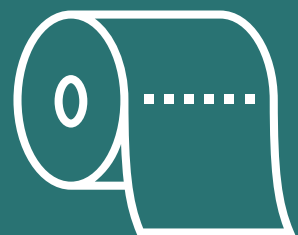


(REST)ROOM FOR IMPROVEMENT

*An analysis on the social inclusiveness of public
restrooms in the Netherlands*

Justine Donia Nota
MSc Metropolitan Analysis, Design & Engineering thesis
TU Delft and Wageningen University & Research
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Master's Thesis

Analysing the Social Inclusiveness of Dutch Public Restrooms

Justine Beaudile Donia Nota

MSc. Metropolitan Analysis Design & Engineering

justine.donianota@wur.nl

Student No. 970604190010

July 7th, 2021

Supervisors:

Karin Peters

Wageningen University & Research

Department of Environmental Sciences

Marian Loth

Delft University of Technology

Faculty of Industrial Design Engineering

External Supervisor:

Heleen de Fooij

Witteveen+Bos



Abstract

Public sanitation is an important aspect of daily life. The awareness around the shortage of proper public sanitation is growing, however only focussing on more general groups of the population. This thesis uses this momentum to contribute to the social inclusiveness of public restrooms. By means of a user survey, this study demonstrates a correlation between negative experiences of public restroom use and non-cisgender people, older adults and physically less able people in the Netherlands. The results show the importance to focus on the number (one every 500 metres) and hygiene of public restrooms, the wayfinding in and towards facilities, having plenty of space, proper restroom bound facilities and lastly, an open feel to improve the feeling of safety. Especially in parks and recreational areas more sanitation facilities are necessary. A combination of male/female and gender neutral stalls turned out to be preferred. The results of the study are translated into design guidelines to help city planners and designers of public restrooms develop more socially inclusive sanitation facilities. The findings of this study should be used to design socially inclusive public restroom. However, design is trivial when there are not enough public restrooms open to everyone. Future research should focus on the feasibility and implementation of more and more socially inclusive sanitation facilities.

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Table of content

1. Introduction	8
1.1 The problem statement	9
1.2 Objective and research questions	10
1.3 Thesis structure	10
2. Conceptual framework	11
2.1 Public sanitation	11
2.2 Social inclusion in public space	12
2.2.1 <i>Marginal groups</i>	12
2.3 Aspects of public space	15
2.3.1 <i>Environmental preference for urban space</i>	15
2.4 Integrating public sanitation and social inclusion	18
3. Methods	19
3.1 Survey	19
3.1.1 <i>Sampling</i>	19
3.1.2 <i>Setup</i>	20
3.2 Data analysis	21
3.3 Design guidelines	22
3.4 Conclusion of methodology	22
4. Results & Analysis	23
4.1 General analysis on public restroom use	23
4.2 Analysis per marginal group	26
4.2.1 <i>Gender</i>	26
4.2.2 <i>Sexuality</i>	31
4.2.3 <i>Age</i>	35
4.2.4 <i>Ability</i>	40
5. Discussion & Conclusion	44
5.1 Discussion	44
5.1.1 <i>Room for improvement</i>	44
5.1.2 <i>A negative view from marginal groups</i>	44
5.1.3 <i>Inclusive design</i>	45
5.1.4 <i>COVID-19 and the urban context</i>	46
5.2 Conclusion	46
5.2.1 <i>Design guidelines</i>	47
5.3 Recommendations	50
6. References	51
7. Appendices	54

1. Introduction

In the sixties, the feminist organisation Dolle Mina's advocated for women's rights, including public "pee right" (Historiek.net, n.d.). In the city of Amsterdam there were plenty of restroom facilities for men, like the famous plaskrul (Kleijne, 2008), while women could only make use of the restrooms in malls and restaurants (Historiek.net, n.d.; Van Snippenburg, 1988). Only in 1985, women were able to use a public restroom with the arrival of the sanisette: a self-cleaning bathroom with a sink and a mirror. However, operating costs were considered too high, so the municipality got rid of these restrooms years later. A few other initiatives came up over the years, but operating costs always turned out to outweigh the benefits (Van Leuken & De Blok, 2020b).

Over the past years, the attention towards the number of public restrooms (for women) in the Netherlands is being prioritized. The Maag Lever Darm Stichting (MLDS; Digestive Disease Foundation) and Continentie Stichting Nederland (CSN; Continence Foundation Netherlands) state that cities should have an openly accessible restroom for every person, every 500 meters in shopping areas and recreational or pedestrian areas. This proposal would allow more people to carefree enjoy going out, as currently one out of ten Dutch sometimes fear going out as a result of a lack of restrooms (MLDS, 2020b).

Rekenkamer Metropool Amsterdam (RMA), an independent research organisation, was asked by the municipality to look into the number and accessibility of public restrooms in the city

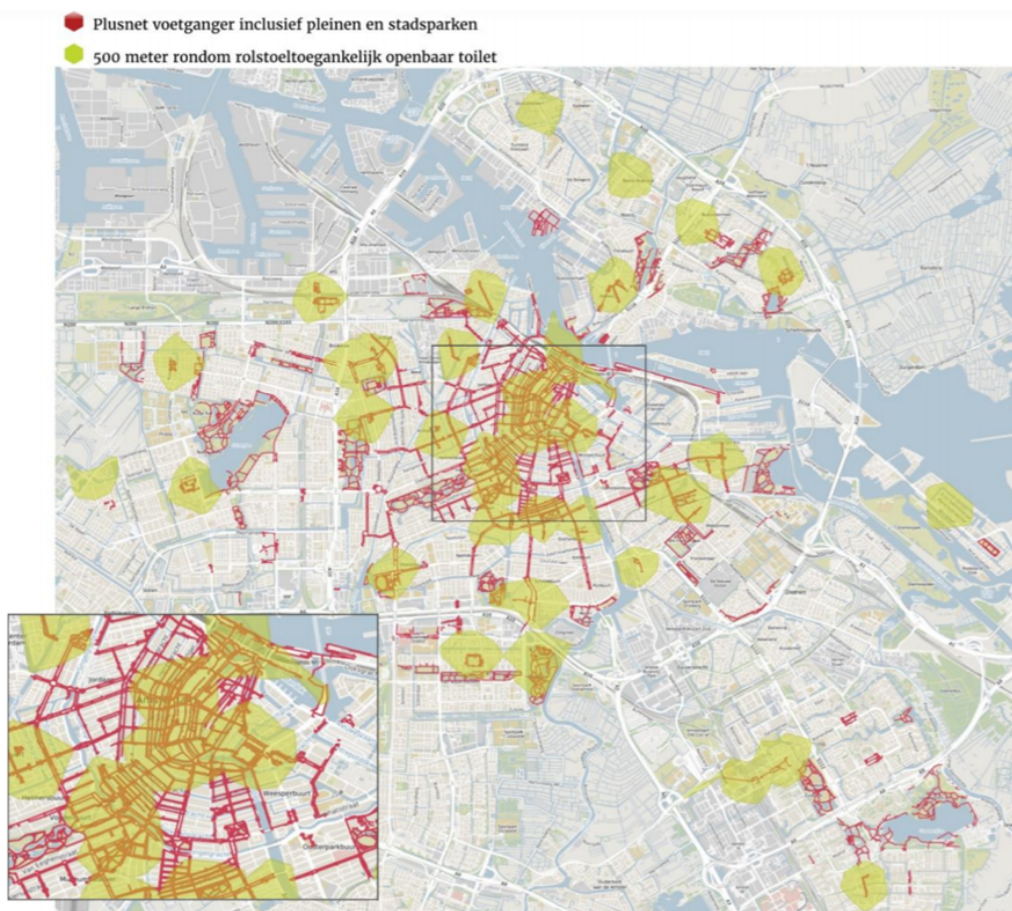


Fig. 1: Pedestrian network (red) and coverage of wheelchair accessible public restrooms (green) in Amsterdam, the Netherlands (Van Leuken and De Blok, 2020b).

(focussing on women and wheelchair dependents) in 2019 and compare this to the current data collected by the municipality herself. RMA found the city of Amsterdam does not comply to the '500 meter norm' initiated by the MLDS and CSN (Van Leuken & De Blok, 2020b). Only 41% of the area that is part of the pedestrian network is within 500 metres of a public restrooms (also accessible to people in a wheelchair) (Fig. 1). In the evening and at night the number of restrooms that are still open drops significantly (Van Leuken & De Blok, 2020b). Three important types of locations where the 500-meter norm was often not met are: the historic centre, parks and shopping areas. These are the key areas mentioned to be of importance to facilitate 'enough' restrooms (MLDS, 2020b).

The municipality of Amsterdam mentions a variety of reasons why the instalment of more public restrooms has not been higher on the agenda (Gemeente Amsterdam, 2018). The main reason, as mentioned earlier, is financial cost. Ideally public restrooms require 24-hour surveillance and regular cleaning, resulting in extra labour costs. Currently, there is no budget allocated towards implementation or management of extra public restroom facilities, meaning there are no funds to either built or manage new public restroom facilities.

A second reason preventing the instalment of more public restrooms is the scarcity of space in busy areas. Public restrooms are needed in areas that are part of the pedestrian network (Fig. 1), which are generally busy meaning that there is less space available for facilities, like public restrooms. Permanent facilities with male/female stalls and gender-neutral facilities take up more public space than the often-used portable toilets. Therefore, the preference goes out to other options when possible, like opening access to restrooms in other (municipal) facilities already open and supervised, like restrooms at the police station or the public library (Gemeente Amsterdam, 2018). However, there is no specific policy or legislation on facilities permitting access to their restrooms, meaning the municipality has to actively search for these options.

A third issue is the difficulty of finding staff for public restrooms, as vandalism towards public restrooms and their staff is an occurring incident causing the city council to be reluctant in allocating budget towards the matter (Oudshoorn, personal communication, September 30, 2020).

1.1 The problem statement

The literature extensively highlights the shortage of public restrooms in Amsterdam (Van Leuken & De Blok, 2020b), also reflected in the municipal debates (Gemeente Amsterdam, 2018, 2019). This growing attention towards and awareness of the importance of the topic can be seen as an opportunity to continue the work of the Dolle Mina's. There are still groups underrepresented by current sanitation facilities in the Netherlands, highlighting and putting emphasis towards an important aspect of public restrooms (Sanders, 2017): its social inclusiveness. The social inclusiveness of public restrooms describes the level to which they are accessible to different social groups. The lack and bad quality of sanitation facilities in African countries have shown to have a larger and more significant impact on women than on men (Wendland & Dankelman, 2015). However, in the past groups that are responsible for the design and construction of sanitation programmes have often not been diverse, resulting in gender-neutrality of facilities (Wendland & Dankelman, 2015). Meaning that in most cases not enough attention is paid to age or gender specific needs, including the needs of people from the LGBTQ+ community (Sanders, 2017; Wendland & Dankelman, 2015). The increased national awareness and prioritization of the shortage of public restrooms (Gemeente Amsterdam, 2019; MLDS, 2020b; Van Leuken & De Blok, 2020a) could be seen as an opportunity to create more social inclusive public sanitation facilities. Using the momentum, practitioners and designers of public space and sanitation facilities can be made aware of the experience of users with public restrooms and the influence of design on these experiences.

1.2 Objective and research questions

The problem statement above sheds light on the shortage of public restrooms and the lack of (gender) inclusiveness in the design of sanitation facilities. The objective of this research is therefore to determine the difference in user experiences of marginal groups with public restrooms and translate this into guidelines that make public restrooms more inclusive. The objective can be rephrased into a main research question:

How can current and future public restrooms in the city of Amsterdam be made socially inclusive to all?

To answer this main question, three sub questions have been defined:

1. *How are the current public restrooms in the Netherlands perceived?*
2. *What makes public restrooms inclusive for women, the LGBTQ+ community, physically challenged and older adults?*
3. *How does the physical environment contribute to the social inclusiveness of public sanitation facilities?*

1.3 Thesis structure

This thesis is organised by first setting out the conceptual foundation of this research for its central themes: public sanitation and social inclusion. This section is arranged by introducing the concepts of the two themes and their relation on each other in public space. The following Chapter 3 explains the methodological approach based on the conceptual framework used to answer the three research questions. Chapter 4 shows the results of the survey data analysis while also comparing the results with findings from the literature. This chapter is followed by the discussion and conclusion in which the research question is answered and an interpretation and implication of the findings are given. The conclusion gives a short summary, presents the design guidelines and gives recommendations for future research.

2. Conceptual framework

This thesis looks at the connection between three concepts: public sanitation, social inclusion and public space. The first part of this chapter examines these three components individually based on previous studies, before focussing on the relation between them and the influence they have on each other in the second part. This interrelation is explained by different social groups can have various needs and experiences in public space, public restrooms in specific. This conceptual framework sets out what those marginal groups are and what aspects must be taken into account when researching the social inclusiveness of public restrooms.

2.1 Public sanitation

Sanitation is a crucial aspect of daily life and consumption. Despite this, there is a taboo on toilets and sanitary practices, with a notion of shame and feeling of dirt reaching across countries and cultures (Van Vliet et al., 2011). However, sanitation can be seen as an important factor contributing to the Millennium Development Goals (MDGs) fighting global poverty (United Nations, 2015) and plays a major role in domestic water usage and waste water production (Van Vliet et al., 2011).

Most scholars have stuck to the following definition of sanitation: “Sanitation is the process of keeping places clean and hygienic, especially by providing a sewage system and a clean water supply” (Collins English Dictionary, n.d.). However, some say this definition does not embody the social aspects of sanitation, like governance, access to innovation of sanitation systems and how stakeholders are (and can be) involved with the sanitation chain (Van Vliet et al., 2011). These things are important to keep in mind when looking at sanitation from not only an engineering point of view. Sanitation is namely a wide-ranging interdisciplinary process influencing the lives of all people and animals, due to its socio-cultural and technological nature. This diverse characteristic of sanitation causes van Vliet et al. (2011) to plea for end-user participation in attempts to revise or build local sanitation systems. This means that it is advised to involve local users in designing, building and upgrading sanitation facilities.

Sanitation plays a large role in daily life, but barriers stand in the way of people having equal access to sanitation facilities (Cross & Coombes, 2013). What specific barriers those are, are case dependent. However, three types of barriers can be determined: attitudinal, environmental and physical (Cross & Coombes, 2013). Attitudinal barriers relate to people’s attitude towards sanitation facilities and are usually shaped by racism, taboos and discrimination. Environmental barriers are the physical aspects that make it more difficult and sometimes even prevent people from finding and accessing sanitation infrastructure; for example, steps leading up to a stall are difficult to use for older adults and people with disabilities, or restroom facilities unable to find due to signs being in a different language. Institutional barriers are policies, procedures or acts of omission enforced by institutions like governments or municipalities, that systematically disadvantage certain groups. Institutional barriers in sanitation can for example be a lack of policies, legislation or governance, resulting in shortage of (qualitative) public restrooms. Minorities often face multiple types of barriers resulting in social exclusion (Cross & Coombes, 2013).

There have been previous studies exploring the inclusiveness and accessibility of public restrooms in the Netherlands. Loth (2021) studied the use of and opinions on public restrooms on Dutch trains. She concluded that train toilets fulfil an important function of public restrooms throughout the train journey (Loth, 2021, p. 11). Her study revealed the specific elements and

features deemed important by train travelers regarding (unisex) restrooms on trains. A survey amongst members of the Dutch Railway customer board showed that three quarters of the respondents (75%) use the train restroom for toileting. A fifth (19%) for personal care, 2% indicated using the train restroom for the care of children and 2% for other activities. Only 1 respondent used the train restroom for relaxation (Loth, 2021, p. 78, fig. 3.16). Respondents from her survey had the most issues with hygiene of train restrooms. To improve train toilets and their hygiene, Loth (2021) proposes a hygiene model of sanitation existing of three elements: physical distance, mental distance and social distance (p. 62). Physical distance is the distance between the human body and the facilities used in a public restroom. Reducing the physical distance correlates with an improvement of hygiene, due to a reduction of for example urine spillage. Urine spillage occurs as a result of a hovering or standing urination position during urinating in a sit-toilet. Physical distance is reduced by encouraging using a sit-toilet in seated position or a urinal while standing. Mental distance is about the psychological distance between the human body and what is defined as human 'dirt'. Examples of human 'dirt' are faeces, urine or toilet paper that are misplaced. Hygiene is improved by reducing the mental distance, i.e., public toilets being a metaphor for dirt. Social distance is defined as the distance between people's bodies. Between unknown users, there is a wide social distance. With public restrooms the social distance is maximal in comparison to private restrooms, due to the anonymity of users. However, the large social distance is not beneficial for the perception of hygiene, because users of the facility and others in the environment have no perception of each other. To create a certain level of perception of mutual presence, it is hypothesised that the increased perception of users of the facility and others will encourage the user to remove a train toilet's dirt for the next user (Loth, 2021). Loth (2021) concludes that the perception of hygiene of public train restrooms can be improved by reducing the physical distance to dirt, the mental distance to dirt and the social distance between train travellers. However, there is a limit to the degree of social distance; we desire a minimum degree of anonymity (Loth, 2021, p. 257), as undesired intimacy can be an invasion of privacy, which brings up a feeling of disgust (Van der Geest, 1998, 1999, 2007).

2.2 Social inclusion in public space

Social inclusion is one of the main drivers of this study and has many different definitions (Allman, 2013). As stated by Collins (2003), and further prolonged in this research, social inclusion is an aim or principle of justice that is often mistaken for equality. The fundamental difference between these two is the objective; while equality searches for the same outcome for all citizens, social inclusion concentrates its attention towards the relative disadvantage of certain groups in society. Social inclusion focusses on providing outcomes that improve the wellbeing of these disadvantaged groups, both in a physical way as nonphysical way.

2.2.1 *Marginal groups*

The literature describes a set of characteristics by which groups can be disadvantaged in the context of public sanitation: gender, age, ability, culture (religion) and family arrangement (with children or infants) (Sanders, 2017). Loth (2021) describes that restroom usage is affected by the main human characteristics of gender, age and physical ability (p. 11). These characteristics from Sanders (2017) and Loth (2021) appear to have an influence on how people experience public restroom use. In this study these characteristics will be used to form reference groups for measuring social inclusion of public restrooms. The following sub chapter will look at the different requirements of social inclusion found in literature and their relation to public sanitation for gender, age, ability and culture (religion).

Gender and sexuality

Gender is one of the most spoken of factors determining social inclusion of sanitation facilities, as can be seen by the work of the Dolle Mina's mentioned in the introduction. However, not only cisgender users (= a person whose gender identity corresponds with the sex the person had or was identified as having at birth (Merriam-Webster, n.d.)) struggle with public sanitation.

Many transgender and gender non-conforming people have had negative experiences using public sanitation facilities. Sociologist Sheila Cavanagh (2010) describes the thoughts and experiences with public restrooms of 100 people from the LGBTQ+ community. These experiences include verbal harassment, being denied access and physical assault while using or trying to access gendered public restrooms (male/female restrooms) (Cavanagh, 2010). Herman (2013) shows the impact of negative user experiences on the lives of trans and gender non-conforming people, influencing employment, education, health and participation in public life. Her paper discusses the findings from a survey on experiences in gendered public restrooms in the U.S. and addresses the importance of innovative regulatory language and implementation efforts in overcoming these negative impacts. The problems faced in public gendered space by transgender and gender non-conforming individuals is intertwined with discrimination based on race and ethnicity, class and gender (Herman, 2013). People of colour, people from lower income groups or trans men have for example experienced problems regarding gendered restrooms at a much higher rate, than Caucasians, trans women or people of a higher income class. Herman (2013) states the differences in experiences suggest that discrimination based on gender, race and ethnicity, and class are intertwined with and may exacerbate experiences of prejudice in gender-segregated spaces, including public restrooms.

Literature shows a difference in experiences of public sanitation use between genders, for some resulting in social exclusion. Design of public restrooms with the intend of increasing the social inclusiveness of facilities should therefore include a wider variety of genders than merely male/female.

Gender segregation

Traditional public restroom facilities are often characterized by male/female stalls, also described as gender-segregated facilities. Herman (2013) highlights the importance of considering whether gender segregation is necessary to organize public space, also on the level of public policy. Her study proposes the adoption of legal protections for transgender and gender non-conforming people, while on the other hand create more gender-neutral public restrooms. Sanders (2017) also argues a gender-neutral restroom to be more inclusive than a segregated one. This is being supported by Bovens and Marcoci (2020), who state that gender-neutral restrooms reduce average waiting times and the number of facilities, thereby cutting costs. They further propose designs and behavioural strategies that help overcome resistance against gender-neutral restrooms (Bovens & Marcoci, 2020). An example of these strategies is nudging, monitoring of safety issues and stimulating men to urinate sitting down.

Although many studies highlight the benefits of gender-neutral restrooms (Herman, 2013; Sanders, 2017; Bovens & Marcoci, 2020), a study by Haas institute of UC Berkeley discusses the challenges of gender-neutral restrooms (Peterson, 2018). Firstly, gender-neutral restrooms are often faced with opposition as some people, mainly women, feel unsafe and vulnerable using the same public restroom as the opposite sex. Other than that, women-only facilities are often deemed necessary for both trans woman as cisgender woman, for validation of their needs and gender. This would mean that replacing the current gender-segregated model with a more gender-neutral one would be impractical and dissatisfying to a group of individuals. Peterson (2018) states that to reach social inclusion it is important to recognize the fluid lines of gender identity. There has to be an aim for practical implementations that enable bathroom users a variety of options, meaning there ideally would be different kind of restroom facilities

available (Peterson, 2018). The contradicting results from previous studies indicate a certain inconclusiveness whether gender-segregated restrooms increase social inclusiveness.

Age and ability

For understanding social inclusion of age and ability, the subgroups are combined. The requirements for both groups are comparable and often studied in the same research (Molenbroek et al., 2011; Sanders, 2017; Loth, 2021, p. 84). Naturally, older people and people with disabilities have different needs than typical able-bodied people. Especially with the demographic shift towards a higher life expectancy, design of public space should include the participation of older adults and disabled people (Molenbroek et al., 2011). Physical disabilities like bad eyesight or lower height due to wheelchair use, can lead to problems with wayfinding of public restrooms as most signs are designed for an eye height of 1.70 meter (Sanders, 2017).

Research has shown that most problems for older and disabled people happen when entering the restroom and during the preparation for toileting (Dayé, 2011), putting emphasis on design of whole facilities rather than merely stalls. Dayé (2011) found that there is a need for solutions in the toileting area coming from disabled and older people, so that their mobility is not further limited by sanitary practices. Respondents of their survey implied often being afraid something can happen during their bathroom visit, resulting in financial costs from physical accidents and emotional costs (Dayé, 2011). Technological challenges most often faced by older adults are lack of storage for belongings, grips, room size and door issues (Dayé, 2011, p. 75). Furthermore, over half of the respondents noted they to some extent avoided going out longer to not have to use a toilet. This is also confirmed by the MLDS, saying 1 out of 10 Dutch stay home due to a fear of not having a toilet within reach when needed (MLDS, 2020a).

Dayé (2011), Molenbroek et al. (2011) and Sanders (2017) show that the lack of proper sanitation influences the lives of people with disabilities and older adults, as it can exclude them from participating in society. They put emphasis on the fact that for this group it is important that not only the toilet itself is taken into consideration, but also the whole restroom facility and the wayfinding towards it. A restroom facility entails a larger concept of not only the toilet itself but also the wayfinding towards it.

Cultural background

Culture also plays a role in the response to social inclusion; among scholars there is a general agreement that people from collectivistic cultures (Turkish, Chinese, Indian e.g.) respond differently to social exclusion and inclusion than those from a more individualistic culture (German, North-American, Dutch e.g.) (Pfundmair, Aydin, et al., 2015). Collectivistic societies prioritize group solidarity over individual goals, in comparison to individualistic cultures in which personal independence is the focus. Someone's country of origin can thus have an influence on whether a situation is experienced as socially exclusive, and to what extent. Studies however differ in their assumption on the cause of different reactions to social exclusion by different cultures.

