the provision of public toilets, which is the duty of the public authorities, as mentioned frequently by the interviewees' speech. For that, participation and social control are essential and should be carried out through public hearings and the ombudsman, among other means of political participation. To solve the problems raised from the public user's perspective, it is important for the municipality to better hear and understand the public. However, the investigation carried out also showed the importance of making the population itself aware of its role in the use of the public good. In this sense, it is considered that behaviour change techniques can be important tools for the population to take ownership of what is theirs and to take care of urban equipment for collective use. In this manner, after full comprehension of the public and the problem, the government may evaluate possible interventions and implementation options.

Considering the second database used, i.e. the GLG comments, it was proved to be an important tool for public management to assess the opinion of the public who frequent the place. This is valid particularly when it is not possible to carry out an in-depth field search. Similarly, a previous study at the PLS was developed using Tripadvisor, another tourism platform in which the location can be assessed, to analyse urban mobility in the location and its tourism promotion (Cruz *et al.* 2017). In addition, the authors shed light on the importance of these voluntary contributions for an initial diagnosis of the local situation, in view of taking measures and decisions on urban planning (Cruz *et al.* 2017). More and more, tourism has been allied with 'mediatisation' and the tourist, who was previously passive, now has an active voice, affecting tourist practices. For instance, tourists are responsible for commenting on the places they visit on digital platforms, often overlapping the voice of institutions (hotels, e.g.), since their experiences become a way of legitimising tourist activity (Aldridge 2016). Therefore,

the incorporation of these new communication flows in the tourism sector must be taken into account in decision-making in the context of urban planning.

Therefore, despite the existence of legislation related to public toilets in Brazil, there is no guarantee of these services provision, making it difficult for the population to request their rights on sanitation in public places. Most of the time, these services are not included in a systematised policy, leaving it up to the municipal government to take actions related to the services without the obligation to do so.

## 5. CONCLUSION

The aim of this research was to understand the perspective of public toilet users on the PLS, a public touristic place (Belo Horizonte, Brazil). For that, observations and interviews were carried out with people on-site and local street vendors and also analyses of comments posted at Google Maps. The results obtained showed how users used the toilet depending on its provision, accessibility, and hygiene aspect. In fact, people often had to leave, affecting local tourism and trade. In addition, chemical toilets were associated with inadequate solutions due to their temporary installation and poor conservation. In addition to the tourist target, local city planning must consider their workers and homeless people who were also toilet users. Consideration should also be given to the profile of the public outlined, particularly the time they spend on the site, rush hours, gender, and age. The study showed the importance of the population becoming aware of their role when using the public toilet for minimising misuse. In terms of behaviour, this problem could lead to vandalism, depredation, waste of material, and incorrect use of the equipment. Therefore, public authorities must also consider using behaviour change techniques to approach the new problems, and they must seek to better comprehend users' opinions. In the case of public toilets in the city of Belo Horizonte, there are no laws, guidelines, or regulations covering the service. Therefore, it seems urgent to systematise the public toilet policy in order to support measures for local public toilets. More research should be carried out on the perspective of public management and the main challenges in the provision of the service. Finally, users' perspectives and opinions highlighted in this study showed important key factors for not using a public toilet, especially regarding access by the elderly and children, demands, and needs. The main issues were related to provision, hygiene, and accessibility. The study showed how hearing and understanding users' demands may improve urban planning when considering sanitation in public places. Therefore, this study contributes to city planning, as it highlighted people's voices surrounding the public toilet and reflected the expectations of the users regarding this urban equipment, guiding the public authorities on their decision-making.

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## DATA AVAILABILITY STATEMENT

All relevant data are included in the paper or its Supplementary Information.

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