Triandis and Gelfand (2012) state that collectivistic cultures view deliberate social exclusion as a major calamity. This is a result of the interdependent nature found in these cultures and the importance of the group as a whole. Other research suggests that with collectivistic cultures this is only the case if the target of exclusion is the own ingroup, instead of an individual (Pfundmair, Aydin, et al., 2015). This means that for collectivistic cultures it matters what the target of social exclusion is: If the target of exclusion is the individual, it might hurt less than when it is the social group of which the individual is part. Individualists are more affected by social exclusion that forms a threat to the individual rather than a threat affecting their social identity, in comparison to collectivists (Pfundmair, Aydin, et al., 2015).

People's response to social exclusion can result in antisocial behaviour, negative mood and low self-esteem (Gardner et al., 2014). People from individualistic orientated cultures tend to have a stronger response to exclusion than people from collective cultures and thereby be more prone to feel socially excluded (Pfundmair, Aydin, et al., 2015; Pfundmair, Graupmann, et al., 2015). This response can express itself in both psychological ways, like stress, as physiological ways, like an increased heartrate (Pfundmair, Aydin, et al., 2015, p. 21).

2.3 Aspects of public space

2.3.1 *Environmental preference for urban space*

The previous section has put emphasis on what social inclusion could mean to different people in relation to sanitation, but how can this be represented in public space? The physical environment of public space has many characteristics that influence the extent to which people feel socially included in different ways. For this study, a conceptual framework is needed to measure preference for aspects of an environment, in this case aspects of a public restroom. By measuring the preference for certain aspects and analysing this per reference group, the parts of sanitation facilities that are required for reference groups to be socially inclusive can be determined.

Preference is a hard to measure concept as it is subjective and can entail different factors to different people (Pacione, 2003). Many factors like experience and expectations affect one's perception. Although preference is subjective, Ho and Au (2020) have developed a psychometric scale that measures the environmental perception of public space using eight underlying core attributes. Based on a set of items from previous studies on environmental perception, their analyses resulted in a set of factors representing the core attributes underlying environmental perception. Their study showed that these attributes predict different variables of public space perception.

The items in the scale from Ho and Au (2020) originate from overlapping and similar items from previous research in such a way that they represent all items found in literature. The items are measurements of constructs, that are grouped into factors (see table 1: Model for environmental perception). The final model consists of eight different factors: two in the affective domain (comfort and activity) and six in the cognitive domain (legibility, enclosure, complexity, crime potential, wildlife, and lighting). The affective domain represents the factors that are interpreted, like an atmosphere or character. The cognitive domain describes the physical of an environment, like height or colour (Ho & Au, 2020). The affective domain is measured by a binary scale, while the cognitive domain is measured on a Likert-scale.

Comfort describes the degree to which an environment is pleasant, relaxing and feels safe. Activity is the level of activity and excitement an environment brings up and can be stimulating. Legibility explains how easy it is to navigate within a physical environment. The factor complexity describes the amount of mystery and complexity going on at a physical space. Studies have proven that high levels of mystery are a strong predictor for environmental preference (Kaplan et al., 1989). Enclosure can be explained as the levels of crowdedness and how cramped or stuffed a room feels. The factor crime potential is high when there is a high situational concern due to low feeling of safety and a high risk of crime. Wildlife contains the natural elements present in an environment. The final construct is lighting, describing the brightness and quality of lighting in an environment (Ho & Au, 2020).

One of the constructs from the scale ('Safety') has also been part of the previous sections of public sanitation and social inclusion. Due to the prominent role of safety in both sanitation and social inclusion as in public space, it will require some more in-depth analysis given in the section below.

Domain	Factor	Construct	Item	
Affective	Comfort	Pleasantness	Upsetting – Calming	
		Relaxation	Distressing – Relaxing	
		Safeness	Uncomfortable – Comfortable	
			Fearful – Safe	
	Activity	Activity	Inactive – Active	
			Sleepy – Arousing	
		Excitement	Dull – Lively	
			Unstimulating – Stimulating	
Cognitive	Legibility	Legibility	In this place it would be very easy to find out my way back to any given point.	
			In this place it would be very easy to find my way around.	
		Composition	In this place it would be very easy to figure out where I am at any given moment. It is very easy to structure and organize this place as a picture.	
	Complexity	Mystery	There is a lot to look at in this place. To a large extent this place promises more to be seen if I could walk deeper in it.	
		Complexity	This place contains many elements of different kinds. A great deal is going on in this place.	
			Enclosure	This place is very stuffy. This place is very cramped.
	Enclosure	Perceived crowding	In this place I strongly feel being “inside looking out”.	
			This place gives me a strong feeling of being enclosed in a hiding place.	
	Crime potential	Safety	There are many areas in this place where a potential criminal can hide. This place is prone to crimes.	
			Situational concern	There is a large probability that an ill-intentioned person would hide in this place. There is possible danger from other people in this place.
		Wildlife	Naturalness	There are many trees, vegetations, and flowers in this place.
	Situational concern		In this place, there is some wildlife that can harm people, such as snakes, bees, and toxic plants. There are potentially harmful animals and plants in this place.	
	Lighting	Lighting	Lighting	The light in this place is very good.
			Brightness	This setting has very bright, clear lighting.
Uniform lighting			This place has uniform lighting.	

Table 1: Model for environmental perception: The affective and cognitive domain with respective factors, constructs and items (summary of the results from Ho and Au (2020)). The two domains are represented by factors, which can be divided into constructs. These constructs can be measured by the items on the right.

Safety as a returning aspect

Different articles explain the requirements for a 'safe' public environment. What organisms perceive as safe has naturally evolved from its effective functioning in an environment (Kaplan & Kaplan, 1989). Crawford and Appleton (1976) came up with the prospect refuge theory, stating humans feel most comfortable in environments that meet the basic human needs. Ellen and Frey (2019) state that the fulfilment of basic human needs (Maslow, 1943) is a general condition for the perception of safety. These environments that meet those human needs often include the need to hide (refuge), while being able to observe (prospect). As safety is a basic human need, the physical environment plays a significant role in a feeling of safety. Van Rijswijk et al. (2016) have looked into literature on the characteristics of the urban environment that increase perceived safety. Besides prospect and refuge, a low level of entrapment also increases the feeling of safety in an environment (Nasar & Jones, 1997). However, van Rijswijk et al. (2016) found that besides these factors influencing one's perception of safety, other characteristics also play a large role. Men are namely said to have a more favourable perception on safety than woman and, next to this biological characteristic, the individual characteristics anxiety, perceived power and attractiveness of being selected as a target by criminals play a role. Ellen and Frey (2019) argue that social factors have an impact on safety judgements and decisions. These social factors include other people's actions and believes, and how one relates to this. Social exclusion is one of those social factors, as it can stimulate negative behaviour and emotions, like aggression, and can influence a person's everyday judgement of, for example, safety of the environment (Richman & Leary, 2009). Non-cisgender people can be described as a minority group and various studies have shown that non-cisgender people face more discrimination, mental- and physical abuse in daily life (Herman, 2013), making them one of the target groups for improving social inclusion. Safety of public space, including public restrooms, can thus be seen as an important requirement for achieving social inclusion.

Predicting environmental preference

The core attributes (factors) can be used to predict and evaluate preferences about physical environments like public restrooms, based on the correlation between the perception and preference of an environment (Ho & Au, 2020). The factors can predict the restorativeness, perceived safety and visitability of an environment. Restorativeness is the extent to which a space is allowing its users to relax and take a break from daily stressors (Laumann et al., 2001). Perceived safety is the extent to which people perceive an environment as safe and secure. Visitability describes the extent to which people experience an environment as friendly for visit (Abdulkarim & Nasar, 2014).

Restorativeness	Perceived safety	Visitability
higher comfort	higher comfort	higher comfort
higher legibility	higher activity	higher activity
higher complexity	higher legibility	higher legibility
lower crime potential	lower enclosure	higher complexity
higher wildlife	higher complexity	lower crime potential
higher lighting	lower crime potential	higher wildlife
	higher lighting	higher lighting

Table 2: Outcome variables and their predictive items.

The three variables can be predicted by a set of factors and the degree in which these are measured, shown in table 2. The table shows that if for example a public restroom complies with all the factors that are noted below 'perceived safety' (= higher comfort, higher activity, higher

legibility, etc.), this environment is predicted to be perceived as safe.

The study by Ho and Au (2020) assumes that a preference for public space is a result of high restorativeness, high perceived safety and a high visitability, and can be predicted by a set of items derived from other studies (Abdulkarim & Nasar, 2014; Pals et al., 2014; Van Rijswijk & Haans, 2018). It is not retraceable how the variables are measured, meaning it is relative to the outcome values if a variable is considered 'high'.

2.4 Integrating public sanitation and social inclusion

The survey from Loth (2021, p.66-89) has provided the essential elements required to study the specific needs of restroom users and determine the important design features. Especially the different aspects of toileting that have to be included in sanitation research can be found in their survey. These insights can be used to analyse the current view on public restrooms in the Netherlands from different perspectives based on demographic information. In combination with the framework by Ho and Au (2020), predictions can be made on the preference and social inclusiveness of public sanitation facilities. Sanders (2017) has shown what groups and characteristics to include when designing public restrooms. The differences between these groups can be categorized using the three types of barriers by Cross and Coombes (2013): attitudinal, environmental and institutional barriers. The scale by Ho and Au (2020) can be used to translate social inclusiveness to the physical environment. The scale offers the ability to predict a preference for urban space and summarises the different elements used to evaluate urban space, collected from a vast number of studies. The scale provides the handles needed to convert the elements of social inclusion from the literature to the physical environment and help create the basis for a design concept.

3. Methods

Two methods were used to answer the research questions: a survey and a design study. The survey relates to user experiences of public sanitation in the Netherlands. The design study aims to translate the findings from the survey and literature into design guidelines. This chapter will describe and justify both methods.

3.1 Survey

The first method for data collection used for this research is a quantitative user survey through Google Forms. The online survey is all multiple aspects of the conceptual foundation underlying this research. Public toilets are used by a wide variety of people, each with an own set of preferences and barriers they face using public toilets. The main goal of the survey is to determine people's opinion on public toilets in the Netherlands and understand what this means for individuals of specific marginal groups. This will be done by focussing on three things following the conceptual framework: (i) determine what aspects of public restrooms make people experience barriers, (ii) pinpoint what elements users prefer for public sanitation and (iii) if there are differences between demographic groups and if so, what. This maps out the needs of the users of public restrooms in the Netherlands. Surveys are a preferred methodological approach when the intended research questions require the collection of standardised information from a larger group of people, which is the case in my study. I have chosen for a survey instead of interviews, to increase the quantity of input from different marginal groups. I believe this causes a more included image of the wishes and demands of marginal groups, than lesser but more detailed input from interviews. An online survey allows for complete anonymity which could be useful for attracting more respondents due to the taboo on the topic.

The target group of the survey includes all Dutch citizens, with a focus on minority groups specified by the literature from the conceptual framework: the LGBTQ+ community, people with disabilities, older adults and people from different backgrounds. Through different social media platforms, like Facebook and LinkedIn, and organisations such as support groups, marginal groups were targeted to gather survey respondents. This study will not include family arrangement in the data collection. This group namely focusses on merely the accessibility of public restrooms for people with children or infants, aiming at larger family stalls and changing beds. These facilities are often more applicable to large buildings like airports (Sanders, 2017).

The results of this survey are used to create a set of requirements needed to make generally excluded groups feel included in the design of public restrooms. The survey is in Dutch, to include as many Dutch public restroom users as possible.

3.1.1 Sampling

Selective sampling and convenience sampling was applied to this research. The target audience of the survey was the whole Dutch population with actively focussing on marginal groups and representatives. To be able to correctly represent the Dutch population, a total sample size of 385 respondents was needed with 10 trans respondents, 8 intersex or non-binary respondents and 62 homo- and bisexual respondents. To represent the Dutch population with a physical disability 100 respondents are needed that are physically less able, of which 83 should make use of an assistive device like a wheelchair. Within the scope of a master's thesis, it will be challenging to meet the criteria for all marginal groups, but this will hopefully be achieved by contacting e.g., wheelchair organisations, trans activists and handicap organisations.

3.1.2 Setup

The survey (Appendix A) is sectioned in five consecutive parts, each part relating to one or more theoretical concepts. I made the decision to have all questions except those on demographics marked as optional, to avoid respondents from prematurely exiting the survey. I received feedback from respondents saying they felt uncomfortable answering questions about gender and sexuality as they did not see the relation between those topics and my research. After this I added a short explanation on the reasoning behind the question asking for their sexuality.

Part 1: Demographics

The different characteristics necessary to include in the demographic are based on the research from Sanders (2017) and the findings of Cavanagh (2010) and Herman (2013). This resulted in five questions, asking participants about their age, gender, physical and mental ability, sexual preference and country of heritage. This set of question should determine if respondents characterise as one or more of the marginal groups set out in the conceptual framework.

Part 2: Use and current situation

The second part of the survey focussed on when, where and how often respondents use public restrooms. As this thesis research is done during the corona crisis, public restroom use could be affected in comparison to pre corona times. This survey section started off with asking about the use of public restrooms pre corona and current use (in uses per month) to establish if there is a change in usage of public restrooms, and if so, how it has changed. This question is followed by acquiring on which locations and on what part of the day the respondents make most often use of public restrooms. In the survey participants are asked if they worry about having access to proper restrooms being out of their home. Participants are asked to give a score from 1 to 10 on the current situation of public restrooms in the Netherlands.

Part 3: Public urinating

The previous part ends with the question if respondents ever publicly urinated. Only if they answered yes, they are redirected to this part of the survey. If respondents answered no, respondents are redirected to Part 4.

Respondents are asked where they have publicly urinated and why they did not use a (public) restroom. This information highlights where more public restrooms have to be realised, while on the other hand clarify why people do not use public restrooms when they need one.

Part 4: Importance and judgment

Part 4 collects data on what users of public restrooms find important and how they judge the same aspects. This is done by using different elements from the survey from de Bruin and Loth (2013) and ask participants to score each statement by importance and if the statement is currently accurate ('Not' to 'Very').

This section results in an overview of what public restroom users find important and what is currently missing in the system. Most interesting are the statements that respondents identified as important but are currently not up to their standards. These are the aspects of public restrooms that need improvement.

The final question of this part gives eight statements, retrieved from the model from Ho and Au (2020). The original items from their model (see Table 1, 'Item') were filtered by importance for and relevance to public restrooms. These items are either presented as a Likert-scale variable (e.g., "distressing – relaxing") or as a one-sentence statement (e.g., "This place is very cramped"). The filtered items were all translated to one-sentence statements in Dutch. Respondents score

these statements by importance ('Unimportant' to 'Very important').

Part 5: Barriers

The final section gathers information based upon barriers people could experience in the process of using public restrooms. Respondents are asked to check off three or less of the most often experienced barriers of public restroom use.

The final section also entails the question what people prefer regarding the separation of gender in public restroom facilities.

Closing

The last page of the questionnaire thanks respondents for their time and gives the opportunity to elaborate on different questions or share their opinion.

3.2 Data analysis

The goal of the data analysis is to determine if age/ gender/ sexuality/ ability/ heritage correlated with:

- concern about having a (proper) restroom while being outside home;
- general rating of public restrooms in the Netherlands;
- what restroom (facility) aspects people find important;
- which of these aspects people find is lacking in the current situation;
- what aspects from the study from Ho and Au (2020) people find important; and
- what barriers people face using restroom facilities.

Besides these group specific analyses, for the whole set of participants I analysed what barriers people most often experienced using public toilets and what type of gender separation people prefer for restrooms.

A first tidying of the final dataset was done in Microsoft Excel looking for outliers, answers that could be standardized and missing values. The statistical analysis is carried out using the program of SPSS (version 25). Dummy variables were created out of the original dataset to carry out different analyses. Through crosstabulation of the different reference groups (age, gender, sexuality, physical ability and heritage) and aspects of public restroom (use) correlations were explored. All variables were not normally distributed. Pearson's correlation coefficient (R) is used to determine if there is a significant correlation ($p < 0.05$) between variables of which at least one is nominal. The value of Pearson's R can be positive (positive correlation) or negative (negative correlation). For the value of Pearson's R, the following rule was used to determine the strength of the correlation (Te Grotenhuis & Van der Weegen, 2013):

0,1 - 0,25 = weak correlation

0,25 - 0,35 = moderate correlation

0,35 - 0,45 = strong

> 0,45 = very strong

If both variables are ordinal, Spearman's correlation coefficient was calculated to analyse correlation. The value of the correlation coefficient is then used to determine the strength of the correlation using the same rule as with Pearson's R.

Visualisation of the data was done in SPSS through Chart builder.

3.3 Design guidelines

The results of the survey data analysis were used to generate guidelines that practitioners or city planners have to keep in mind when designing with the goal of social inclusiveness. The guidelines are based on the aspects and elements of public sanitation that are deemed important and lacking by the respondents of the survey. A framework is given showing the data source, limitations and confirming literature sources. The goal of the guidelines is to provide practitioners with an overview of elements important for inclusive design.

3.4 Conclusion of methodology

The main method used in this thesis will be a user survey looking into the experiences of people with public restrooms and their opinion on public sanitation in the Netherlands. The outcomes of this survey will help create a set of guidelines that are applicable to those designing and implementing public restroom facilities. The key challenge of this methodology is to find enough respondents (from the marginal groups), let the survey be extensive enough to answer the research questions while not being too long and have enough significant results to formulate design guidelines.

4. Results & Analysis

This chapter presents the result from the data analysis and the design study. The results from the data analysis are divided into a general analysis on public restroom use by all respondents, followed by an analysis on the different marginal groups. For each marginal group, the results and analysis of the different parts of the survey will be discussed, along with showcasing how the results relate to findings from other studies. Each sub chapter starts with a summary of the important findings and some concluding statements. Before going into the analysis of the results for the group as a whole, the sample distribution of the survey is given.

261 respondents filled out the survey. Average age of respondents was 34 years, with the youngest being 12 years old and the eldest being 74 years old. Most respondents identified as female (64%), followed by male (22%), non-binary (8%) and trans gender (5%). 73% of respondents identified as heterosexual, 8% as homosexual, 11% as bisexual and 6% as queer. Majority of respondents did not have a mental or physical handicap (79%), 9% was dependent of a wheelchair or scooter, 4% had a mental handicap, 3% had a disease or condition making them dependent of a restroom and 2% was physically less abled (not dependent of a wheelchair). 94% of respondents identified as Dutch, with 1 to 2 respondents from Germany, Belgium, Canada, China, France, Ireland, Surinam, the U.S. and Australia equally. Due to the lack of respondents with an origin outside the Netherlands, the demographic of country of origin was excluded from the data analysis and will therefore not be shown in this chapter.

4.1 General analysis on public restroom use

Looking at the whole set of respondents, data was collected on the effect of COVID-19 on public restroom use, the areas or facilities in which public restrooms are used most often, the general score of public restrooms in the Netherlands, where respondents have urinated in public and why respondents urinated in public. Respondents were asked about their preference for gender separation in public restrooms.

As seen in table 3, public restroom use declined during the COVID-19 crisis, which is the period in which this research was done. Respondents indicated to use public restrooms on average a few times per month before the COVID-19 crisis and once per year or less during this period. 166 respondents use public restrooms most in the afternoon (64%), 64 use them most in the evening (25%), 14 in the morning (5%) and 5 use them most at night (2%).

		Pre COVID-19	During COVID-19
Frequency of public restroom use	1x per week or more	44%	7%
	1x per month	35%	14%
	1x per 3 months	12%	32%
	1x per year or less	9%	46%
	No answer	0%	1%

Table 3: Frequency of public restrooms use pre and during the COVID-19 crisis.

Most respondents indicate to use public restrooms most often in hospitality facilities, like restaurants or cafes, followed by restrooms at public transport facilities, like train stations, followed by public buildings, like libraries or the police station (Fig. B1). After being asked if ever urinated in public (“wildplassen” in Dutch), respondents who answered ‘yes’ were redirected to two questions on where and why they urinated in public. Public urination happens most in nature and recreational areas, parks and parking lots (Fig. B2). The reason why people urinated in public is in most cases because a restroom was not present. The restroom being unhygienic or too far were the second and third most mentioned reason why respondents urinated in public (Fig. B3).

Public restrooms in the Netherlands are given an average rating of 5.1 out of 10. The two tables below show lists of the aspects of public restroom use ranked by importance (5 = “very important”) and by rating of this aspect in the current situation (5 = “very good”). The elements of public restroom use found most important are privacy and hygiene, and least important are the ability to relax and having enough space (Table 4). All other aspects are seen as reasonably to very important. The highest rated aspects are privacy and safety, with the lowest rated aspect being the number of public restrooms and the ability to relax at public restrooms (Table 5). These findings are in correspondence with the study by Van Leuken and De Blok (2020b) emphasizing the need for more public restroom facilities, and by Loth (2021), in which the main problem of Dutch train toilets is related to poor hygiene. Findability has an average rating and a reasonably high importance. Van Leuken and De Blok (2020b) found that findability of public restrooms in Amsterdam is bad; although attempts have been made to improve findability and wayfinding, most public restrooms have no signage making them hard to find if you are not aware of their existence (p. 22).

Aspect of public restrooms	Mean importance
Privacy	4,50
Safety	4,33
Space	4,30
Grooming facilities	4,23
Pleasantness	4,22
RB facilities	4,20
Findability	4,00
Hygiene	3,95
Free access	3,67
Relax	3,40
Amount	2,20

Table 4: Mean rating of the importance of public restroom aspects in the Netherlands, ranked by highest to lowest (between 1 and 5).

Aspect of public restrooms	Mean rating in current public restrooms
Privacy	3,13
Safety	2,92
Space	2,61
Grooming facilities	2,47
Pleasantness	2,38
RB facilities	2,37
Findability	2,34
Hygiene	2,12
Free access	2,05
Relax	1,98
Amount	1,79

Table 5: Mean rating of public restroom aspects based on current state of public restrooms in the Netherlands, ranked by highest to lowest score (between 1 and 5).

The items predicting environmental preference for public restrooms were in general seen as less important than the aspects of public restroom use. As seen in table 6, most important item predicting environmental preference is a feeling of protection in the sense of privacy, followed by good lighting and wayfinding. The item of a feeling of protection scored as most important correlates with the respondents finding privacy the most important aspect of public restrooms. Second most important item predicting the preference for an environment is lighting. The model from Ho and Au (2020) links “good”, “bright”, “clear” and “uniform” lighting to increased levels of pleasantness, relaxation and safeness. Lighting that is considered “good”, “bright”, “clear” and “uniform” can thus contribute to the preference for certain restroom facilities. Third most important item predicting environmental preference for public restrooms is wayfinding. Respondents accentuate the importance of finding your way around and knowing where everything is. The fourth element seen as important is feeling of openness for restroom spaces and not feel cramped or stuffy. A feeling of openness makes for low levels of enclosure and perceived crowding. This in return is beneficial for perceived safety of an environment. Loth (2021) proposes an open design to balance out the minimization of social distance, resulting in improvement of the perception of hygiene. The least important item of public restroom space (“not” to “somewhat” important) was lively and there being many (different) elements to look at. This could indicate people prefer minimalistic design for public restrooms facilities.

Respondents prefer to have a combination of both traditional male/female stalls and neutral stalls (39%). Over a quarter of respondents had no preference (28%), 16% preferred the traditional male/female facilities, 12% preferred gender-neutral stalls and facilities and 5% preferred traditional male/female stalls and shared gender-neutral facilities (Fig. B4).

Environmental elements	Mean importance
Protected	4,09
Lighting	3,72
Wayfinding	3,39
Openness	3,18
Natural elements	1,88
Lively	1,79
Many elements	1,55
Look at	1,40

Table 6: Mean rating of the importance of environmental elements in public restrooms in the Netherlands, ranked highest to lowest (between 1 and 5).

4.2 Analysis per marginal group

This section shows the results of the data analysis per variable depicting the marginal groups. This is done in chronological order of the survey (see section 3.1.1 and Appendix A). Statistically significant and remarkable or mentionable non-significant results are shown or described. The beginning of each subsection presents a summary of the results from the analysis per marginal group. All the contingency tables can be found in Appendix C.

4.2.1 Gender

The different sub variables of gender were grouped to increase the statistical relevance of the results due to higher cell count. The respondents identifying as trans and non-binary were grouped into a new variable called ‘Trans/ non-binary’ (Table 7). Trans or non-binary respondents were on average younger than cisgender respondents (22 years old, in comparison to 37 (cis-men) and 36 (cis-women)). Almost all trans or non-binary identified themselves as non-heterosexual (= queer: 94%).

	Frequency	Percent
Cis-men	59	22,6
Cis-women	168	64,4
Trans/ non-binary	33	12,6
Total	261	100,0

Table 7: Frequencies of gender

Concern

There is a significant correlation between gender of the respondents and their worries about having access to a proper restroom when they are out of their home ($p < .001$) (Table C1.2). Cisgendered men have significantly less worries than cis-women, non-binary and trans people. The correlation between gender and worries about access to restrooms is moderate ($R = .254$).

General rating

Figure 2 shows a visualisation of the average ratings of public restrooms facilities in the Netherlands per gender. Comparing the mean of the general rating of public restrooms in the Netherlands shows a significant correlation between gender and rating ($R = .278$, $p = .005$). Where cis-men give an average rating of

SUMMARY: GENDER

Cis-women and trans or non-binary respondents have a lower rating of the current situation regarding public restrooms and have more worries about having access to a proper restroom when being out of their home.

For cis-women and trans or non-binary, it is more important:

- *to have enough space in public restroom facilities;*
- *to have hygienic public restrooms;*
- *for public restrooms to be easy to find;*
- *to have proper restroom bound facilities;*
- *to have proper privacy at public restrooms; and*
- *to feel safe at public restrooms in order to use them.*

A sense of unsafety and gender separated facilities are in almost or more than half of the cases experienced as a barrier to trans or non-binary, but not to cisgendered individuals. Cis-men see a long waiting line as a barrier.

5.8, cis-women and trans or non-binary people give a rating of 4.8. This makes the average rating a 5.1.

Cis-women and trans or non-binary respondents have a lower rating of the current situation regarding public restrooms and have more worries about having access to a proper restroom when being out of their home. This negative correlation is explained by Loth (2021) as a possible result from the fact that women [and all those not identifying as cis man] have more physical contact with toilet facilities due to their anatomy. Whereas cis-men can remain standing in front of a toilet for urination, most other genders adopt a sitting or hovering position (Loth, 2021, p. 82).

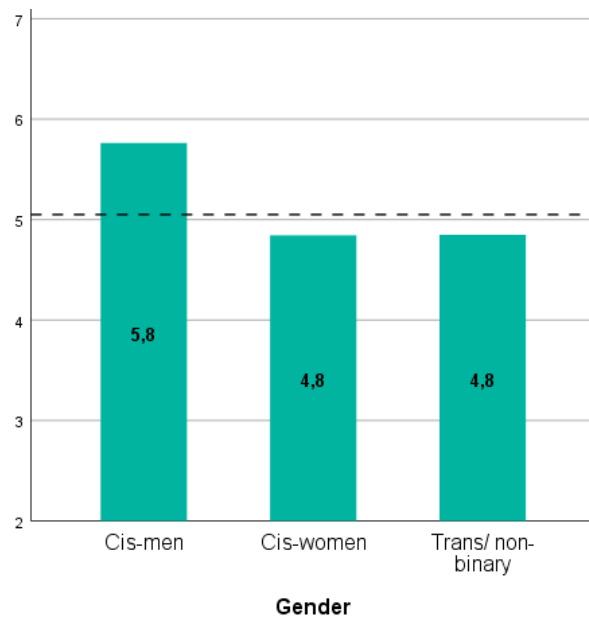


Fig.2: Mean rating of public restrooms by gender.

Important aspect

Figure 3 gives an overview of the differences in mean rating of (the importance of) public restroom aspects in the Netherlands by gender. A significant correlation was found between gender and the importance of having enough public restrooms, hygiene, findability, proper restroom bound facilities, free access to public restrooms, privacy and safety. The corresponding contingency tables can be found in Appendix C1.

Having enough public restrooms is for cis-women and trans or non-binary respondents on average seen as more important, than cis man who find this 'reasonably' to 'very' important instead of 'very' important ($R = .151, p = .015$).

Respondents identifying as cis man scored restroom hygienics on average as 'reasonably' important, in comparison to cis-women scoring this 'very' important. Trans or non-binary respondents scored this 'reasonably' to 'very' important ($R = .217, p < .001$).

Findability of public restrooms was deemed more important by trans or non-binary respondents and cis-women. They rated the importance of findability of public restrooms 'very' important, while cis-men rated this 'reasonably' important ($R = .168, p = .005$).

Respondents identifying as cis man scored restroom bound facilities on average as 'reasonably' important, in comparison to other gender identifying respondents scoring this 'very' important ($R = .215, p = .011$).

Having free access to public restrooms was most important to respondents identifying as trans or non-binary, followed by cis-women, followed by cis-men ($p < .001$). The correlation between gender and the importance of having free access to public restrooms is weak ($R = .204$).

Cis-women and trans or non-binary indicated the privacy of public restrooms to be significantly more important than cis-men ($R = .284, p < .001$). 42% of respondents identifying as cis man scored statement 4.9 on good privacy facilities as 'very' important, in comparison to over 70% of cis-women and trans or non-binary respondents.

Safety of public restrooms appeared to be more important to cis-women and trans or non-binary respondents, than cis-men ($R = .202, p < .001$). 35% of respondents identifying as cis man scored restrooms having to be safe in order to use them on average as 'very' important, in comparison to

over 50% of cis-women and trans or non-binary respondents.

The findings of this study that women and trans or non-binary value proper restroom bound facilities, privacy at public restrooms and a feeling of safety more than cis-men could also be explained by their more exposed position during toileting, causing feelings of vulnerability (Loth, 2021, p. 82).

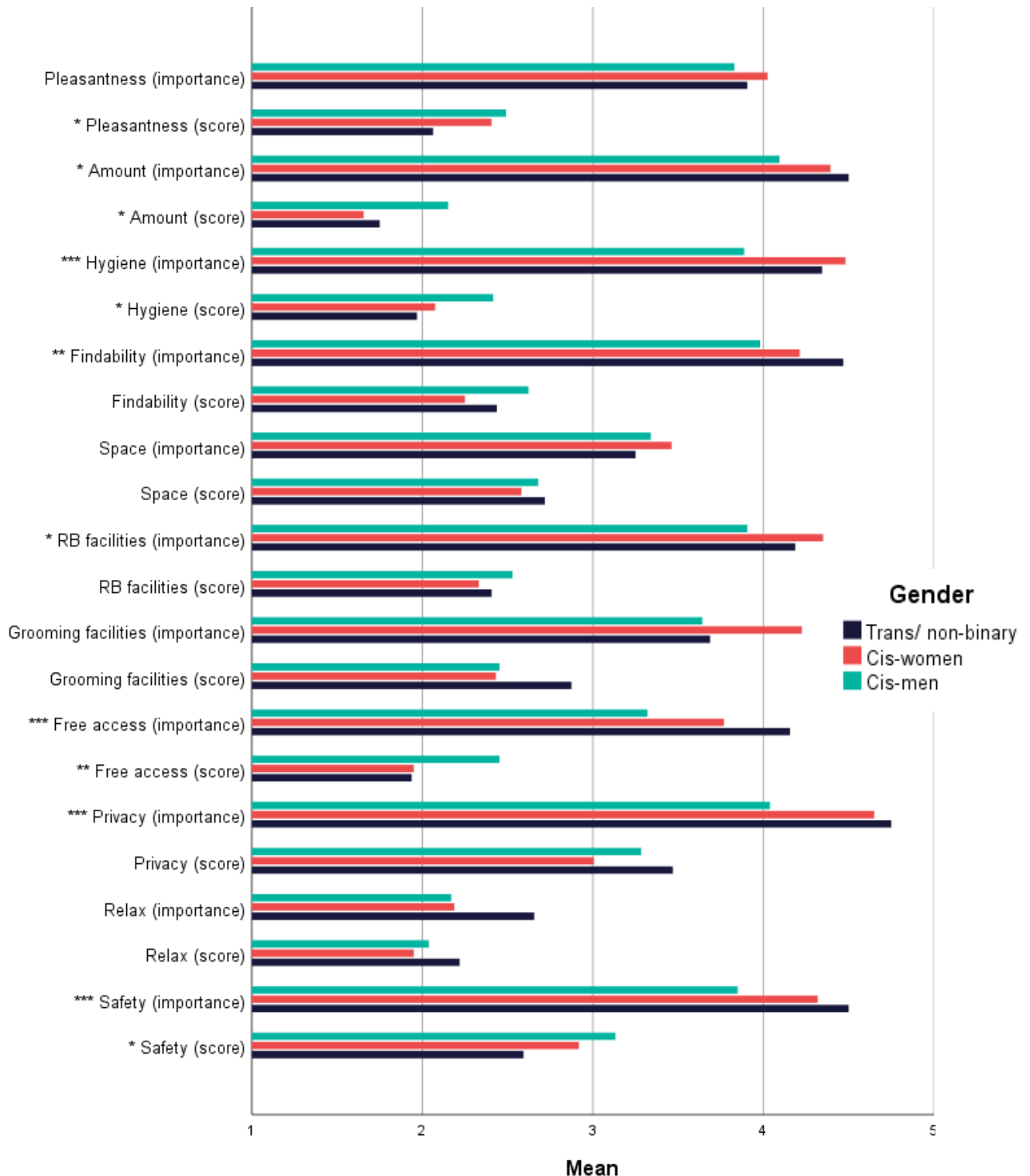


Fig. 3: Mean rating of importance and score of public restrooms aspects in the Netherlands, by gender (significance: $p < .05^*$; $p < .01^{**}$; $p < .001^{***}$).

Non-significant results

All respondents no matter their gender found it reasonably important for a public restroom to be a pleasant space. Gender did not have a noticeable influence on the importance of having enough space, with respondents from all genders rating this moderately to reasonably important. Trans or non-binary respondents indicated the ability to relax and escape from daily life at a restroom to be more important than cisgendered respondents.

Rating of aspects

A significant correlation was found between gender and the rating of public restrooms being a pleasant place, the number of public restrooms, hygiene, free access to public restrooms and safety (Fig. 3 and Appendix C1).

Trans or non-binary respondents gave a more negative rating to public toilets currently being a pleasant place, in comparison to cisgendered respondents ($R = -.145, p = .020$).

Respondents identifying as cis man scored the statement on there being enough public restrooms significantly higher than cis woman and trans or non-binary respondents of which more than half indicated this not being the case ($R = -.161, p = .010$).

On average trans or non-binary respondents give a lower rating to the hygiene of current restrooms than both cis-female and cis-male ($R = -.152, p = .015$).

Trans or non-binary identifying respondents indicated public restrooms to not always have free access in comparison to cis-women saying this is slightly the case and cis-men saying this is moderately the case ($R = -.174, p = .005$).

Respondents identifying as cis man described the statement on having to feel safe in order to be able to use a public restroom as this being the case to a reasonable extent, in comparison to other gender identifying respondents describing this as 'slightly' to 'reasonably' being the case to them ($R = -.142, p = .023$).

The results show a more negative opinion of women and trans or non-binary people with public restrooms. This is in light with initial expectations and the findings from Cavanagh (2010) and Herman (2013), showing the negative experiences of these people with public sanitation, like verbal and physical abuse.

Non-significant results

Cis-women rated findability of public restrooms somewhat lower than cis-men and trans or non-binary respondents. Respondents identifying as cis man gave a lower rating to the statement on there being a lot of space at public restrooms, including the stalls, building and facilities, than cis-women and trans or non-binary respondents. All genders had the same opinion that it is slightly the case that public toilets have good restroom bound facilities and grooming facilities. Cis-women appear to have a more negative view on the level of privacy of public restrooms in comparison to the view of cis-men and trans or non-binary respondents.

Items of environmental preference

Two statements from Ho and Au (2020) appeared to have a significant correlation with gender. The first being "A toilet (area) is lively". Trans or non-binary respondents in general described this as not important, in comparison to cisgendered respondents who described this as not to somewhat important ($R = -.146, p = .019$).

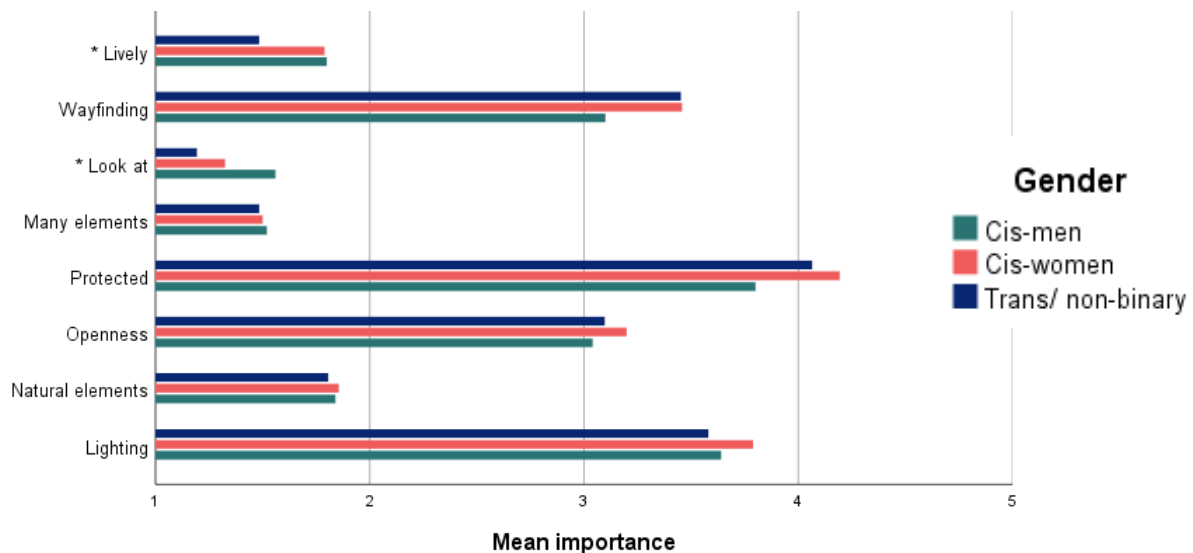


Fig. 4: Mean importance of items predicting environmental preference for public restrooms by gender (significance: $p < .05^*$, $p < .01^{**}$, $p < .001^{***}$).

The second statement with a significant correlation is: “There is a lot to look at”. Although in general all genders scored this ‘unimportant’, cis-men scored it more important than cis-women and trans or non-binary ($R = -.217$, $p < .001$).

Non-significant results

Cis-men indicated it to be reasonably important to easily find your way around a public restroom facility and know where everything is. Cis-women and trans or non-binary respondents indicated this on average to be important. Gender did not appear to have an influence on respondent’s opinion on the importance of having many different elements in the room, as they all rated this not important. Cis-women and trans or non-binary indicated the statement “there is a feeling of being shielded relative to the outside” to be significantly more important than cis-men. Cis-men found it more important for restrooms to be open and not feel cramped, than cis-women and trans or non-binary did. Natural elements were deemed not important by respondents from all genders.

Barriers

Data analysis shows many differences between barriers experienced using public restrooms between different genders (Table C1.36 and C1.37).

Non-cis-gendered respondents most often experience a sense of unsafety as being a barrier for public restroom use, followed by cis-women, followed by cis-men ($R = .177$, $p = .009$). A sense of unsafety being a barrier for non cis-gendered individuals can relate to the connotation of bad experiences mentioned in Cavanagh (2010) and Herman (2013). Transgender and gender non-conforming people face verbal harassment and physical assault at a much higher rate than cisgender individuals (Cavanagh, 2010).

For cis-men a long waiting line (environmental barrier) is significantly more often a barrier than for cis-women or trans or non-binary ($R = -.143$, $p = .021$), which can be explained by the fact that it is less common for men to have to wait in line for public restrooms and that it is physically and ergonomically easier for men to urinate in public.

Trans and non-binary respondents are the only gender types where the majority indicated a separation between gender (M/F) was experienced as a barrier ($R = .443, p < .001$). Almost all other respondents (92,3% of total) indicated this not being a barrier for them. Herman (2013) and Sander (2017) explain the need for gender-neutral stalls as they are more inclusive to non-cisgendered. Gender separated stalls namely make it difficult or confronting to choose between male or female stalls if individuals do not identify as a binary gender. This is confirmed by the above-mentioned results from this study.

Non-significant

All genders experience bad hygiene as a barrier with cis-women experiencing this barrier most often. On average, most respondents indicate bad restroom bound facilities not to pose as a barrier, but around 40% of cis-women did indicate this. Although in general not seen as a barrier among all genders, close to half of the respondents identifying as trans or non-binary indicate mandatory payment being a barrier for public restroom use. Lack of privacy is only experienced as a barrier by the majority of respondents identifying as cis-women. All the respondents identifying as trans non-binary indicated bad grooming facilities being a barrier for public restroom use, in comparison to the other genders indicating this not being the case.

4.2.2 Sexuality

Initial dataset of sexual preferences was narrowed down by categorizing into “heterosexual” and “queer” individuals due to the small numbers of cases of the variables (Table 8). Queer respondents were relatively younger than heterosexual respondents (average age of 24, in comparison to 38).

Concern

There is no statistical correlation between sexuality and respondents worrying about (access to) a restroom while being outside of their home. As seen in table C2.2, for all sexualities the amount of worries about access to restrooms varies between ‘rarely’ and ‘often’.

General rating

There are no major differences between mean rating of public restrooms per sexual preference (Fig. 5). Heterosexual respondents give public restrooms in the Netherlands a mean rating of 5.0, in comparison to queer individuals giving this a 5.2 on average.

SUMMARY: SEXUAL PREFERENCE

For non-heterosexual respondents it more important to be able to relax and escape from daily life at a restroom than for heterosexual respondents.

Mandatory entry fee and separated gender facilities for public restrooms pose as a barrier for public restroom use more often to non-heterosexual users.

	Frequency	Percent
Heterosexual	190	72,8
Queer	67	25,7
Missing value	4	1,5
Total	261	100,0

Table 8: Frequencies of sexual preference.

Important aspect

Significantly more queer respondents than heterosexual respondents indicate having enough public restrooms to be very important to them ($R = .154$, $p = .037$). This also goes for free access to public restrooms, as the data analysis showed that queer respondents find it significantly more important than heterosexual respondents to not have a mandatory entry fee ($R = .167$, $p = .043$) (Fig. 6).

Opinions on the importance of ability to relax at restrooms are very divided. Respondents not being heterosexual appear to find this significantly more important than heterosexual respondents of which half finds this not important ($R = .277$, $p < .001$) (Fig. 6). This could be explained by the literature analysis from Herman (2013), in which she summarises different studies illustrating the stress, discrimination and prejudice queer people face on a daily basis. Additionally, Loth (2021) explains public restrooms to be a place where people can relax and slow down to escape social duties (p. 265). One might assume that the extra and increased level of stress experienced by queer people leads to a need for relaxation and a break from everyday activities.

Safety appears to be more important for queer users of public restrooms than heterosexual users, although on average both groups indicate this to be very important ($R = .131$, $p = .037$).

Non-significant results

No mentionable results were found between the non-significant results. The contingency tables of the non-significant results can be found in Appendix C.2.

Rating of aspects

The rating of free access to public restrooms gave a significant difference between hetero- and queer respondents ($R = -.145$, $p = .043$). Queer respondents in most cases do not agree that there is always free access to public restroom facilities (Fig. 6).

Non-significant results

Cross tabs show heterosexual respondents scored statement “I have to feel safe in order to be able to use a restroom” more positively than queer respondents. All contingency tables can be found in Appendix C.2.

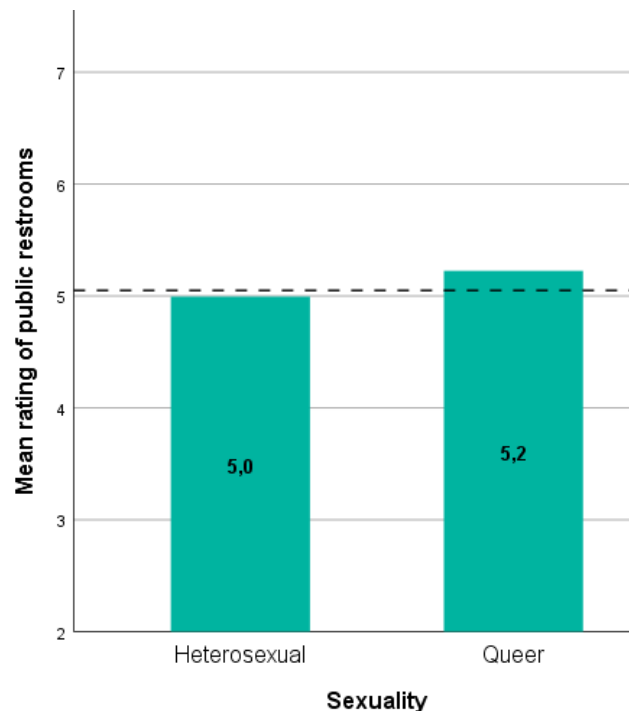


Fig.5: Mean rating of public restrooms per sexual preference.

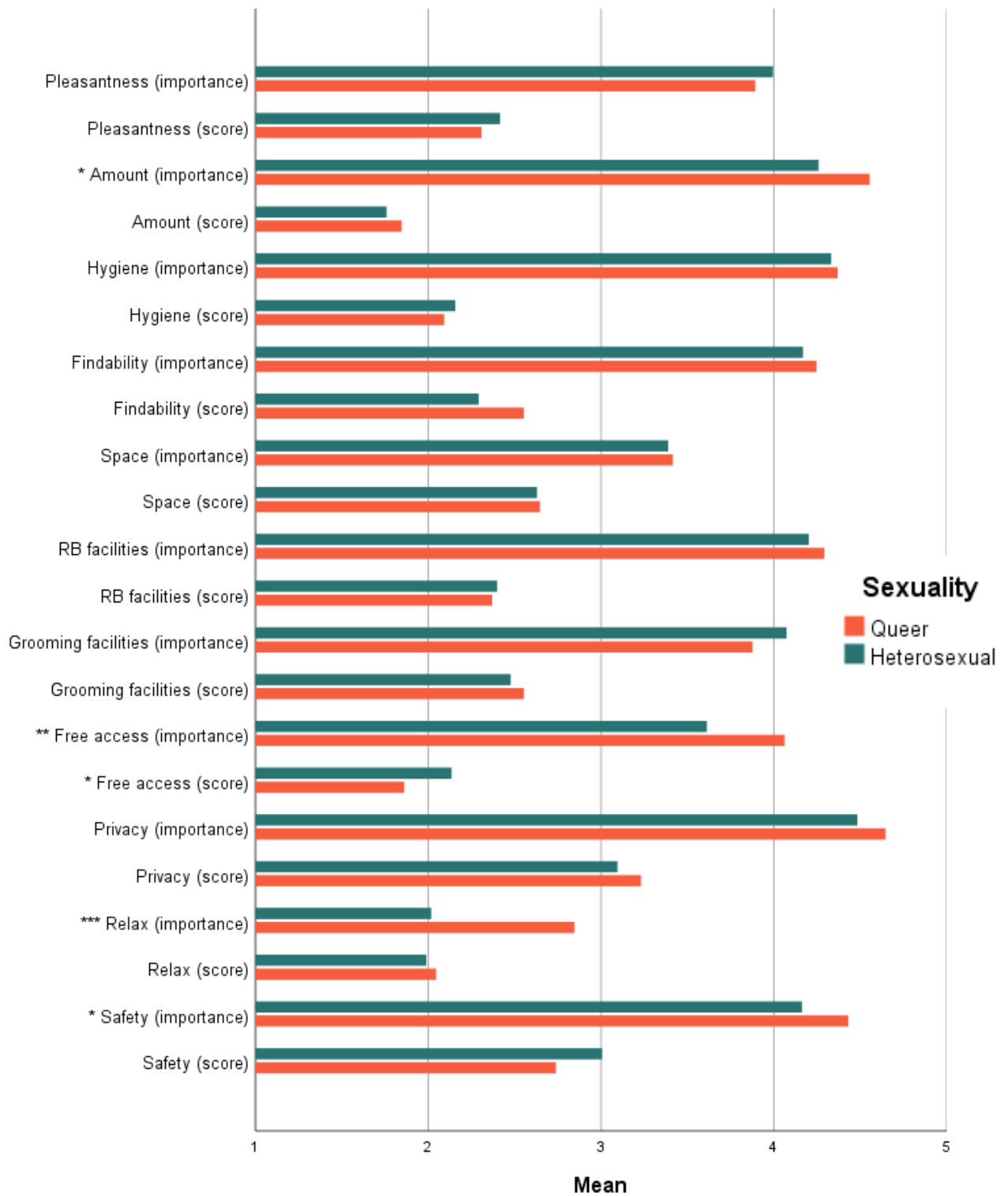


Fig. 6: Mean rating of importance and score of public restrooms aspects in the Netherlands, by sexuality (significance: $p < .05^*$; $p < .01^{**}$; $p < .001^{***}$).

Items of environmental preference

Wayfinding at public restroom facilities is on average seen as a more important item by queer respondents ($R = .151, p = .025$) (Fig. 7).

Non-significant results

Heterosexual and queer respondents do not appear to have different experiences and opinions on the importance of items from Ho and Au (2020) predicting environmental preference. The contingency tables are given in Appendix C.2.

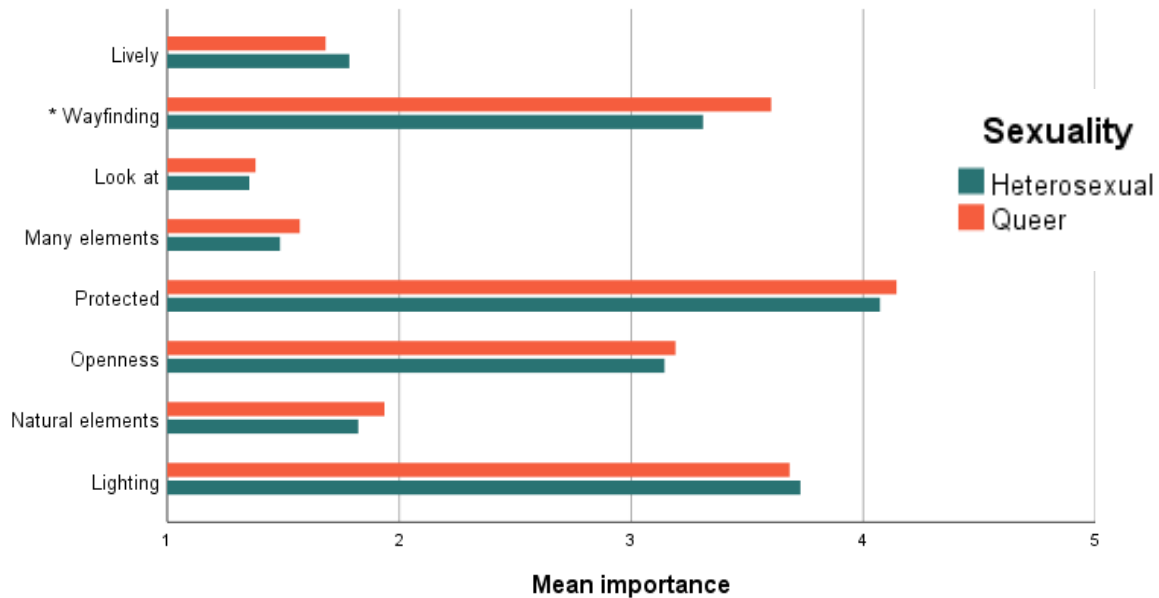


Fig. 7: Mean importance of items predicting environmental preference for public restrooms by gender (significance: $p < .05^*$, $p < .01^{**}$, $p < .001^{***}$).

Barriers

An overview of the difference between barriers faced by sexuality can be found in table C2.37. Heterosexual respondents are more likely to consider bad hygiene to be a barrier for public restroom use than respondents with other sexual preferences ($R = -.152, p = .014$).

Mandatory payment is considered a barrier more often to queer respondents ($R = .145, p = .020$). This could be related to the fact that close to all queer respondents participating in the survey are from the younger two age groups (< 27 years old) and probably have a lower income than older adults and therefore less to spend.

Gender separated restroom stalls and facilities appear to be a barrier significantly more often to queer respondents than to heterosexual respondents ($R = .374, p < .001$). It is not surprising that gender separated restrooms are experienced as a barrier to queer people as they often identified as trans or non-binary, or struggle with gender identity.

Non-significant results

Although non-significant, more than half of queer respondents indicate a sense of unsafety to be a barrier to them in comparison to 41% of heterosexual respondents. The other barriers do not show any differences between heterosexual and queer respondents (Appendix C.2).

4.2.3 Age

Age categories were created by quartile percentages due to the large number of respondents in their twenties (Table 9).

Age	Frequency	Percent
<= 24	89	34,1
25 - 26	43	16,5
27 - 48	61	23,4
=> 49	62	23,8
Total	255	97,7
Missing value	6	2,3
	261	100,0

Table 9: Frequencies of age quartiles.

Concern

A higher age has a significant negative correlation with the frequency of respondents worrying about (access to) a restroom while being outside of their home ($\rho = -.158$, $p = .033$). Older respondents tend to have fewer worries about having access to a proper restroom than younger respondents (Table C3.2).

General rating

Figure 8 shows a visualisation of the average ratings of public restrooms facilities in the Netherlands per age quartile. No significant correlation was found between age quartiles and mean rating of public restrooms in the Netherlands ($\rho = -.028$, $p = .656$). In other words, age does not have a direct correlation with someone's mean rating of public restrooms. However, there is a significant difference in mean rating between the different age quartiles ($p = .034$).

SUMMARY: AGE

For older adults (age => 49), it is more important:

- to have enough space in public restroom facilities;
- to have proper grooming facilities; and
- for there to be an open feel at public restrooms.

The current level of privacy at public restrooms is rated lower by older than younger adults.

For younger adults (age < 27), it is more important:

- to have enough public restrooms;
- to have free access to public restrooms; and
- to be able to relax and escape from daily life at a restroom.

People in the age categories up to 27 years old see mandatory entry fee and gender separated stalls as a barrier for public restroom use more often than older adults.

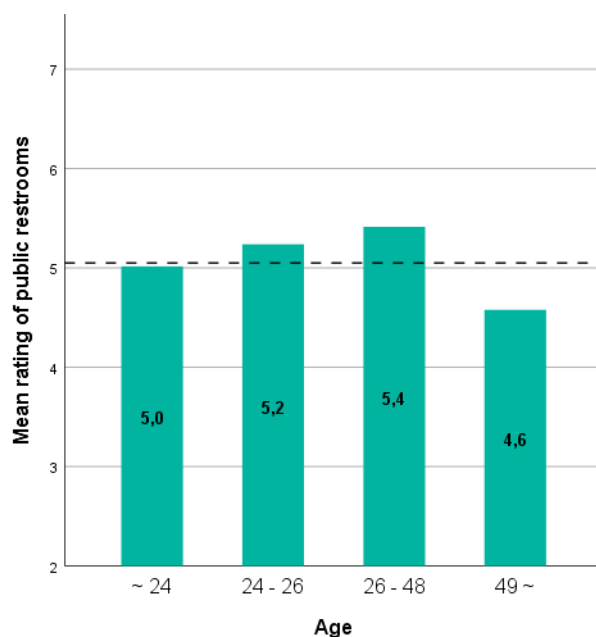


Fig. 8: Mean rating of public restrooms by age quartile.

Importance of restroom aspects

A negative correlation is found between age and the importance of having enough public restrooms (Fig. 9). Younger respondents (age < 27) turned out to find it more important to have enough public restrooms ($\rho = -.225$, $p = .002$). A possible explanation for this could be the different ways in which older and younger adults spend their free time and how they choose to recreate, with a difference in budget in mind. These findings from my study are in contradiction with the findings of Loth (2021) in which older people are described as relatively more dependent of restrooms and are more frequent users of public restrooms.

A positive significant correlation was found between age and the importance of having enough space in public restrooms ($\rho = .214$, $p = .001$). Respondents from the higher age quartiles ranked the importance of having enough space higher than younger respondents (Fig. 9). Lack of storage space and unsatisfying room size of restroom facilities is also one of the most occurring problems for older adults mentioned by Dayé (2011); wash bowl height and mirror (part of grooming facilities) are less of a problem for older adults in this study.

Respondents from the younger age groups scored on the importance of grooming facilities significantly lower than the older groups ($\rho = .173$, $p = .006$) (Fig. 9), meaning that older respondents tend to find grooming facilities more important.

A negative correlation was found between age and importance of free access to public restrooms (Fig. 9). Respondents from the younger age groups scored the importance of free access to public restrooms significantly higher than the older age groups ($\rho = -.294$, $p < .001$).

Respondents from the younger age groups scored the importance of being able to relax in public restrooms facilities significantly higher than the older age groups ($\rho = -.251$, $p < .001$) (Fig. 9).

Non-significant results

No other significant correlations were found between age and the importance of aspects of public restrooms. The findings from the data analysis on these aspects is shortly described in this sub section. Contingency tables can be found in Appendix C.3.

All age quartiles indicated hygiene on average to be 'very' important, except respondents aged 25 and 26 who found this on average 'reasonably' important. The oldest age quartile (age 49 and above) to find this most important (63% scoring 'very'). All respondents no matter their age indicated findability of restrooms to be 'reasonably' to 'very' important on average. Age did not turn out to have influence on respondents rating on the importance of restroom bound facilities, as all age quartiles scored this 'reasonably' to 'very' important, except the third quartile (age 26 to 48) scoring this somewhat less important. The first two age quartiles (age up to 26) and the highest age quartile (age 49 and above) rated the importance of privacy 'very' important by 65% to 71%. Respondents aged between 26 and 49 rated this 'very' important by 55%. The youngest and oldest age quartiles rated the importance of safety 'very' important and the respondents between age 25 and 48 rated this 'reasonably' to 'very' important.

Rating of restroom aspects

No significant correlations were found between the rating of public restroom aspects and age groups. However, respondents from the older age groups scored the current rating of privacy at public restrooms slightly lower than younger age groups (Fig. 9). Crosstabs can be found in Appendix C.3.

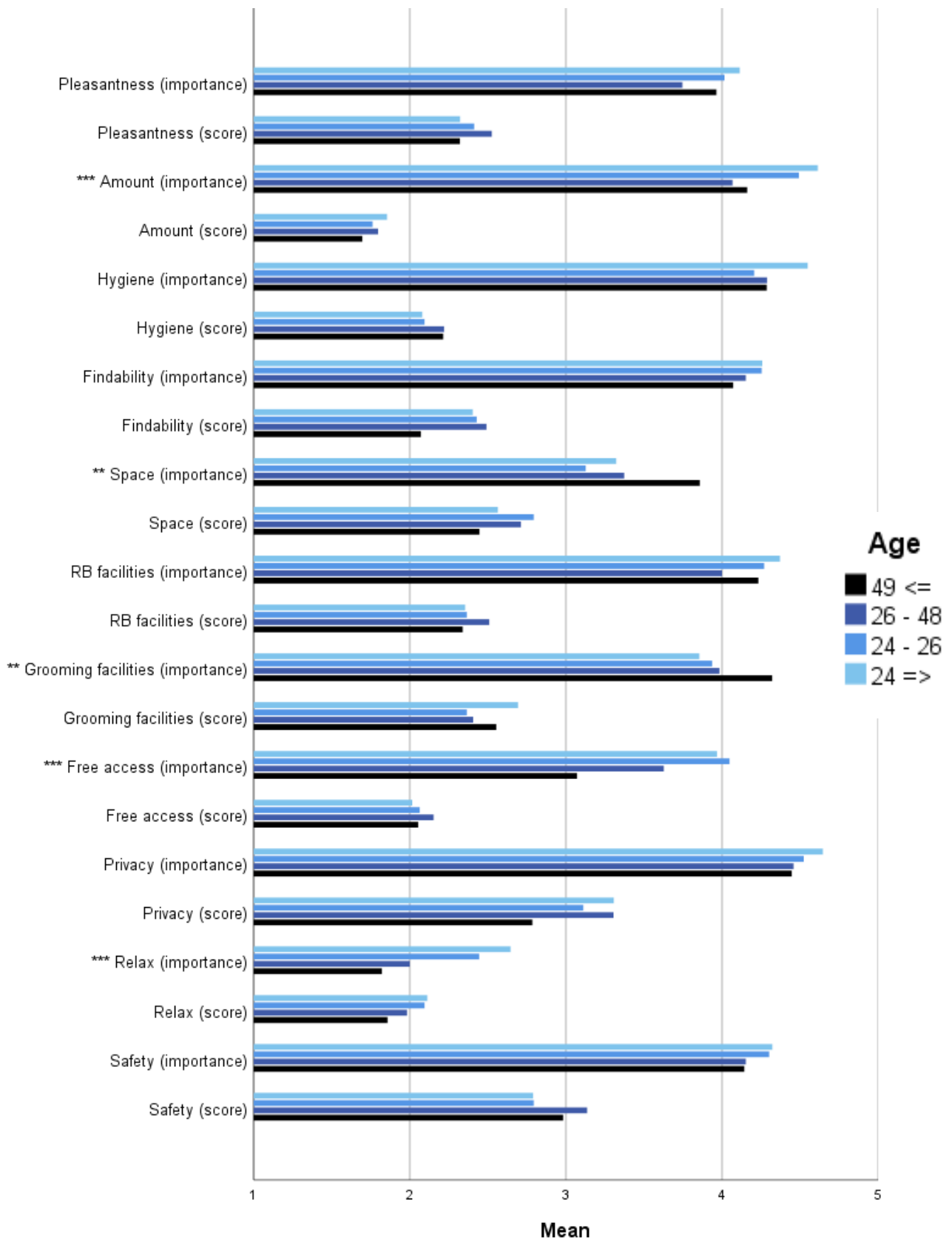


Fig. 9: Mean rating of importance and score of public restrooms aspects in the Netherlands, by age (significance: $p < .05^*$, $p < .01^{**}$, $p < .001^{***}$).

Items of environmental preference

From the items predicting environmental preference provided by (Ho & Au, 2020), one showed a significant correlation between their importance and age quartile (Fig. 10). Respondents from the highest age quartile rate the importance of a feeling of openness of public restrooms higher than younger respondents ($\rho = .133$, $p = .035$).

Non-significant results

Although not significant, the following contingency table shows that older respondents see lighting in restroom facilities as more important than younger respondents.

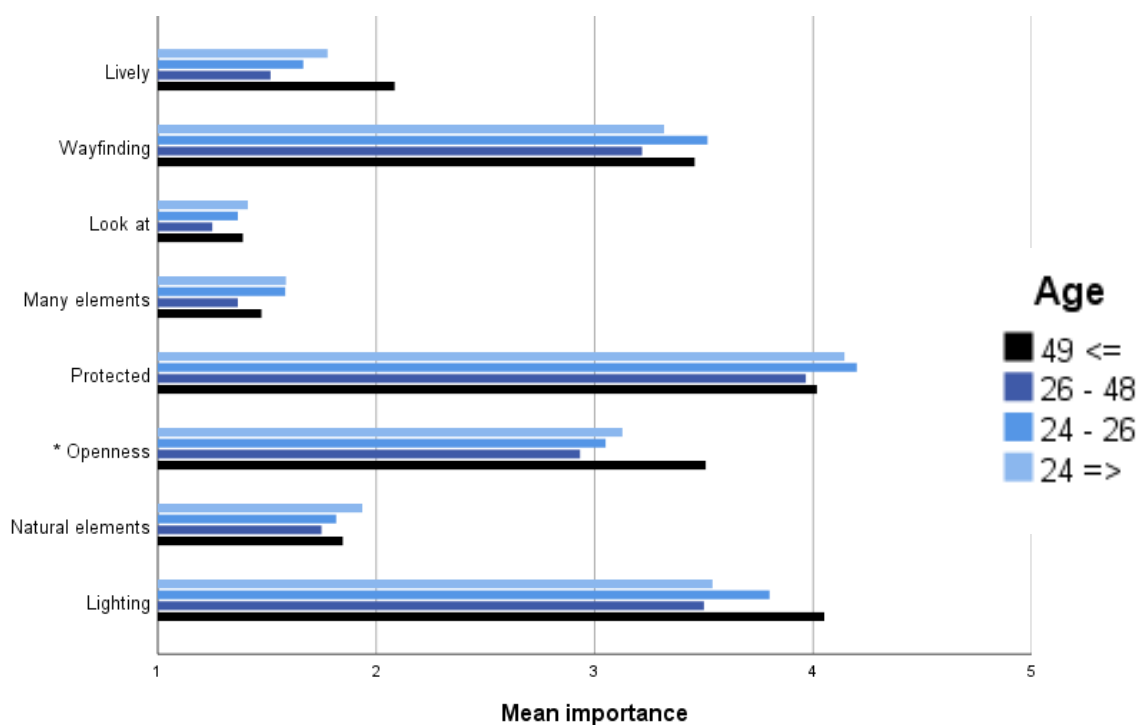


Fig. 10: Mean importance of items predicting environmental preference for public restrooms by age (significance: $p < .05^*$, $p < .01^{**}$, $p < .001^{***}$).

Barriers

Between the age groups, two significant differences were found on the barriers most often experienced while using or accessing public restrooms or their facilities (Table C3.35 and table C3.36).

Younger respondents more often experience a mandatory entry fee as a barrier to use public restrooms than respondents from the higher age groups ($R = -.270$, $p < .001$). The reason behind younger people seeing mandatory entry fee as a barrier for public restroom use, as given above, is due to a probable lower income. However, on average each age group indicated mandatory entry fees not to be a barrier.

Having separate restrooms for men and women is on average not seen as a barrier for all age quartiles. However, young people (age to 24) experience this to be a barrier more often (Table

C3.46) ($R = -.189, p < .001$). Gender separated stalls being a barrier to younger adults correlates with the respondents from the younger age groups being significantly more queer or trans or non-binary.

The literature raised the expectation that older adults experience more environmental barriers, like bad restroom bound facilities or lack of space, as mentioned by Dayé (2011), due to the physical limitations of elderly. Looking at the barriers experienced by different age groups, people up to 27 years old experience more environmental barriers.

Non-significant results

Contingency tables of all results can be found in Appendix C.3. This sub section gives a short description of the findings.

Bad hygiene was for around 85% of respondents with age up to 48 a barrier and for 95% of the respondents older than 48. Around half of all respondents indicated lack of privacy to be a barrier. Younger respondents (up to 26 years old) indicated a sense of unsafety to be a barrier more often than older respondents (50% in comparison to 40%). Age did not appear to have an influence on bad restroom facilities to be experienced as a barrier as around 35% of all respondents indicated this to be a barrier. Lack of space was on average not seen as a barrier and no differences were found between age groups. Only for those aged between 27 and 49 a long waiting line appeared to be a barrier for close to half of the respondents. Age did not have an influence on bad grooming facilities to be a barrier. Around 87% of all respondents indicated this to not be a barrier to them. Not having gender separated stalls and facilities was not seen as a barrier to almost all the respondents. However, 11% of respondents above 49 indicated this to be a barrier in comparison to 1 to 5% of the respondents younger than 49.

4.2.4 Ability

To be able to better analyse the data, I created two subgroups regarding ability: No physical disability and physically less abled (Table 10). Physically less abled includes those participants that either have a physical disability (with or without a wheelchair or scooter) and those having a condition or disease making them depended of restrooms. Respondents with only a mental disability were categorised under ‘no physical disability’. Respondents with multiple disabilities (mental, physical and/or a condition or disease) and were categorized under ‘physical disability’ if they had at least one of the physical disabilities.

Concern

Respondents with a physical disability appear to worry significantly more often about access to restrooms when they are out of their homes, than respondents without a physical disability ($R = .347, p < .001$) (Table C4.2).

General rating

Respondents with a physical disability scored public restrooms in the Netherlands significantly lower than respondents without a physical disability ($R = -.257, p = .009$). Wheelchair dependent respondents scored public restrooms the lowest (a 3.3 on average), in comparison with respondents with other or no disability.

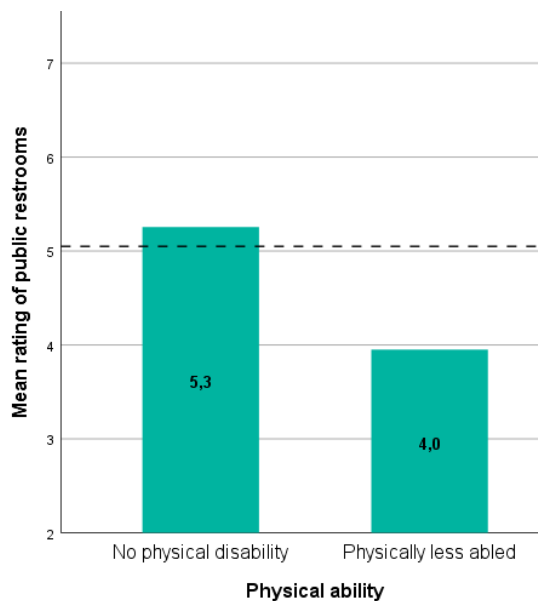


Fig. 11: Mean rating of public restrooms by physical ability.

	Frequency	Percent
No physical disability	218	83,5
Physically less abled	40	15,3
Missing	3	1,1
Total	261	100,0

Table 10: Frequencies of physical ability.

SUMMARY: ABILITY

Respondents with a physical disability have more worries about having access to a restroom while being out of their home and give a lower rating to the current public restrooms in the Netherlands.

For people with a physical disability, it is very important:

- *to have enough space in public restroom facilities; and*
- *to have proper grooming facilities.*

Respondents with a physical disability give a much lower rating to:

- *the number of public restrooms there are;*
- *the findability of public restrooms; and*
- *the amount of space there is at public restroom facilities.*

Physically less abled describe lack of space and bad grooming facilities as a barrier for public restroom use more often than respondents without a physical disability.

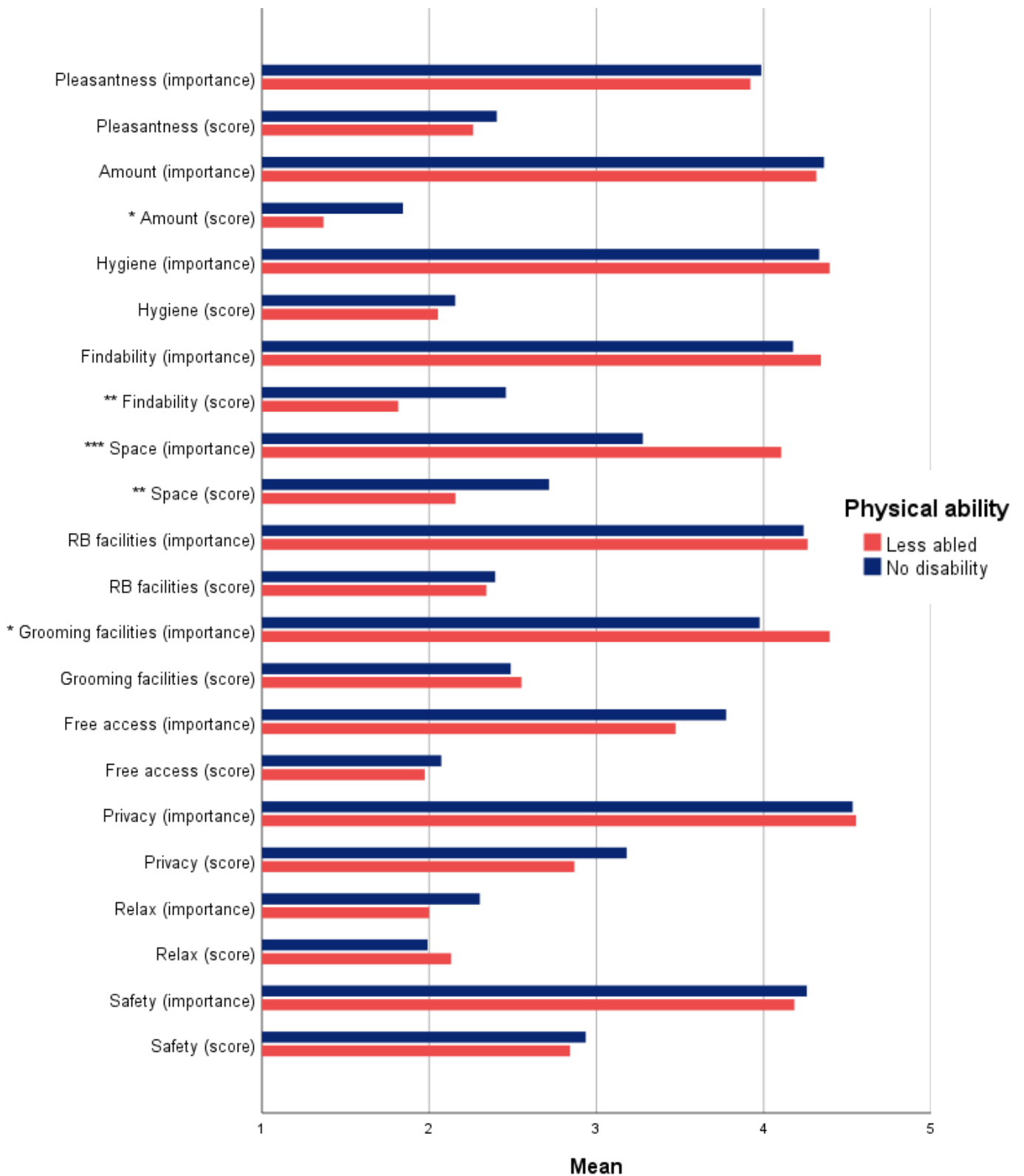


Fig. 12: Mean rating of importance and score of public restrooms aspects in the Netherlands, by physical ability (significance: $p < .05^*$, $p < .01^{**}$, $p < .001^{***}$).

Important aspect

Figure 12 shows the mean rating and score of restroom aspects by physical ability. Respondents with no physical disability rate having enough space 'moderately' to 'reasonably' important, in comparison to respondents with a physical disability rating this 'very' important ($R = .277$, $p < .001$). The correlation between ability and the importance of having 'enough' space at a restroom is average.

Grooming facilities are deemed significantly more important by respondents with a physical disability than those without ($R = .162$, $p = .010$). The correlation between ability and the importance of grooming facilities is weak.

The importance of these two aspects of public restroom use can be explained by the fact that people with disabilities often are wheelchair users, have a cane or other assistive devices. Because of this they require more space to manoeuvre, make a turn and prepare for toileting (Loth, 2021, p. 201). As mentioned, in this study people with a disease or condition making them dependent of restrooms are also categorised as a physically less abled person. These individuals often rely on grooming facilities due to e.g. (accidents with) stomas.

Non-significant results

On average, findability of public restrooms is seen as 'very' important by physically less abled respondents and 'reasonably' important by respondents with no physical disability. Free access to public restrooms is considered more important by those respondents without a physical disability, than those with a physical disability. All cross tabs of disability by importance of public restroom aspects can be found in Appendix C.4.

Rating of aspects

The difference in rating between respondents with or without physical disabilities is visualized in figure 12. Respondents with a physical disability appear to have a more negative view on the number of public restrooms in comparison to respondents without a physical disability ($R = -.145$, $p = .020$). Respondents with a physical disability scored current findability of public restrooms lower than respondents without a disability ($R = -.208$, $p = .001$). In Amsterdam public restrooms are already hard to find, which could be even worse for people that are for example in a wheelchair and do not have the same eye height as the height of the restroom signs. Respondents with no physical disability indicated current public restrooms having enough space as 'slightly' to 'moderately', in comparison to respondents with a physical disability rating this 'not' currently being part of public restrooms ($R = -.193$, $p = .002$).

Non-significant results

Respondents with a physical ability have a more negative rating of public restrooms having free access. No other mentionable differences are found between the rating of public restroom aspects and disability of respondents. All contingency tables can be found in Appendix C.4.

Items of environmental preference

No significant correlations were found between ability and the items for environmental preference (Fig. 13). The data analysis did show that natural elements are described as less important by respondents with a physical disability than respondents without physical disabilities and lighting is deemed more important to them in comparison to respondents without physical disabilities. All contingency tables can be found in Appendix C.4.

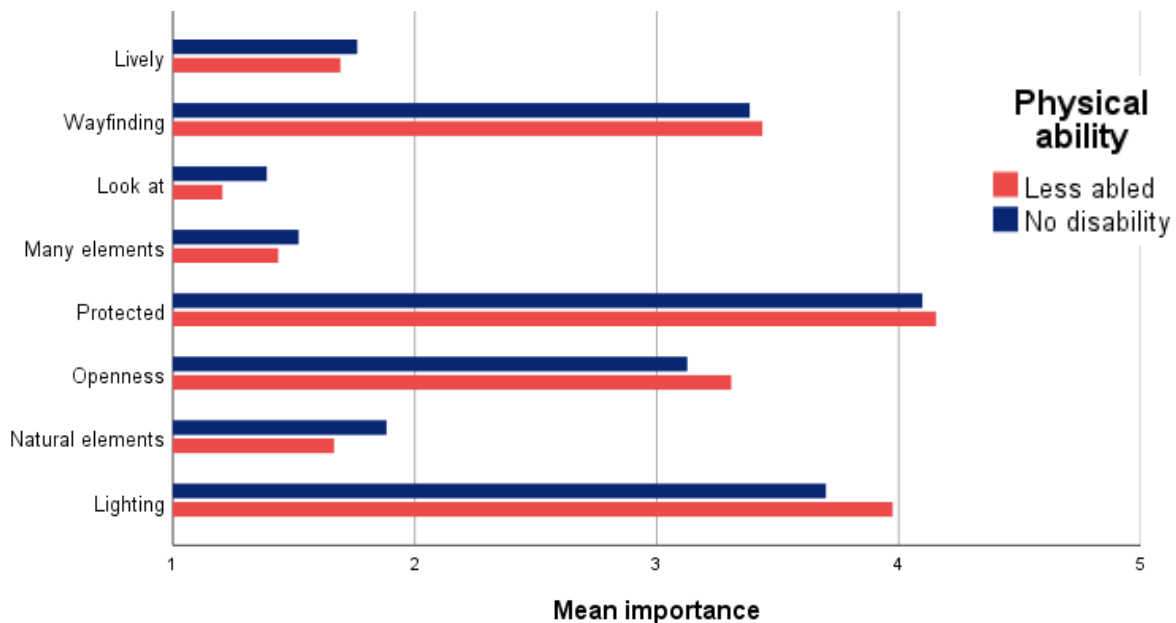


Fig. 13: Mean importance of items predicting environmental preference for public restrooms by age (significance: $p < .05^*$; $p < .01^{**}$; $p < .001^{***}$).

Barriers

Almost half of the respondents with a physical disability indicated lack of space at public restrooms to be a barrier, in comparison to around 8% of respondents without a physical disability ($R = .405$, $p < .001$). People that are physically less able make use of a wheelchair, cane or other mobility aids causing them to need more space to manoeuvre and prepare for toileting.

Respondents with a physical disability on average did not consider a long waiting line to be a barrier, in comparison to respondents without a physical disability of which 44% considered this to be a barrier ($R = -.215$, $p = .001$). As there are fewer toilet users with a physical disability, the restroom for disabled (if there is one available) is less likely to have a waiting line.

Bad grooming facilities were not considered a barrier for public restroom use on average, no matter the physical ability of respondents. Respondents with a physical disability however indicate this to be a barrier most often ($R = .213$, $p = .005$).

Close to all respondents without a disability did not consider restrooms not being sufficiently accessible to less able a barrier and 20% of respondents with a physical ability did ($R = .385$, $p < .001$). As mentioned, this variable was created after multiple respondents added this option manually to the question asking about the barriers they experience. Therefore, only those people who added this being a barrier in the comments are a counted value.

In correspondence with what they find important and the reasoning behind that, respondents with a physical disability face more environmental barriers than those without a physical disability (Table C4.35 and C4.36).

Non-significant results

A sense of unsafety is seen as a barrier more often to respondents without a physical disability (46%) in comparison to those with a physical disability (30%). Respondents without a physical disability also consider mandatory entrée fees to be a barrier more often than respondents with a physical disability. The other barriers do not show any differences between heterosexual and queer respondents (Appendix C.4).

5. Discussion & Conclusion

This concluding chapter will place the results in a broader scope by contextualizing the findings of the research questions by identifying correlations and relationships of the data and linking them to the existing theory and research from the conceptual framework. The chapter will close off with the conclusion of this study containing a set of design guidelines, and recommendations for future research.

5.1 Discussion

5.1.1 *Room for improvement*

The findings of the survey gave a view of the opinion on public toilets by the Dutch population. I expected this to be rather negative which was also shown by the results. The worst rated elements and aspects of public sanitation with a high importance are the number of public restrooms and their hygiene. These findings are in line with two of the more important studies part of the conceptual framework, namely those by Van Leuken and De Blok (2020b) and Loth (2021). As these studies were also part of the explorative literature study prior to the data collection they played an important factor in setting expectations for the results of this study: people want more and cleaner public restrooms. With Amsterdam as a case study, Van Leuken and De Blok (2020b) show the shortage of public restrooms in an urban context. They highlight the importance of having a public restroom every 500 metres in the more populous areas. Through a user survey Loth (2021) established that, just as in this research, hygiene is one of the most important aspects of train toilets. In her conclusion she proposes a set of design features contributing to the perception of hygiene (p. 254). The features mentioned are aimed at train toilets but can be applied to public restrooms.

The need for public restrooms appears to be highest in nature and recreational areas, parks and parking lots, as these are the locations where respondents urinate in public due to a lack of restroom facilities. This is in line with the findings of Van Leuken and De Blok (2020b) stating that there is no (wheelchair accessible) public restroom in most city parks of Amsterdam within every 500 metres. The results from this study in combination with the findings from Van Leuken and De Blok (2020b) indicate a need for more public restrooms in parks and recreational areas.

5.1.2 *A negative view from marginal groups*

When analysing the results, I soon realised that most of the initial expectations based on the literature were confirmed. The marginal groups turned out to have a much more negative view on the different aspects of public sanitation and the use of these, than heterosexual cis-men. Although maybe not being the most exciting, these results did confirm that the initial aim of the research and the survey itself were done right.

Herman (2013) and Sander (2017) explain the need for gender-neutral stalls as they are more inclusive to non-cisgendered. Gender separated stalls namely make it difficult or confronting to choose between male or female stalls if individuals do not identify as a binary gender. This is confirmed by the results from this study as trans or non-binary respondents from the survey indicated separate restroom facilities to be a barrier to them. However, a significant percentage of respondents also preferred traditional male/female stalls. To be as inclusive as possible, a combination of both gender separated stalls (male/female) and gender-neutral stalls is advised. This is also the outcome of the policy brief by Peterson (2018) explaining the limitations of having

only one type of restroom facility, as that always socially excludes a certain group. Next to gender separated facilities, a sense of unsafety is also a barrier for both trans or non-binary and queer respondents, which can also be explained by the association of public restrooms with possible negative experiences. Trans, non-binary or queer people experience both environmental (gender separated stalls) and attitudinal barriers (sense of unsafety).

The Dolle Mina's and the awareness of sanitation for women is representing for the female emancipation of that time period. We could say that there is a shift happening from female emancipation towards a more inclusive version of emancipation, looking at the LGBTQ+ community as well. The continuous role of public sanitation in the emancipation of different marginal groups shows the structural lack of public sanitation facilities and their social inclusiveness.

As mentioned at the beginning of the result chapter, there were too little respondents originating from foreign countries to be able to make any statements on possible differences between the opinion on public restrooms by users from different countries. It is thereby not possible to determine if people from individualistic and collectivistic cultures other experiences have regarding public sanitation and their social inclusiveness. Another limitation of the methodology is that the highest age quartile started from 49 years old and upwards. In the literature the older adults studied were aged above 65 years old which is a significant difference and should be considered interpreting the results from this study. The older adults in this study most likely have fewer physical limitations influencing their experiences using public restrooms than the people studied in previous research.

5.1.3 *Inclusive design*

The individual analyses per marginal group have showed the different barriers for public restrooms faced by its users. The third research question of this study looks at how the environmental elements contribute to the social inclusiveness of public sanitation facilities. To answer this, the framework by Ho and Au (2020) was converged and translated into Dutch statements about the importance of different environmental elements of public restrooms. Four of the eight statements from Ho and Au (2020) scored above reasonably important. The element scored as most important is protected feeling in comparison to the outside, which correlates with the respondents finding privacy the most important aspect of public restrooms. The second most important element is lighting. The model from Ho and Au (2020) links "good", "bright", "clear" and "uniform" lighting to increased levels of pleasantness, relaxation and safeness. Good lighting predicts increased restorativeness, perceived safety and visitability. From this one can conclude that good (= bright, clear and uniform) lighting increases social inclusion by contributing to the restorativeness, perceived safety and visitability of public restroom facilities. Third most important element from Ho and Au (2020) for public restrooms is wayfinding. Respondents accentuate the importance of finding your way around and knowing where everything is. Proper wayfinding promotes high legibility, which also predicts both restorativeness, perceived safety and visitability. Wayfinding can increase social inclusion of public restroom facilities inclusion by contributing to the restorativeness, perceived safety and visitability. Good wayfinding should focus on making it easy to navigate one's way back to the entry/exit, figure out where one is at any given point in time and structure and organize the place as a picture. The fourth element seen as important is feeling of openness for restroom spaces and not feel cramped or stuffy. A feeling of openness makes for low levels of enclosure and perceived crowding. This in return is beneficial for perceived safety of an environment. From this we can conclude that a feeling of openness in public restroom facilities increases social inclusion by improving the perceived safety. I had initially expected natural elements to be seen as one of the more important aspects as well, as Loth (2021) explains: "By using natural wall murals of sunflowers and trees, users feel that they are in a natural surrounding which reduces their stress when they enter and are inside the train toilet" (p. 213). Especially with some of the marginal groups using public

restrooms for a moment of relaxation, natural elements could contribute to that, but are merely seen as “somewhat” important. The least important elements of public restroom space (not to “somewhat” important) were lively and there being many (different) elements to look at. This could mean people prefer minimalistic design for public restrooms facilities.

Besides the elements of Ho and Au (2020), this study also looked at the effect of gender segregation at public restrooms for social inclusion. The survey showed most people prefer a combination of both gender-neutral and traditional male/female stalls. These results directly correlate with the findings of Peterson (2018), explaining they would ideally be a variety of restroom facilities available, recognizing the fluid lines of gender identity and increasing social inclusiveness (p. 6). The findings of the survey also relate to the literature of Herman (2013) and Sanders (2017) in which the benefits of gender-neutral facilities are explained. However, as respondents prefer to have the option to choose between traditional and gender-neutral stalls, these mixed facilities would take up more space and thereby also require more funding, and thereby still fall under the municipality of Amsterdam’s existing reasons to not implement more (gender-neutral) public restrooms.

5.1.4 *COVID-19 and the urban context*

Important to note is that this research is done during COVID-19 times, meaning public restroom experiences could be affected by the pandemic. Respondents indicated to use public restrooms on average a few times per month before the COVID crisis and once per year or less during this period. I believe the pandemic caused a shift in type of public restrooms being used. As restaurants and stores remained closed due to mandatory lockdown, people out on the street were compelled to use public restrooms in parks and street sanitation facilities, which are often not supervised and, in my opinion, less clean and comfortable. From own experiences I have noticed that in urban areas restaurants and bars supply at least women with many of the needed restroom facilities. This became clear to many of those around me during the pandemic as well.

This connects to the larger presence and prioritisation of social inclusion in urban areas. In the gender studies covered in the conceptual framework the context is often urban (Cavanagh, 2010; Herman, 2013; Bovens & Marcoci, 2020). Marginal groups like trans people tend to settle in or around cities (Kuyper & Vanden Berghe, 2017), while women and girls are said to face more security risks in urban environments (Wendland & Dankelman, 2015). Together with the apparent shortage of public restrooms in cities it appears that inclusive sanitation is a more urgent matter in the urban areas, or, in some ways, there is a difference in user distribution causing a disparate supply and demand.

In general, there is also more (use of) public space in the urban environment. Due to the population density in cities like Amsterdam, people are more likely to be assigned to public space for recreation and leisure. This results in a stronger need for sanitation facilities in urban public space.

5.2 Conclusion

In this thesis user experiences of public restrooms in the Netherlands are studied to determine the social inclusiveness of public sanitation and how this can be improved. By means of a user survey, data is collected on the opinion of public restrooms among Dutch people. Marginal groups defined in previous studies are targeted to improve the facilities for those that have more negative experiences with public restrooms. The study showed that there is indeed a negative correlation between marginal groups and experiences with public restrooms.

Public restrooms in the Netherlands are given an average rating of 5.1 out of 10 with physically

less able respondents being the group giving this the lowest rating (4.0/10) and cis-men the highest rating (5.8/10). People with a physical disability have the most negative opinion of public restrooms in comparison to the other studied marginal groups: trans or non-binary, queer and older adults.

Social inclusiveness of public restrooms can be positively influenced in various ways. Offering both traditional male/female stalls as well as gender-neutral stalls acknowledges the fluidity of gender identity and takes away an insecurity for non-cisgendered individuals. The largest gains in improvement of the opinion on public restrooms will be from increasing the number of public restrooms, improving their hygiene, safety, restroom bound facilities and wayfinding in and towards facilities. Public restrooms should first be implemented in nature and recreational areas, parks and parking lots, open in the afternoon and evening especially. These concluding findings are converted into a framework of design guidelines.

5.2.1 Design guidelines

This thesis proposes design guidelines for practitioners and implementers of public sanitation based on the analysis of the survey results in comparison with current literature (Table 11). The primary focus of these guidelines is to guide city planners or designers of public space or public restroom facilities in making facility designs that are socially inclusive to a wide range of users, including marginal groups. The guidelines are shaped by a set of elements and public restroom aspects important to keep in mind when designing with the main goal of social inclusion.

The guidelines are ranked based on their importance and score based on the output of the survey, in combination with the findings from the literature. Every guideline has a short description, a notification of the data from chapter 4.1.1 on which it is based, a short mention of possible limitations to the guideline and the literature sources that confirm the recommendation. As a reminder, the importance and score are ranked from 1 to 5; 1 being not important with 5 being very important. A score of 1 means that this aspect of public restrooms is not present at current public restrooms and a score of 5 means that this is aspect could not be improved.

Important to note is that these guidelines are based on the data from this study and are based on those aspects that are rated important but score relatively low. For example, privacy is seen as most important element, but is also rated the highest scoring element of current public restroom facilities and is therefore not included in these guidelines.

The end result of this thesis is the set of design guidelines benefitting the social inclusiveness of sanitation facilities. However, to improve the social inclusiveness of public restrooms the facilities have to be there in the first place, and they have to be open to everyone. This study showed public restrooms are most often used in the afternoon and evenings, but in order to be inclusive it is of course desired to have facilities that are open 24/7. This contributes to the immanent challenges with the feasibility of inclusive sanitation facilities which have to be tackled before a difference can be made. The design aspect is adjuvant to having enough public restrooms catering the undeniable need for more facilities. This puts this study into perspective and brings forward a few of the recommendations for future research.

Guideline	Description	Data source	Limitations	Literature
1. Public restroom every 500 meters	Have an accessible public restroom every 500 metres in the city centre, that is open at least in the afternoon and in the evening.	Importance = 4.3 Score = 1.8	It is costly and there is no manpower to operate the facilities.	Van Leuken and De Blok (2020b)
2. Hygiene	<p>Improve the general hygiene of public restrooms:</p> <ul style="list-style-type: none"> – Reduce physical space between users and restroom (facilities) – Reduce mental space between user and what is considered as dirt – Reduce social distance between the users 	<p>Importance = 4.5 Score = 2.1</p> <p>Proper hygiene is most important to women and trans or non-binary people with bad hygiene being the most often named barrier for public restroom use by all respondents.</p>	Round the clock maintenance and cleaning staff is very costly and hard to find.	Van Leuken and De Blok (2020b) Loth (2021)
3. Safety	Increase safety of public restrooms by improving privacy, lowering feeling of enclosure (generate open feel) and ensure bright, clear and uniform lighting in public restroom facilities.	<p>Importance = 4.2 Score = 2.9</p> <p>A feeling of safety is most important to trans and non-binary people, followed by cis-women.</p>	More than just the physical environment influences the perception of safety; personal experiences can have a significant impact on this.	Nasar and Jones (1997) Ho and Au (2020)
4. Wayfinding	<p>Improve wayfinding to and in public restrooms facilities:</p> <ul style="list-style-type: none"> – Clear and uniform signage towards and in restroom facilities – Open floorplan so users know where to go and how to get back to the entry 	<p>Importance = 4.2 Score = 2.3</p>	Wayfinding in and towards facilities should keep in mind the bodily differences in e.g. eye height with signage.	Van Leuken and De Blok (2020b, p.22) Sanders (2017)

Table continues on next page

Guideline	Description	Data source	Limitations	Literature
5. Restroom bound facilities	Ensure proper restroom bound facilities: <ul style="list-style-type: none"> – Toilet paper (holder) – Toilet seat – Flush button – Sanitary bin – Clothing hook – Support bars (for restroom for less abled) – Alarm system (for restroom for less abled) 	Importance = 4.2 Score = 2.4 This is important to older adults, women and trans/non-binary.	To ensure proper restroom bound facilities, regular surveillance is necessary at public restroom facilities. Staff is costly and hard to find for 24 hour a day occupancy.	Loth (2021)
6. Variety of different stalls	Give people the option to choose between male, female and gender-neutral stalls.	39% of respondents prefer a combination of male/female and gender-neutral stalls. Non-cisgender and queer respondents experience gender separated stalls as a barrier.	Only having gender-neutral stalls can cause discomfort for some women as they do not feel safe sharing facilities with other genders. A variety of stalls is more costly and there is often not enough public space for these larger facilities.	Peterson (2018)
7. Space (enough to turn a wheelchair)	Increase safety of public restrooms by improving privacy, lowering feeling of enclosure (generate open feel) and ensure bright, clear and uniform lighting in public restroom facilities.	Importance = 3.4 Score = 2.6 The amount of space is significantly more important to older adults, women and trans or non-binary and people with a physical disability.	Larger stalls with more space can go at the expense of the number of stalls and other facilities. It thereby increases the cost per stall.	Van Leuken and De Blok (2020b) Loth (2021)
8. Openness	Create an open feel so people do not feel cramped while ensuring privacy of users.	Importance = 3.2 An open feel at public restrooms is most important to older adults.	Privacy is the most important aspect of public restroom use, so attention should be brought to the areas in which openness is desired and contributing to a feeling of safety.	Nasar and Jones (1997) Ho and Au (2020) Sanders (2017)
9. More restrooms in parks and recreational areas	Public restrooms are needed most in nature and recreational areas, parks and near parking lots.	People urinate in public most at these locations, mainly due to a lack of public restrooms.		Van Leuken and De Blok (2020)

Table 11: Framework of proposed design guidelines ranked by priority of implementation.

5.3 Recommendations

Future research is necessary to translate the findings of this research into an actual design of a public restroom facility that can be used as an example to developers of public sanitation facilities across the Netherlands. Based on the conclusions from the previous sections, practitioners should consider the design guidelines mentioned when designing and constructing public sanitation facilities. It is advised to create design concepts based on the aforementioned design guidelines and the hygiene model from Loth (2021), in collaboration with users of public restrooms. The framework from Ho and Au (2020) should be applied on these potential design concepts to predict the restorativeness, perceived safety and visitability of these concepts. With this more inclusive facilities can be established.

The conclusions made shaping the design guidelines are based solely on the answers from a group of 261 people, but inclusive research should search for what is best to all people. As there was not a sufficient amount of respondents with a non-Dutch background, no statements could be made on the aspects of social inclusion for different cultural or ethnical groups. The average age of the older adults was also not representative of the older Dutch population. Future research should increase the sample size to correctly represent the Dutch population looking into the experiences with public sanitation of potential marginal groups.

Other future research should focus on the feasibility of socially inclusive sanitation facilities, as the main challenge faced currently is still the high cost and lack of mandate. This thesis proposes design features like diverse stalls (Male/Female/Neutral) which are more costly and space taking than traditional stalls. Without more and better legislation and governance on public sanitation design recommendations can not be implemented due to the lack of facilities.

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7. Appendices

Table of content - Appendices

A. Survey [Dutch]	55
A.1 Deel 1: persoonlijke gegevens	55
A.2 Deel 2: gebruik & huidige situatie	55
A.3 Deel 3: wildplassen	55
A.4 Deel 4: belang & oordeel	55
A.5 Deel 5: belang ontwerp elementen	56
A.6 Deel 6: barrières	57
B. Results of group analysis	58
C. Results of marginal groups	60
C.1 Gender	60
C.2 Sexuality	72
C.3 Age	85
C.4 Ability	97

A. Survey [Dutch]

A.1 Deel 1: persoonlijke gegevens

Leeftijd	
Geslacht	M/V/ Trans-M/V/ Non-binair/ Anders
Beperking	Fysieke handicap/ mentale handicap/ MLD ziekte/ Rolstoel afhankelijk
Woonplaats	
Seksuele voorkeur	Heteroseksueel/ homoseksueel/ Biseksueel/ anders/ wil niet zeggen

A.2 Deel 2: gebruik & huidige situatie

Hoe vaak maakt u gemiddeld gebruik van een publiek toilet (voor corona tijden)?	
Hoe vaak maakt u gemiddeld gebruik van een publiek toilet (voor corona tijden)?	Nee / ja, minder gebruik/ ja, meer gebruik
Wat voor plekken gebruikt u een publiek toilet het meest? (max 3)	OV/ horeca / publiek gebouw/ winkel/ park/ publiek toilet op straat/ gebruik ik nooit
Wanneer op de dag maakt u het meest gebruik van een openbaar toilet?	's Ochtends/ 's Middags/ s' Avonds/ s' Nachts
Als u de deur uitgaat, maakt u zich dan wel eens zorgen of er onderweg of op uw bestemming wel een (goed) toilet is?	Nooit / soms / vaak/ altijd/ weet ik niet
Wat is uw algemene score voor de huidige openbare toiletten in Nederland?	1 tot 10
Heeft u wel eens wild geplast?	Ja/ Nee

A.3 Deel 3: wildplassen

Waar heeft u wild geplast? (meerdere antwoorden mogelijk)	Uitgaansgebied/ rondom winkelcentra/ woonwijk/ park/ rond OV-punt/ parkeerplaats/ natuurgebied/ anders...
Waarom was dit? (meerdere antwoorden mogelijk)	wc te ver/ wc te druk/ wc te onhygiënisch/ wc onveilig/ anders...

A.4 Deel 4: belang & oordeel

"Een toilet moet een aangename plek zijn om te komen"	Niet/ Enigszins/ Een beetje/ Redelijk/ Erg
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“Er zijn genoeg openbare toiletten”	Niet/ Enigszins/ Een beetje/ Redelijk/ Erg
“Openbare toiletten zijn hygiënisch”	Niet/ Enigszins/ Een beetje/ Redelijk/ Erg
“Openbare toiletten zijn makkelijk te vinden”	Niet/ Enigszins/ Een beetje/ Redelijk/ Erg
“Openbare toiletten hebben veel ruimte” (In de zin van hokjes, het toiletgebouw, bij de wasbakken)	Niet/ Enigszins/ Een beetje/ Redelijk/ Erg
“Openbare toiletten hebben goede toilet gebonden voorzieningen”. *Toilet gebonden voorzieningen = toiletpapier, wc-bril, spoelknop, wc-papier houder, prullenbak, kledinghaak, steunbeugels, alarminstallatie	Niet/ Enigszins/ Een beetje/ Redelijk/ Erg
“Openbare toiletten hebben goede verzorgingsvoorzieningen”. (Verzorgingsvoorzieningen = wastafel, spiegel, kraan, zeep, handdroger/papier)	Niet/ Enigszins/ Een beetje/ Redelijk/ Erg
“Openbare toiletten zijn altijd gratis”	Niet/ Enigszins/ Een beetje/ Redelijk/ Erg
“Openbare toiletten hebben goede privacy”. (Privacy = goed werkend slot, bezet/onbezet indicatie op het slot, sluitende deur)	Niet/ Enigszins/ Een beetje/ Redelijk/ Erg
“Een toilet is een plek waar ik even kan ontspannen en ontsnappen aan het dagelijks leven”	Niet/ Enigszins/ Een beetje/ Redelijk/ Erg
“Ik moet mij veilig kunnen voelen wil ik van een toilet gebruik maken”	Niet/ Enigszins/ Een beetje/ Redelijk/ Erg

A.5 Deel 5: belang ontwerp elementen

Kunt u aangeven in hoeverre u de volgende uitspraken over een openbaar toilet (bezoek) belangrijk vindt?	Onbelangrijk/ Enigszins belangrijk/ Redelijk belangrijk/ Belangrijk/ Zeer belangrijk
Een toilet(ruimte) is levendig	Onbelangrijk/ Enigszins belangrijk/ Redelijk belangrijk/ Belangrijk/ Zeer belangrijk
Ik kan in deze ruimte makkelijk mijn weg vinden en weet waar alles is	Onbelangrijk/ Enigszins belangrijk/ Redelijk belangrijk/ Belangrijk/ Zeer belangrijk
Er is hier veel om naar te kijken	Onbelangrijk/ Enigszins belangrijk/ Redelijk belangrijk/ Belangrijk/ Zeer belangrijk
Er zijn veel verschillende elementen in de ruimte	Onbelangrijk/ Enigszins belangrijk/ Redelijk belangrijk/ Belangrijk/ Zeer belangrijk
Er is een afgeschermd gevoel ten opzichte van buiten	Onbelangrijk/ Enigszins belangrijk/ Redelijk belangrijk/ Belangrijk/ Zeer belangrijk
Een toilet(ruimte) is open en voelt niet benauwd	Onbelangrijk/ Enigszins belangrijk/ Redelijk belangrijk/ Belangrijk/ Zeer belangrijk

A.6 Deel 6: barrières

<p>Welke aspecten vormen voor u een barrière om een openbaar toilet te gebruiken? (Kies er max. 3)</p>	<p>Slechte hygiëne/ Slechte toilet gebonden voorzieningen/ Slechte verzorgingsvoorzieningen/ Een verplichte betaling/ Gebrek aan privacy/ (Gevoel van) onveiligheid/ Tekort aan ruimte/ Scheiding tussen mannen en vrouwen/ Géén scheiding tussen mannen en vrouwen (genderneutraal toilet)/ Te lange wachttijd/ anders...</p>
<p>Waarnaar gaat uw voorkeur qua scheiding mannen/vrouwen bij openbare toiletten?</p>	<p>Geen voorkeur/ Aparte mannen- en vrouwentoiletten/ Gender neutrale toiletten (iedereen gebruikt dezelfde hokjes en voorzieningen)/ Een combinatie van bovenstaande (zowel gescheiden, als neutrale hokjes)/ Gescheiden hokjes, maar gedeelde voorzieningen (wasbak/ spiegel)</p>
<p>Vragen en opmerkingen...</p>	

B. Results of group analysis

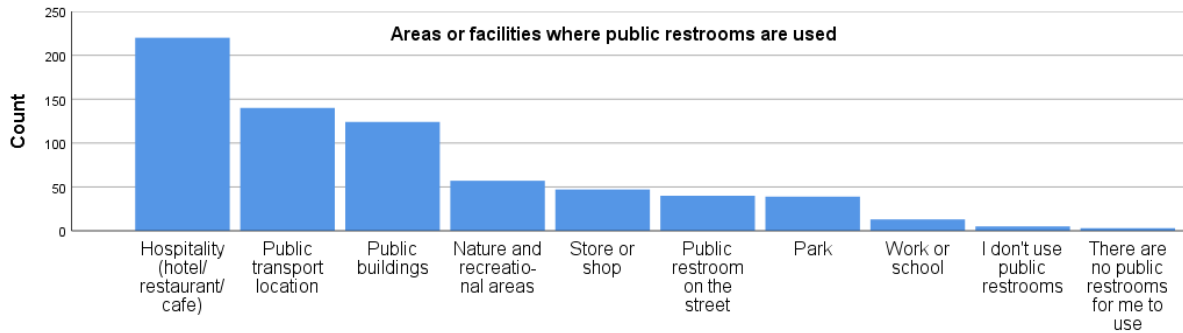


Fig. B1: Areas or facilities where public restrooms are used.

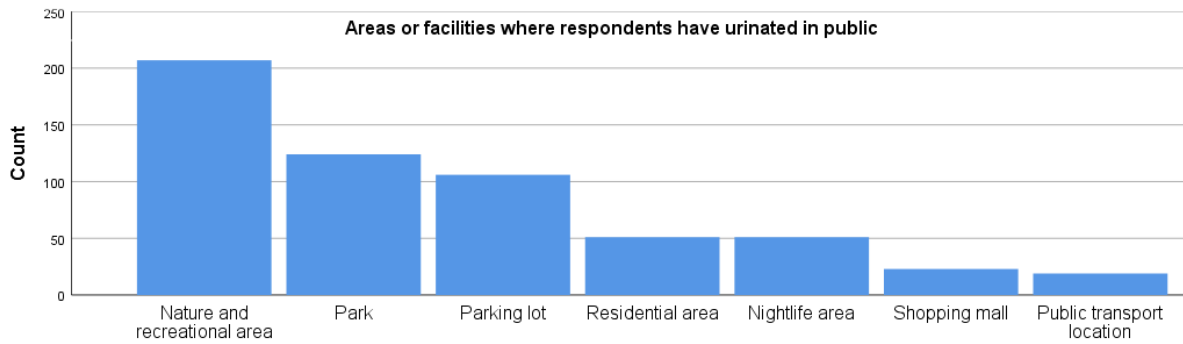


Fig. B2: Areas or facilities where respondents have urinated in public.

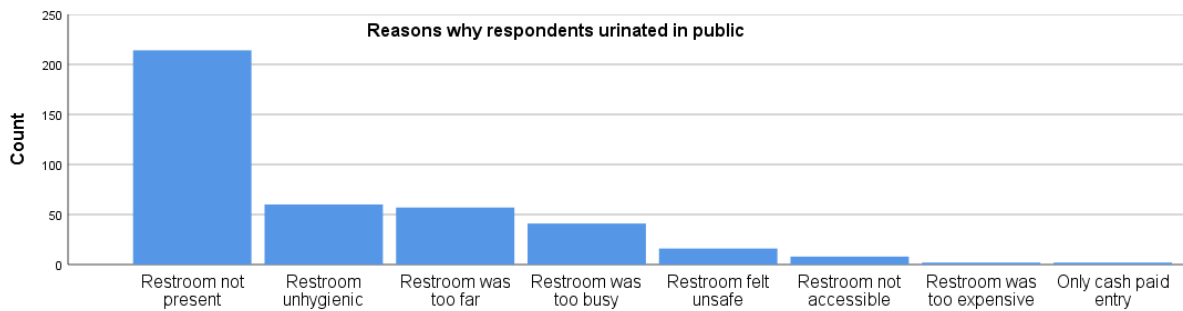


Fig. B3: Reasons why respondents urinated in public

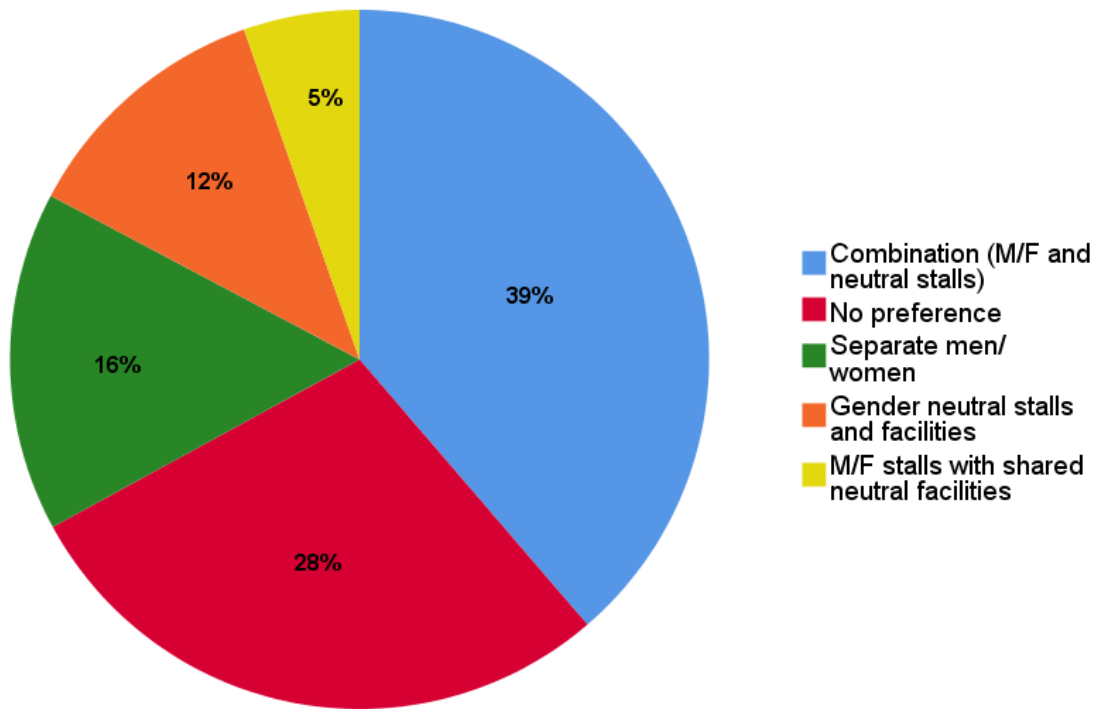


Fig. B4: Preference for gender separation in public restroom facilities.

C. Results of marginal groups

C.1 Gender

		Frequency	Percent
Valid	(Cis) man	59	22,6
	(Cis) woman	168	64,4
	Non-binary	20	7,7
	Trans man	10	3,8
	Trans woman	1	,4
	Trans non-binary	2	,8
	Unknown	1	,4
Total		261	100,0

Table C1.1: Original frequency table of gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Worries about (access to) toilet	Never	32,2%	10,1%	
	Rarely	25,4%	15,5%	24,2%
	Sometimes	25,4%	35,1%	33,3%
	Often	8,5%	29,2%	27,3%
	Always	8,5%	10,1%	15,2%

Table C1.2: Worries about access to a restroom, by gender.

Statistically significant outcomes	Pearson's <i>r</i>	Approx. significance
Importance of having enough restrooms	.151	.015
Importance of hygiene	.217	< .001
Importance of findability	.173	.005
Importance of restroom bound facilities	.157	.011
Importance of free access	.229	< .001
Importance of good privacy	.329	< .001
Importance of safety in order to use	.242	< .001

Table C1.3: Overview of the statistically significant outcomes for a difference between gender for the importance of public restroom aspects.

		Gender		
		Cis-men	25 - 26	Trans/ non-binary
Pleasantness - importance	Not	3,4%	0,6%	
	Slightly	11,9%	3,6%	9,1%
	Moderately	20,3%	18,5%	21,2%
	Reasonably	40,7%	45,8%	42,4%
	Very	23,7%	31,5%	27,3%

Table C1.4: Crosstab of the importance of pleasantness of public restrooms by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Amount - importance	Not	3,4%	4,8%	3,0%
	Slightly	5,1%	3,6%	
	Moderately	15,3%	5,4%	
	Reasonably	39,0%	24,0%	36,4%
	Very	37,3%	62,3%	60,6%

Table C1.5: Crosstab of the importance of having enough public restrooms by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Hygiene - importance	Not	5,1%	0,6%	
	Slightly	10,2%	3,0%	3,0%
	Moderately	8,5%	8,3%	6,1%
	Reasonably	49,2%	23,2%	42,4%
	Very	27,1%	64,9%	48,5%

Table C1.6: Crosstab of the importance of proper hygiene at public restrooms by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Findability - importance	Not	5,1%	2,4%	
	Slightly	6,8%	2,4%	
	Moderately	5,1%	9,6%	9,1%
	Reasonably	55,9%	40,7%	36,4%
	Very	27,1%	44,9%	54,5%

Table C1.7: Crosstab of the importance of findability of public restrooms by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Space - importance	Not	6,8%	6,6%	3,0%
	Slightly	22,0%	11,4%	18,2%
	Moderately	23,7%	28,1%	36,4%
	Reasonably	33,9%	34,1%	36,4%
	Very	13,6%	19,8%	6,1%

Table C1.8: Crosstab of the importance of having enough space at public restrooms by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
RB facilities - importance	Not	5,1%	0,6%	
	Slightly	8,5%	1,2%	12,1%
	Moderately	13,6%	9,6%	9,1%
	Reasonably	44,1%	38,9%	27,3%
	Very	28,8%	49,7%	51,5%

Table C1.9: Crosstab of the importance of restroom bound facilities of public restrooms by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Grooming facilities - importance	Not	8,6%	0,6%	3,1%
	Slightly	8,6%	7,2%	12,5%
	Moderately	22,4%	7,8%	25,0%
	Reasonably	39,7%	38,9%	31,3%
	Very	20,7%	45,5%	28,1%

Table C1.10: Crosstab of the importance of grooming facilities of public restrooms by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Free access - importance	Not	20,3%	7,2%	9,4%
	Slightly	13,6%	8,4%	3,1%
	Moderately	16,9%	19,9%	9,4%
	Reasonably	27,1%	30,7%	18,8%
	Very	22,0%	33,7%	59,4%

Table C1.11: Crosstab of the importance of having free access to public restrooms by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Privacy - importance	Not	6,8%		
	Slightly	11,9%	0,6%	
	Moderately	6,8%	5,4%	3,1%
	Reasonably	32,2%	22,3%	18,8%
	Very	42,4%	71,7%	78,1%

Table C1.12: Crosstab of the importance to able able to relax and escape from daily life at public restrooms by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Ability to relax - importance	Not	47,5%	47,6%	25,0%
	Slightly	23,7%	13,1%	21,9%
	Moderately	11,9%	20,8%	25,0%
	Reasonably	8,5%	12,5%	18,8%
	Very	8,5%	6,0%	9,4%

Table C1.13: Crosstab of the importance to able able to relax and escape from daily life at public restrooms by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Safety - importance	Not	5,1%	0,6%	
	Slightly	8,5%	3,0%	3,1%
	Moderately	23,7%	11,3%	3,1%
	Reasonably	27,1%	31,5%	34,4%
	Very	35,6%	53,6%	59,4%

Table C1.14: Crosstab of the importance of safety of public restrooms by gender.

Variable	Pearson's r	Approx. significance
Rating of pleasantness	-.145	.020
Rating of enough restrooms	-.161	.010
Rating of hygiene	-.152	.015
Rating of free access	-.174	.005
Rating of safety in order to use	-.142	.023

Table C1.15: Overview of the statistically significant outcomes for a difference between gender for the rating of public restroom aspects.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Pleasantness - score	Not	12,5%	16,7%	39,4%
	Slightly	39,3%	39,3%	27,3%
	Moderately	30,4%	33,3%	24,2%
	Reasonably	17,9%	9,5%	9,1%
	Very		1,2%	

Table C1.16: Crosstab of the rating of safety of current public restroom facilities by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Amount - score	Not	35,1%	58,1%	57,6%
	Slightly	24,6%	24,0%	18,2%
	Moderately	28,1%	12,0%	18,2%
	Reasonably	12,3%	4,8%	6,1%
	Very		1,2%	

Table C1.17: Crosstab of the rating of the number of current public restroom facilities by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Hygiene - score	Not	13,8%	27,4%	42,4%
	Slightly	48,3%	45,8%	27,3%
	Moderately	24,1%	18,5%	24,2%
	Reasonably	13,8%	8,3%	6,1%
	Very	35,6%	53,6%	59,4%

Table C1.18: Crosstab of the rating of hygiene of current public restroom facilities by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Findability - score	Not	12,1%	32,9%	21,2%
	Slightly	37,9%	26,9%	36,4%
	Moderately	27,6%	24,6%	24,2%
	Reasonably	20,7%	14,4%	18,2%
	Very	1,7%	1,2%	

Table C1.19: Crosstab of the rating of findability of current public restroom facilities by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Space - score	Not	15,5%	18,0%	12,1%
	Slightly	32,8%	28,7%	30,3%
	Moderately	22,4%	33,5%	33,3%
	Reasonably	27,6%	19,2%	24,2%
	Very	1,7%	0,6%	

Table C1.20: Crosstab of the rating of space of current public restroom facilities by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Restroom bound facilities - score	Not	17,5%	19,8%	18,2%
	Slightly	36,8%	40,1%	42,4%
	Moderately	29,8%	28,1%	21,2%
	Reasonably	10,5%	11,4%	18,2%
	Very	5,3%	0,6%	

Table C1.21: Crosstab of the rating of restroom bound facilities of current public restroom facilities by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Grooming facilities - score	Not	22,8%	19,8%	12,5%
	Slightly	36,8%	35,3%	31,3%
	Moderately	21,1%	29,9%	21,9%
	Reasonably	15,8%	14,4%	25,0%
	Very	3,5%	0,6%	9,4%

Table C1.22: Crosstab of the rating of grooming facilities of current public restroom facilities by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Free access - score	Not	20,7%	33,3%	40,6%
	Slightly	31,0%	43,6%	34,4%
	Moderately	36,2%	18,2%	15,6%
	Reasonably	12,1%	4,2%	9,4%
	Very		0,6%	

Table C1.23: Crosstab of the rating of currently always having free access to public restroom facilities by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Privacy - score	Not	3,4%	4,2%	3,1%
	Slightly	25,9%	34,1%	18,8%
	Moderately	22,4%	22,2%	25,0%
	Reasonably	39,7%	34,1%	34,4%
	Very	8,6%	5,4%	18,8%

Table C1.24: Crosstab of the rating of privacy of current public restroom facilities by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Ability to relax - score	Not	39,7%	44,0%	34,4%
	Slightly	31,0%	27,4%	31,3%
	Moderately	20,7%	20,2%	15,6%
	Reasonably	8,6%	6,5%	15,6%
	Very		1,8%	3,1%

Table C1.25: Crosstab of the rating of the ability to relax and escape from daily life at current public restroom facilities by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Safety - score	Not	8,6%	5,4%	21,9%
	Slightly	17,2%	35,7%	25,0%
	Moderately	31,0%	24,4%	25,0%
	Reasonably	39,7%	31,0%	28,1%
	Very	3,4%	3,6%	

Table C1.26: Crosstab of the rating of safety of current public restroom facilities by gender.

Significant variable	Pearson's <i>r</i>	Approx. significance
Lively	-.146	.019
Look	-.217	< .001

Table C1.27: Overview of the statistically significant outcomes for a difference between genders for the importance of items predicting environmental preference.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Lively	Not important	41,4%	43,5%	67,7%
	Somewhat important	36,2%	37,5%	19,4%
	Reasonably important	10,3%	15,5%	9,7%
	Important	8,6%	3,6%	3,2%
	Very important	3,4%		

Table C1.28: Crosstab of the importance of public restroom environments to be "lively".

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Way-finding	Not important	7,3%	2,4%	
	Somewhat important	16,4%	18,0%	25,0%
	Reasonably important	38,2%	28,1%	21,9%
	Important	27,3%	35,3%	37,5%
	Very important	10,9%	16,2%	15,6%

Table C1.29: Crosstab of the importance of easy wayfinding at public restroom environments.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Look	Not important	55,4%	75,6%	87,5%
	Somewhat important	26,8%	17,9%	6,3%
	Reasonably important	10,7%	5,4%	3,1%
	Important	3,6%	1,2%	3,1%
	Very important	3,6%		

Table C1.30: Crosstab of the importance of having a lot to look at, at public restroom environments.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Many elements	Not important	54,5%	62,5%	68,8%
	Somewhat important	29,1%	27,4%	15,6%
	Reasonably important	10,9%	8,3%	12,5%
	Important	1,8%	1,2%	3,1%
	Very important	3,6%	0,6%	

Table C1.31: Crosstab of the importance of having many different elements at public restroom environments.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Protected	Not important	1,8%	0,6%	
	Somewhat important	7,3%	7,1%	12,5%
	Reasonably important	21,8%	11,9%	21,9%
	Important	43,6%	33,9%	15,6%
	Very important	25,5%	46,4%	50,0%

Table C1.32: Crosstab of the importance of a protecting or sheltering feeling in comparison to the outside at public restrooms.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Open	Not important	10,9%	8,9%	12,5%
	Somewhat important	23,6%	20,8%	15,6%
	Reasonably important	18,2%	24,4%	34,4%
	Important	38,2%	32,1%	25,0%
	Very important	9,1%	13,7%	12,5%

Table C1.33: Crosstab of the importance of public restroom environments to be "open" and not cramped or stuffy.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Natural	Not important	44,6%	46,4%	53,1%
	Somewhat important	25,0%	28,0%	21,9%
	Reasonably important	17,9%	19,6%	15,6%
	Important	12,5%	5,4%	6,3%
	Very important		0,6%	3,1%

Table C1.34: Crosstab of the importance of public restroom environments to have natural elements, like plants.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Lighting	Not important	3,5%	3,0%	3,1%
	Somewhat important	12,3%	10,8%	21,9%
	Reasonably important	21,1%	22,3%	25,0%
	Important	47,4%	31,9%	15,6%
	Very important	15,8%	31,9%	34,4%

Table C1.35: Crosstab of the importance of lighting at public restrooms..

Significant variable	Pearson's <i>r</i>	Approx. significance
Sense of unsafety	.177	.004
Too long of a waiting line	-.143	.021
Separation between gender	.443	< .001

Table C1.36: Overview of the statistically significant outcomes for a difference between barriers faced using public restrooms by genders.

	Gender		
	Cis-men	Cis-women	Trans or non-binary
1.	Bad hygiene	Bad hygiene	Bad hygiene
2.	Too long of a waiting line	Lack of privacy	Sense of unsafety
3.	Lack of privacy	Bad restroom facilities	Separation between gender
4.	Mandatory payment	Sense of unsafety	Mandatory payment
5.	Sense of unsafety	Too long of a waiting line	Lack of privacy
6.	Bad restroom facilities	Mandatory payment	Too long of a waiting line
7.	Lack of space	Bad grooming facilities	Bad restroom facilities
8.	Bad grooming facilities	Lack of space	Bad grooming facilities
9.	Not sufficiently accessible to less abled	No separation between gender	Lack of space
10.	No separation between gender	Not sufficiently accessible to less abled	No separation between gender
11.	Separation between gender	Separation between gender	No restroom for less abled
12.	No restroom for less abled	No restroom for less abled	Not sufficiently accessible to less abled

Table C1.37: Overview of the barriers faced when using public restrooms by gender, ranked 1 to 12.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Bad hygiene	No	16,9%	6,0%	30,3%
	Yes	83,1%	94,0%	69,7%

Table C1.38: Crosstab of bad hygiene being a barrier to respondents or not, by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Lack of privacy	No	59,3%	47,0%	60,6%
	Yes	40,7%	53,0%	39,4%

Table C1.39: Crosstab of lack of privacy being a barrier to respondents or not, by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Sense of unsafety	No	66,1%	57,1%	33,3%
	Yes	33,9%	42,9%	66,7%

Table C1.40: Crosstab of a sense of unsafety being a barrier to respondents or not, by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Bad restroom facilities	No	74,6%	57,1%	78,8%
	Yes	25,4%	42,9%	21,2%

Table C1.41: Crosstab of bad restroom bound facilities being a barrier to respondents or not, by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Mandatory payment	No	62,7%	76,8%	54,5%
	Yes	37,3%	23,2%	45,5%

Table C1.42: Crosstab of mandatory payment being a barrier to respondents or not, by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Lack of space	No	84,7%	83,9%	97,0%
	Yes	15,3%	16,1%	3,0%

Table C1.43: Crosstab of lack of space being a barrier to respondents or not, by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Too long of a waiting line	No	47,5%	63,1%	69,7%
	Yes	52,5%	36,9%	30,3%

Table C1.44: Crosstab of a long waiting line being a barrier to respondents or not, by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Bad grooming facilities	No	93,2%	83,3%	90,9%
	Yes	6,8%	16,7%	9,1%

Table C1.45: Crosstab of bad grooming facilities being a barrier to respondents or not, by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
No separation between gender	No	98,3%	92,3%	97,0%
	Yes	1,7%	7,7%	3,0%

Table C1.46: Crosstab of gender-neutral facilities being a barrier to respondents or not, by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Separation between gender	No	100,0%	97,6%	51,5%
	Yes		2,4%	48,5%

Table C1.47: Crosstab of gender separated facilities being a barrier to respondents or not, by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
No restroom for less abled	No	100,0%	99,4%	97,0%
	Yes		0,6%	3,0%

Table C1.48: Crosstab of a lack of facilities for less abled being a barrier to respondents or not, by gender.

		Gender		
		Cis-men	Cis-women	Trans/ non-binary
Not sufficiently accessible for less abled	No	98,3%	95,2%	100,0%
	Yes	1,7%	4,8%	

Table C1.49: Crosstab of a restroom not being sufficiently accessible to less abled being a barrier to respondents or not, by gender.

C.2 Sexuality

		Frequency	Percent
Valid	Heterosexual	190	72,8
	Homosexual	20	7,7
	Bisexual	29	11,1
	Queer	8	3,1
	Pansexual	6	2,3
	Unlabelled	4	1,5
	Unknown	4	1,5
Total		261	100,0

Table C2.1: Original frequency table of sexual preference.

		Sexual preference	
		Heterosexual	Queer
Worries about (access to) toilet	Never	17,4%	3,0%
	Rarely	16,3%	26,9%
	Sometimes	30,5%	38,8%
	Often	25,3%	22,4%
	Always	10,5%	9,0%

Table C2.2: Worries about access to a restroom, by sexual preference.

Variable	Pearson's <i>r</i>	Approx. significance
Importance of having enough public restrooms	.154	.014
Importance of free access	.167	.008
Importance of ability to relax at restrooms	.277	< .001
Importance of safety in order to use	.242	< .001

Table C2.3: Overview of the statistically significant outcomes for a difference between sexual preference for the importance of public restroom aspects.

		Sexual preference	
		Heterosexual	Queer
Pleasantness - importance	Not	1,6%	
	Slightly	6,3%	6,0%
	Moderately	17,4%	25,4%
	Reasonably	44,2%	41,8%
	Very	30,5%	26,9%

Table C2.4: Crosstab of the importance of pleasantness of public restrooms by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Amount - importance	Not	4,8%	1,5%
	Slightly	4,8%	
	Moderately	9,0%	1,5%
	Reasonably	27,5%	34,3%
	Very	54,0%	62,7%

Table C2.5: Crosstab of the importance of having enough public restrooms by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Hygiene - importance	Not	2,1%	
	Slightly	4,7%	3,0%
	Moderately	9,5%	4,5%
	Reasonably	27,9%	43,3%
	Very	55,8%	49,3%

Table C2.6: Crosstab of the importance of proper hygiene at public restrooms by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Findability - importance	Not	3,7%	
	Slightly	4,2%	
	Moderately	6,8%	13,4%
	Reasonably	42,6%	47,8%
	Very	42,6%	38,8%

Table C2.7: Crosstab of the importance of findability of public restrooms by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Space - importance	Not	6,8%	4,5%
	Slightly	15,8%	12,1%
	Moderately	26,3%	34,8%
	Reasonably	34,2%	34,8%
	Very	16,8%	13,6%

Table C2.8: Crosstab of the importance of having enough space at public restrooms by sexual preference.

		Sexual preference	
		Heterosexual	Queer
RB facilities - importance	Not	2,1%	
	Slightly	3,7%	6,0%
	Moderately	11,1%	9,0%
	Reasonably	40,2%	34,3%
	Very	42,9%	50,7%

Table C2.9: Crosstab of the importance of restroom bound facilities of public restrooms by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Grooming facilities - importance	Not	2,7%	3,0%
	Slightly	8,0%	9,1%
	Moderately	12,2%	16,7%
	Reasonably	38,3%	37,9%
	Very	38,8%	33,3%

Table C2.10: Crosstab of the importance of grooming facilities of public restrooms by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Free access - importance	Not	11,7%	6,1%
	Slightly	9,6%	7,6%
	Moderately	21,3%	9,1%
	Reasonably	27,1%	30,3%
	Very	30,3%	47,0%

Table C2.11: Crosstab of the importance of having free access to public restrooms by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Privacy - importance	Not	2,1%	
	Slightly	3,7%	1,5%
	Moderately	6,3%	3,0%
	Reasonably	24,3%	24,2%
	Very	63,5%	71,2%

Table C2.12: Crosstab of the importance of privacy at public restrooms by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Ability to relax - importance	Not	52,1%	24,2%
	Slightly	15,8%	19,7%
	Moderately	17,9%	21,2%
	Reasonably	10,0%	19,7%
	Very	4,2%	15,2%

Table C2.13: Crosstab of the importance to able able to relax and escape from daily life at public restrooms by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Safety - importance	Not	2,1%	
	Slightly	5,8%	
	Moderately	14,7%	9,1%
	Reasonably	28,9%	37,9%
	Very	48,4%	53,0%

Table C2.14: Crosstab of the importance of safety of public restrooms by sexual preference.

Variable	Pearson's <i>r</i>	Approx. significance
Rating of free access	-.145	.043

Table C2.15: Overview of the statistically significant outcomes for a difference between sexual preference for the rating of public restroom aspects.

		Sexual preference	
		Heterosexual	Queer
Pleasantness - score	Not	16,6%	23,9%
	Slightly	39,6%	32,8%
	Moderately	31,0%	32,8%
	Reasonably	11,8%	10,4%
	Very	1,1%	

Table C2.16: Crosstab of the rating of safety of current public restroom facilities by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Amount - score	Not	53,5%	49,3%
	Slightly	22,5%	26,9%
	Moderately	17,1%	14,9%
	Reasonably	5,9%	9,0%
	Very	1,1%	

Table C2.17: Crosstab of the rating of the number of current public restroom facilities by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Hygiene - score	Not	26,5%	25,4%
	Slightly	41,8%	50,7%
	Moderately	22,2%	14,9%
	Reasonably	9,5%	9,0%
	Very	35,6%	53,6%

Table C2.18: Crosstab of the rating of hygiene of current public restroom facilities by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Findability - score	Not	30,2%	16,4%
	Slightly	28,0%	37,3%
	Moderately	25,4%	25,4%
	Reasonably	15,3%	19,4%
	Very	1,1%	1,5%

Table C2.19: Crosstab of the rating of findability of current public restroom facilities by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Space - score	Not	15,9%	15,2%
	Slightly	31,2%	27,3%
	Moderately	29,6%	36,4%
	Reasonably	22,2%	21,2%
	Very	1,1%	

Table C2.20: Crosstab of the rating of space of current public restroom facilities by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Restroom bound facilities - score	Not	19,8%	16,4%
	Slightly	36,4%	47,8%
	Moderately	30,5%	20,9%
	Reasonably	11,8%	13,4%
	Very	1,6%	1,5%

Table C2.21: Crosstab of the rating of restroom bound facilities of current public restroom facilities by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Grooming facilities - score	Not	19,8%	18,2%
	Slightly	33,7%	37,9%
	Moderately	29,4%	21,2%
	Reasonably	16,0%	16,7%
	Very	1,1%	6,1%

Table C2.22: Crosstab of the rating of grooming facilities of current public restroom facilities by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Free access - score	Not	27,4%	40,9%
	Slightly	40,3%	37,9%
	Moderately	24,7%	15,2%
	Reasonably	7,0%	6,1%
	Very	0,5%	

Table C2.23: Crosstab of the rating of currently always having free access to public restroom facilities by sexual

preference.

		Sexual preference	
		Heterosexual	Queer
Privacy - score	Not	4,3%	3,0%
	Slightly	31,4%	27,3%
	Moderately	20,7%	25,8%
	Reasonably	36,7%	33,3%
	Very	6,9%	10,6%

Table C2.24: Crosstab of the rating of privacy of current public restroom facilities by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Ability to relax - score	Not	43,4%	37,9%
	Slightly	24,9%	37,9%
	Moderately	23,3%	10,6%
	Reasonably	7,4%	10,6%
	Very	1,1%	3,0%

Table C2.25: Crosstab of the rating of the ability to relax and escape from daily life at current public restroom facilities by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Safety - score	Not	7,4%	9,1%
	Slightly	28,6%	34,8%
	Moderately	24,3%	31,8%
	Reasonably	36,5%	21,2%
	Very	3,2%	3,0%

Table C2.26: Crosstab of the rating of safety of current public restroom facilities by sexual preference.

Significant variable	Pearson's <i>r</i>	Approx. significance
Bad hygiene	-.152	.014
Mandatory payment	.145	.020
Separation between gender	.374	< .001

Table C2.27: Overview of the statistically significant outcomes for a difference between sexual preferences for the importance of items predicting environmental preference.

		Sexual preference	
		Heterosexual	Queer
Lively	Not important	43,9%	50,8%
	Somewhat important	37,6%	27,7%
	Reasonably important	12,7%	16,9%
	Important	5,8%	1,5%
	Very important		3,1%

Table C2.28: Crosstab of the importance of public restroom environments to be "lively".

		Sexual preference	
		Heterosexual	Queer
Way-finding	Not important	3,8%	
	Somewhat important	20,5%	13,6%
	Reasonably important	30,3%	28,8%
	Important	32,4%	37,9%
	Very important	13,0%	19,7%

Table C2.29: Crosstab of the importance of easy wayfinding at public restroom environments.

		Sexual preference	
		Heterosexual	Queer
Look	Not important	73,3%	69,7%
	Somewhat important	18,7%	18,2%
	Reasonably important	5,9%	7,6%
	Important	2,1%	1,5%
	Very important		3,0%

Table C2.30: Crosstab of the importance of having a lot to look at, at public restroom environments.

		Sexual preference	
		Heterosexual	Queer
Many elements	Not important	62,4%	57,6%
	Somewhat important	27,4%	24,2%
	Reasonably important	8,1%	13,6%
	Important	1,6%	1,5%
	Very important	0,5%	3,0%

Table C2.31: Crosstab of the importance of having many different elements at public restroom environments.

		Sexual preference	
		Heterosexual	Queer
Protected	Not important	1,1%	
	Somewhat important	8,0%	7,8%
	Reasonably important	15,4%	15,6%
	Important	34,0%	32,8%
	Very important	41,5%	43,8%

Table C2.32: Crosstab of the importance of a protecting or sheltering feeling in comparison to the outside at public restrooms.

		Sexual preference	
		Heterosexual	Queer
Open	Not important	8,6%	12,1%
	Somewhat important	23,1%	15,2%
	Reasonably important	24,7%	24,2%
	Important	30,6%	36,4%
	Very important	12,9%	12,1%

Table C2.33: Crosstab of the importance of public restroom environments to be "open" and not cramped or stuffy.

		Sexual preference	
		Heterosexual	Queer
Natural	Not important	49,2%	39,4%
	Somewhat important	24,1%	33,3%
	Reasonably important	20,3%	15,2%
	Important	5,9%	10,6%
	Very important	0,5%	1,5%

Table C2.34: Crosstab of the importance of public restroom environments to have natural elements, like plants.

		Sexual preference	
		Heterosexual	Queer
Lighting	Not important	4,3%	
	Somewhat important	11,8%	15,2%
	Reasonably important	20,4%	28,8%
	Important	35,5%	28,8%
	Very important	28,0%	27,3%

Table C2.35: Crosstab of the importance of public restroom environments to have natural elements, like plants.

Significant variable	Pearson's <i>r</i>	Approx. significance
Bad hygiene	-.152	.014
Mandatory payment	.145	.020
Separation between gender	.374	< .001

Table C2.36: Overview of the statistically significant outcomes for a difference between barriers faced using public restrooms by sexual preferences.

	Sexuality	
	Heterosexual	Queer
1.	Bad hygiene	Bad hygiene
2.	Lack of privacy	Sense of unsafety
3.	Sense of unsafety	Lack of privacy
4.	Too long of a waiting line	Mandatory payment
5.	Bad restroom facilities	Too long of a waiting line
6.	Mandatory payment	Bad restroom facilities
7.	Lack of space	Separation between gender
8.	Bad grooming facilities	Lack of space
9.	No separation between gender	Bad grooming facilities
10.	Not sufficiently accessible to less abled	No separation between gender
11.	Separation between gender	Not sufficiently accessible to less abled
12.	No restroom for less abled	No restroom for less abled

Table C2.37: Overview of the barriers faced when using public restrooms by sexual preference, ranked 1 to 12.

		Sexual preference	
		Heterosexual	Queer
Bad hygiene	No	8,4%	19,4%
	Yes	91,6%	80,6%

Table C2.38: Crosstab of bad hygiene being a barrier to respondents or not, by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Lack of privacy	No	51,6%	50,7%
	Yes	48,4%	49,3%

Table C2.39: Crosstab of lack of privacy being a barrier to respondents or not, by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Sense of unsafety	No	58,9%	47,8%
	Yes	41,1%	52,2%

Table C2.40: Crosstab of a sense of unsafety being a barrier to respondents or not, by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Bad restroom facilities	No	62,1%	68,7%
	Yes	37,9%	31,3%

Table C2.41: Crosstab of bad restroom bound facilities being a barrier to respondents or not, by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Mandatory payment	No	74,7%	59,7%
	Yes	25,3%	40,3%

Table C2.42: Crosstab of mandatory payment being a barrier to respondents or not, by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Lack of space	No	86,3%	85,1%
	Yes	13,7%	14,9%

Table C2.43: Crosstab of lack of space being a barrier to respondents or not, by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Too long of a waiting line	No	59,5%	61,2%
	Yes	40,5%	38,8%

Table C2.44: Crosstab of a long waiting line being a barrier to respondents or not, by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Bad grooming facilities	No	87,4%	85,1%
	Yes	12,6%	14,9%

Table C2.45: Crosstab of bad grooming facilities being a barrier to respondents or not, by sexual preference.

		Sexual preference	
		Heterosexual	Queer
No separation between gender	No	93,2%	97,0%
	Yes	6,8%	3,0%

Table C2.46: Crosstab of gender-neutral facilities being a barrier to respondents or not, by sexual preference.

		Sexual preference	
		Heterosexual	Queer
Separation between gender	No	98,4%	76,1%
	Yes	1,6%	23,9%

Table C2.47: Crosstab of gender separated facilities being a barrier to respondents or not, by sexual preference.

		Sexual preference	
		Heterosexual	Queer
No restroom for less abled	No	99,5%	98,5%
	Yes	0,5%	1,5%

Table C2.48: Crosstab of a lack of facilities for less abled being a barrier to respondents or not, by sexual

preference.

		Sexual preference	
		Heterosexual	Queer
Not sufficiently accessible for less abled	No	96,8%	98,5%
	Yes	3,2%	1,5%

Table C2.49: Crosstab of a restroom not being sufficiently accessible to less abled being a barrier to respondents or not, by sexual preference.

C.3 Age

		Frequency	Percent
Valid	<= 24	89	34,1
	25 - 26	43	16,5
	27 - 48	61	23,4
	=> 49	62	23,8
	Total	255	97,7
Missing	System	6	2,3
Total		261	100,0

Table C3.1: Original frequency table of age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Worries about (access to) toilet	Never	5,6%	2,3%	27,9%	21,0%
	Rarely	22,5%	16,3%	9,8%	22,6%
	Sometimes	31,5%	44,2%	32,8%	25,8%
	Often	27,0%	30,2%	21,3%	19,4%
	Always	12,5%	9,4%	7,9%	12,5%

Table C3.2: Worries about access to a restroom, by age group.

Statistically significant outcomes	p -value	Approx. significance
Importance of enough restrooms	.151	.015
Importance of having enough space in public restrooms	.217	< .001
Importance of grooming facilities	.173	.005
Importance of free access to public restrooms	.157	.011
Importance of being able to relax in public restrooms	.229	< .001
Importance of safety in order to use	.242	< .001

Table C3.3: Overview of the statistically significant outcomes for a difference between age group for the importance of public restroom aspects.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Pleasantness - importance	Not		2,3%	3,3%	
	Slightly	3,4%	2,3%	6,6%	12,9%
	Moderately	19,1%	18,6%	24,6%	14,5%
	Reasonably	42,7%	51,2%	41,0%	45,2%
	Very	34,8%	25,6%	24,6%	27,4%

Table C3.4: Crosstab of the importance of pleasantness of public restrooms by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Amount - importance	Not	1,1%	2,3%	8,2%	6,6%
	Slightly		2,3%	4,9%	8,2%
	Moderately	1,1%	7,0%	11,5%	9,8%
	Reasonably	30,3%	30,2%	27,9%	27,9%
	Very	67,4%	58,1%	47,5%	47,5%

Table C3.5: Crosstab of the importance of having enough public restrooms by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Hygiene - importance	Not		2,3%	1,6%	3,2%
	Slightly	2,2%	4,7%	4,9%	6,5%
	Moderately	7,9%	2,3%	9,8%	11,3%
	Reasonably	30,3%	58,1%	32,8%	16,1%
	Very	59,6%	32,6%	50,8%	62,9%

Table C3.6: Crosstab of the importance of proper hygiene at public restrooms by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Findability - importance	Not			4,9%	6,6%
	Slightly		4,7%	1,6%	8,2%
	Moderately	9,0%	14,0%	4,9%	8,2%
	Reasonably	51,7%	39,5%	50,8%	27,9%
	Very	39,3%	41,9%	37,7%	49,2%

Table C3.7: Crosstab of the importance of findability of public restrooms by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Space - importance	Not	7,9%	4,7%	5,0%	4,8%
	Slightly	14,6%	18,6%	15,0%	11,3%
	Moderately	36,0%	32,6%	35,0%	9,7%
	Reasonably	29,2%	41,9%	28,3%	43,5%
	Very	12,4%	2,3%	16,7%	30,6%

Table C3.8: Crosstab of the importance of having enough space at public restrooms by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
RB facilities - importance	Not		2,3%	3,3%	1,6%
	Slightly	2,2%	7,0%	3,3%	6,6%
	Moderately	7,9%	11,6%	14,8%	9,8%
	Reasonably	39,3%	34,9%	47,5%	32,8%
	Very	50,6%	44,2%	31,1%	49,2%

Table C3.9: Crosstab of the importance of restroom bound facilities of public restrooms by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Grooming facilities - importance	Not	1,1%	4,7%	5,0%	1,6%
	Slightly	11,4%	7,0%	6,7%	6,6%
	Moderately	14,8%	14,0%	13,3%	9,8%
	Reasonably	45,5%	39,5%	41,7%	26,2%
	Very	27,3%	34,9%	33,3%	55,7%

Table C3.10: Crosstab of the importance of grooming facilities of public restrooms by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Free access - importance	Not	5,7%	4,7%	11,5%	21,3%
	Slightly	10,3%	7,0%	4,9%	13,1%
	Moderately	10,3%	9,3%	29,5%	24,6%
	Reasonably	31,0%	27,9%	29,5%	26,2%
	Very	42,5%	51,2%	24,6%	14,8%

Table C3.11: Crosstab of the importance of having free access to public restrooms by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Privacy - importance	Not	1,1%	2,3%	1,7%	1,6%
	Slightly	2,3%	2,3%	3,3%	4,9%
	Moderately		7,0%	8,3%	9,8%
	Reasonably	26,1%	20,9%	31,7%	18,0%
	Very	70,5%	67,4%	55,0%	65,6%

Table C3.12: Crosstab of the importance of privacy at public restrooms by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Ability to relax - importance	Not	30,7%	48,8%	50,8%	58,1%
	Slightly	18,2%	7,0%	23,0%	12,9%
	Moderately	23,9%	14,0%	11,5%	24,2%
	Reasonably	15,9%	20,9%	9,8%	3,2%
	Very	11,4%	9,3%	4,9%	1,6%

Table C3.13: Crosstab of the importance to able able to relax and escape from daily life at public restrooms by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Safety - importance	Not	1,1%	2,3%	3,3%	
	Slightly	2,3%	4,7%	1,6%	9,7%
	Moderately	12,5%	9,3%	13,1%	16,1%
	Reasonably	28,4%	39,5%	39,3%	22,6%
	Very	55,7%	44,2%	42,6%	51,6%

Table C3.14: Crosstab of the importance of safety of public restrooms by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Pleasantness - score	Not	15,7%	23,3%	16,4%	18,6%
	Slightly	41,6%	32,6%	29,5%	45,8%
	Moderately	32,6%	39,5%	37,7%	18,6%
	Reasonably	9,0%	4,7%	14,8%	16,9%
	Very	1,1%		1,6%	

Table C3.15: Crosstab of the rating of safety of current public restroom facilities by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Amount - score	Not	55,1%	46,5%	48,3%	58,3%
	Slightly	22,5%	27,9%	28,3%	16,7%
	Moderately	12,4%	20,9%	18,3%	16,7%
	Reasonably	10,1%	4,7%	5,0%	5,0%
	Very				3,3%

Table C3.16: Crosstab of the rating of the number of current public restroom facilities by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Hygiene - score	Not	27,0%	18,6%	26,2%	27,9%
	Slightly	47,2%	55,8%	44,3%	31,1%
	Moderately	19,1%	20,9%	14,8%	29,5%
	Reasonably	6,7%	4,7%	14,8%	11,5%
	Very	59,6%	32,6%	50,8%	62,9%

Table C3.17: Crosstab of the rating of hygiene of current public restroom facilities by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Findability - score	Not	32,6%	23,3%	21,3%	26,7%
	Slightly	21,3%	32,6%	27,9%	46,7%
	Moderately	27,0%	14,0%	36,1%	16,7%
	Reasonably	18,0%	25,6%	14,8%	10,0%
	Very	1,1%	4,7%		

Table C3.18: Crosstab of the rating of findability of current public restroom facilities by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Space - score	Not	15,7%	11,6%	10,0%	26,2%
	Slightly	29,2%	25,6%	33,3%	29,5%
	Moderately	37,1%	27,9%	36,7%	21,3%
	Reasonably	18,0%	34,9%	20,0%	19,7%
	Very				3,3%

Table C3.19: Crosstab of the rating of space of current public restroom facilities by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
RB facilities - score	Not	22,5%	20,9%	13,1%	18,6%
	Slightly	37,1%	34,9%	41,0%	44,1%
	Moderately	23,6%	32,6%	31,1%	27,1%
	Reasonably	14,6%	11,6%	14,8%	6,8%
	Very	2,2%			3,4%

Table C3.20: Crosstab of the rating of restroom bound facilities of current public restroom facilities by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Grooming facilities - score	Not	17,0%	30,2%	18,3%	16,7%
	Slightly	33,0%	27,9%	45,0%	31,7%
	Moderately	26,1%	23,3%	21,7%	36,7%
	Reasonably	19,3%	18,6%	13,3%	13,3%
	Very	4,5%		1,7%	1,7%

Table C3.21: Crosstab of the rating of grooming facilities of current public restroom facilities by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Free access - score	Not	33,3%	26,2%	27,9%	33,3%
	Slightly	43,7%	40,5%	41,0%	31,7%
	Moderately	14,9%	26,2%	21,3%	31,7%
	Reasonably	6,9%	7,1%	9,8%	3,3%
	Very	1,1%			

Table C3.22: Crosstab of the rating of currently always having free access to public restroom facilities by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Privacy - score	Not	4,5%	7,0%		4,9%
	Slightly	23,9%	20,9%	35,0%	39,3%
	Moderately	27,3%	20,9%	18,3%	23,0%
	Reasonably	33,0%	41,9%	40,0%	29,5%
	Very	11,4%	9,3%	6,7%	3,3%

Table C3.23: Crosstab of the rating of privacy of current public restroom facilities by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Relax - score	Not	33,0%	39,5%	47,5%	47,5%
	Slightly	31,8%	27,9%	31,1%	24,6%
	Moderately	22,7%	23,3%	14,8%	18,0%
	Reasonably	10,2%	9,3%	4,9%	8,2%
	Very	2,3%		1,6%	1,6%

Table C3.24: Crosstab of the rating of the ability to relax and escape from daily life at current public restroom facilities by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Safety - score	Not	11,4%	9,3%	4,9%	6,6%
	Slightly	29,5%	34,9%	24,6%	34,4%
	Moderately	30,7%	18,6%	26,2%	21,3%
	Reasonably	25,0%	37,2%	39,3%	34,4%
	Very	3,4%		4,9%	3,3%

Table C3.25: Crosstab of the rating of safety of current public restroom facilities by age group.

Significant variable	ρ -value	Approx. significance
Openness	.133	.035

Table C3.26: Overview of the statistically significant outcomes for a difference between age groups for the importance of items predicting environmental preference.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Lively	Not important	47,7%	57,1%	54,1%	26,2%
	Somewhat important	33,0%	23,8%	32,8%	47,5%
	Reasonably important	15,9%	9,5%	9,8%	18,0%
	Important	3,4%	4,8%	3,3%	8,2%
	Very important		4,8%		

Table C3.27: Crosstab of the importance of public restroom environments to be "lively".

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Wayfinding	Not important	2,3%	2,4%	5,1%	3,3%
	Somewhat important	17,0%	19,0%	23,7%	15,0%
	Reasonably important	28,4%	33,3%	30,5%	28,3%
	Important	40,9%	23,8%	27,1%	38,3%
	Very important	11,4%	21,4%	13,6%	15,0%

Table C3.28: Crosstab of the importance of easy wayfinding at public restroom environments.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Look at	Not important	72,7%	76,2%	73,8%	70,0%
	Somewhat important	17,0%	9,5%	21,3%	21,7%
	Reasonably important	6,8%	7,1%	4,9%	6,7%
	Important	3,4%	2,4%		1,7%
	Very important		4,8%		

Table C3.29: Crosstab of the importance of having a lot to look at, at public restroom environments.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Many elements	Not important	58,0%	61,9%	62,3%	66,1%
	Somewhat important	28,4%	21,4%	29,5%	22,0%
	Reasonably important	11,4%	7,1%	8,2%	10,2%
	Important	1,1%	4,8%		1,7%
	Very important	1,1%	4,8%		

Table C3.30: Crosstab of the importance of having many different elements at public restroom environments.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Protected	Not important			3,3%	
	Somewhat important	6,8%	4,9%	6,6%	13,3%
	Reasonably important	13,6%	22,0%	19,7%	10,0%
	Important	34,1%	29,3%	37,7%	33,3%
	Very important	45,5%	43,9%	32,8%	43,3%

Table C3.31: Crosstab of the importance of a protecting or sheltering feeling in comparison to the outside at public restrooms.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Openness	Not important	12,5%	4,8%	11,5%	8,5%
	Somewhat important	20,5%	23,8%	24,6%	11,9%
	Reasonably important	26,1%	28,6%	26,2%	18,6%
	Important	31,8%	33,3%	31,1%	37,3%
	Very important	9,1%	9,5%	6,6%	23,7%

Table C3.32: Crosstab of the importance of public restroom environments to be "open" and not cramped or stuffy.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Natural elements	Not important	38,6%	47,6%	59,0%	45,0%
	Somewhat important	35,2%	28,6%	16,4%	25,0%
	Reasonably important	19,3%	16,7%	11,5%	28,3%
	Important	5,7%	7,1%	11,5%	1,7%
	Very important	1,1%		1,6%	

Table C3.33: Crosstab of the importance of public restroom environments to have natural elements, like plants, per age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Lighting	Not important	3,4%	7,0%		3,4%
	Somewhat important	10,2%	9,3%	18,3%	11,9%
	Reasonably important	26,1%	25,6%	26,7%	11,9%
	Important	36,4%	30,2%	38,3%	28,8%
	Very important	23,9%	27,9%	16,7%	44,1%

Table C3.34: Crosstab of the importance of good lighting at public restrooms by age group.

Significant variable	Pearson's <i>r</i>	Approx. significance
Mandatory payment	-.270	< .001
Separation between gender	-.189	.002

Table C3.35: Overview of the statistically significant outcomes for a difference between barriers faced using public restrooms by age groups.

	Age			
	<= 24	25 - 26	27 - 48	=> 49
1.	Bad hygiene	Bad hygiene	Bad hygiene	Bad hygiene
2.	Lack of privacy	Sense of unsafety	Lack of privacy	Lack of privacy
3.	Sense of unsafety	Lack of privacy	Too long of a waiting line	Sense of unsafety
4.	Bad restroom facilities	Mandatory payment	Sense of unsafety	Bad restroom facilities
5.	Too long of a waiting line	Too long of a waiting line	Bad restroom facilities	Too long of a waiting line
6.	Mandatory payment	Bad restroom facilities	Mandatory payment	Lack of space
7.	Separation between gender	Lack of space	Bad grooming facilities	Bad grooming facilities
8.	Bad grooming facilities	Bad grooming facilities	Lack of space	No separation between gender
9.	Lack of space	Separation between gender	Separation between gender	Mandatory payment
10.	No separation between gender	No separation between gender	No separation between gender	Not sufficiently accessible to less abled
11.	Not sufficiently accessible to less abled	Not sufficiently accessible to less abled	Not sufficiently accessible to less abled	Separation between gender
12.	No restroom for less abled	No restroom for less abled	No restroom for less abled	No restroom for less abled

Table C3.36: Overview of the barriers faced when using public restrooms by age group, ranked 1 to 12.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Bad hygiene	No	14,6%	16,3%	11,5%	4,8%
	Yes	85,4%	83,7%	88,5%	95,2%

Table C3.37: Crosstab of bad hygiene being a barrier to respondents or not, by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Lack of privacy	No	50,6%	53,5%	47,5%	54,8%
	Yes	49,4%	46,5%	52,5%	45,2%

Table C3.38: Crosstab of lack of privacy being a barrier to respondents or not, by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Sense of unsafety	No	50,6%	46,5%	63,9%	59,7%
	Yes	49,4%	53,5%	36,1%	40,3%

Table C3.39: Crosstab of a sense of unsafety being a barrier to respondents or not, by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Bad restroom facilities	No	58,4%	74,4%	65,6%	66,1%
	Yes	41,6%	25,6%	34,4%	33,9%

Table C3.40: Crosstab of bad restroom bound facilities being a barrier to respondents or not, by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Mandatory payment	No	61,8%	55,8%	80,3%	90,3%
	Yes	38,2%	44,2%	19,7%	9,7%

Table C3.41: Crosstab of mandatory payment being a barrier to respondents or not, by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Lack of space	No	87,6%	86,0%	86,9%	83,9%
	Yes	12,4%	14,0%	13,1%	16,1%

Table C3.42: Crosstab of lack of space being a barrier to respondents or not, by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Too long of a waiting line	No	61,8%	62,8%	52,5%	67,7%
	Yes	38,2%	37,2%	47,5%	32,3%

Table C3.43: Crosstab of a long waiting line being a barrier to respondents or not, by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Bad grooming facilities	No	85,4%	88,4%	86,9%	88,7%
	Yes	14,6%	11,6%	13,1%	11,3%

Table C3.44: Crosstab of bad grooming facilities being a barrier to respondents or not, by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
No separation between gender	No	95,5%	97,7%	98,4%	88,7%
	Yes	4,5%	2,3%	1,6%	11,3%

Table C3.45: Crosstab of gender-neutral facilities being a barrier to respondents or not, by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Separation between gender	No	85,4%	90,7%	98,4%	96,8%
	Yes	14,6%	9,3%	1,6%	3,2%

Table C3.46: Crosstab of gender separated facilities being a barrier to respondents or not, by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
No restroom for less abled	No	98,9%	100,0%	100,0%	98,4%
	Yes	1,1%			1,6%

Table C3.47: Crosstab of a lack of facilities for less abled being a barrier to respondents or not, by age group.

		Age			
		<= 24	25 - 26	27 - 48	=> 49
Not sufficiently accessible for less abled	No	96,6%	97,7%	98,4%	93,5%
	Yes	3,4%	2,3%	1,6%	6,5%

Table C3.48: Crosstab of a restroom not being sufficiently accessible to less abled being a barrier to respondents or not, by age group.

C.4 Ability

		Frequency	Percent
Valid	No mental/physical disability	207	79,3
	Mental disability	11	4,2
	Wheelchair dependent	25	9,6
	Physically less abled (no wheelchair)	6	2,3
	Condition/ disease dependent of restroom	9	3,4
	Total	258	98,9
Missing	System	3	1,1
Total		261	100,0

Table C4.1: Original frequency table of Physical ability.

		Physical ability	
		No physical disability	Physically less abled
Worries about (access to) toilet	Never	15,6%	5,0%
	Rarely	21,1%	5,0%
	Sometimes	36,2%	12,5%
	Often	20,6%	45,0%
	Always	6,4%	32,5%

Table C4.2: Worries about access to a restroom, by physical ability.

Variable	Pearson's r	Approx. significance
Importance of enough space	.277	< .001
Importance of grooming facilities	.162	.010

Table C4.3: Overview of the statistically significant outcomes for a difference between physical ability for the importance of public restroom aspects.

		Physical ability	
		No physical disability	Physically less abled
Pleasantness - importance	Not	1,4%	
	Slightly	6,0%	7,5%
	Moderately	18,8%	17,5%
	Reasonably	43,6%	50,0%
	Very	30,3%	25,0%

Table C4.4: Crosstab of the importance of pleasantness of public restrooms by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Amount - importance	Not	2,3%	12,5%
	Slightly	3,7%	2,5%
	Moderately	6,9%	7,5%
	Reasonably	32,3%	12,5%
	Very	54,8%	65,0%

Table C4.5: Crosstab of the importance of having enough public restrooms by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Hygiene - importance	Not	1,4%	2,5%
	Slightly	4,1%	7,5%
	Moderately	8,7%	2,5%
	Reasonably	33,5%	20,0%
	Very	52,3%	67,5%

Table C4.6: Crosstab of the importance of proper hygiene at public restrooms by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Findability - importance	Not	2,3%	5,1%
	Slightly	2,8%	5,1%
	Moderately	8,7%	5,1%
	Reasonably	48,2%	17,9%
	Very	38,1%	66,7%

Table C4.7: Crosstab of the importance of findability of public restrooms by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Space - importance	Not	6,5%	5,0%
	Slightly	16,1%	7,5%
	Moderately	31,8%	7,5%
	Reasonably	35,0%	30,0%
	Very	10,6%	50,0%

Table C4.8: Crosstab of the importance of having enough space at public restrooms by physical ability.

		Physical ability	
		No physical disability	Physically less abled
RB facilities - importance	Not	1,4%	2,5%
	Slightly	4,6%	2,5%
	Moderately	9,7%	10,0%
	Reasonably	39,6%	35,0%
	Very	44,7%	50,0%

Table C4.9: Crosstab of the importance of restroom bound facilities of public restrooms by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Grooming facilities - importance	Not	3,3%	
	Slightly	8,4%	5,0%
	Moderately	14,0%	7,5%
	Reasonably	40,0%	30,0%
	Very	34,4%	57,5%

Table C4.10: Crosstab of the importance of grooming facilities of public restrooms by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Free access - importance	Not	10,2%	12,8%
	Slightly	8,3%	10,3%
	Moderately	19,0%	12,8%
	Reasonably	25,5%	43,6%
	Very	37,0%	20,5%

Table C4.11: Crosstab of the importance of having free access to public restrooms by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Privacy - importance	Not	1,9%	
	Slightly	3,2%	2,6%
	Moderately	5,1%	5,1%
	Reasonably	24,1%	25,6%
	Very	65,7%	66,7%

Table C4.12: Crosstab of the importance of privacy at public restrooms by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Ability to relax - importance	Not	43,3%	50,0%
	Slightly	16,1%	20,0%
	Moderately	20,7%	12,5%
	Reasonably	12,0%	15,0%
	Very	7,8%	2,5%

Table C4.13: Crosstab of the importance to be able to relax and escape from daily life at public restrooms by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Safety - importance	Not	1,4%	2,5%
	Slightly	4,1%	5,0%
	Moderately	12,4%	15,0%
	Reasonably	32,3%	22,5%
	Very	49,8%	55,0%

Table C4.14: Crosstab of the importance of safety of public restrooms by physical ability.

Variable	Pearson's <i>r</i>	Approx. significance
Rating of free access	-.145	.043

Table C4.15: Overview of the statistically significant outcomes for a difference between physical ability for the rating of public restroom aspects.

		Physical ability	
		No physical disability	Physically less abled
Pleasantness - score	Not	18,1%	20,0%
	Slightly	37,7%	40,0%
	Moderately	30,7%	35,0%
	Reasonably	12,6%	5,0%
	Very	0,9%	

Table C4.16: Crosstab of the rating of safety of current public restroom facilities by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Amount - score	Not	48,8%	77,5%
	Slightly	25,6%	10,0%
	Moderately	17,7%	7,5%
	Reasonably	7,9%	
	Very		5,0%

Table C4.17: Crosstab of the rating of the number of current public restroom facilities by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Hygiene - score	Not	26,3%	25,0%
	Slightly	43,3%	47,5%
	Moderately	20,7%	20,0%
	Reasonably	9,7%	7,5%
	Very		

Table C4.18: Crosstab of the rating of hygiene of current public restroom facilities by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Findability - score	Not	24,0%	41,0%
	Slightly	29,5%	38,5%
	Moderately	26,3%	17,9%
	Reasonably	18,9%	2,6%
	Very	1,4%	

Table C4.19: Crosstab of the rating of findability of current public restroom facilities by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Space - score	Not	12,5%	37,5%
	Slightly	30,6%	25,0%
	Moderately	32,4%	25,0%
	Reasonably	24,1%	10,0%
	Very	0,5%	2,5%

Table C4.20: Crosstab of the rating of space of current public restroom facilities by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Restroom bound facilities - score	Not	19,5%	15,0%
	Slightly	38,6%	47,5%
	Moderately	27,4%	27,5%
	Reasonably	12,6%	10,0%
	Very	1,9%	

Table C4.21: Crosstab of the rating of restroom bound facilities of current public restroom facilities by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Grooming facilities - score	Not	19,2%	20,0%
	Slightly	36,4%	30,0%
	Moderately	25,7%	32,5%
	Reasonably	16,4%	15,0%
	Very	2,3%	2,5%

Table C4.22: Crosstab of the rating of grooming facilities of current public restroom facilities by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Free access - score	Not	29,9%	38,5%
	Slightly	40,2%	38,5%
	Moderately	22,9%	15,4%
	Reasonably	7,0%	5,1%
	Very		2,6%

Table C4.23: Crosstab of the rating of currently always having free access to public restroom facilities by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Privacy - score	Not	3,3%	5,0%
	Slightly	29,3%	37,5%
	Moderately	22,3%	25,0%
	Reasonably	36,7%	27,5%
	Very	8,4%	5,0%

Table C4.24: Crosstab of the rating of privacy of current public restroom facilities by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Ability to relax - score	Not	42,1%	37,5%
	Slightly	29,2%	27,5%
	Moderately	19,9%	20,0%
	Reasonably	7,4%	12,5%
	Very	1,4%	2,5%

Table C4.25: Crosstab of the rating of the ability to relax and escape from daily life at current public restroom facilities by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Safety - score	Not	7,4%	9,1%
	Slightly	28,6%	34,8%
	Moderately	24,3%	31,8%
	Reasonably	36,5%	21,2%
	Very	3,2%	3,0%

Table C4.26: Crosstab of the rating of safety of current public restroom facilities by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Lively	Not important	46,5%	45,0%
	Somewhat important	33,0%	42,5%
	Reasonably important	14,0%	12,5%
	Important	5,6%	
	Very important	0,9%	

Table C4.27: Crosstab of the importance of public restroom environments to be “lively”.

		Physical ability	
		No physical disability	Physically less abled
Way-finding	Not important	3,3%	2,5%
	Somewhat important	16,5%	27,5%
	Reasonably important	31,1%	20,0%
	Important	35,4%	27,5%
	Very important	13,7%	22,5%

Table C4.28: Crosstab of the importance of easy wayfinding at public restroom environments.

		Physical ability	
		No physical disability	Physically less abled
Look	Not important	70,6%	82,5%
	Somewhat important	19,2%	15,0%
	Reasonably important	7,0%	2,5%
	Important	2,3%	
	Very important	0,9%	

Table C4.29: Crosstab of the importance of having a lot to look at, at public restroom environments.

		Physical ability	
		No physical disability	Physically less abled
Many elements	Not important	61,0%	62,5%
	Somewhat important	25,8%	30,0%
	Reasonably important	9,9%	7,5%
	Important	1,9%	
	Very important	1,4%	

Table C4.30: Crosstab of the importance of having many different elements at public restroom environments.

		Physical ability	
		No physical disability	Physically less abled
Protected	Not important	0,9%	
	Somewhat important	6,6%	12,5%
	Reasonably important	14,6%	20,0%
	Important	37,6%	12,5%
	Very important	40,4%	55,0%

Table C4.31: Crosstab of the importance of a protecting or sheltering feeling in comparison to the outside at public restrooms.

		Physical ability	
		No physical disability	Physically less abled
Open	Not important	9,4%	12,5%
	Somewhat important	21,6%	15,0%
	Reasonably important	24,9%	22,5%
	Important	32,9%	30,0%
	Very important	11,3%	20,0%

Table C4.32: Crosstab of the importance of public restroom environments to be "open" and not cramped or stuffy.

		Physical ability	
		No physical disability	Physically less abled
Natural	Not important	44,4%	60,0%
	Somewhat important	27,1%	22,5%
	Reasonably important	20,1%	12,5%
	Important	7,9%	2,5%
	Very important	0,5%	2,5%

Table C4.33: Crosstab of the importance of public restroom environments to have natural elements, like plants.

		Physical ability	
		No physical disability	Physically less abled
Lighting	Not important	3,3%	2,6%
	Somewhat important	12,6%	10,3%
	Reasonably important	22,4%	20,5%
	Important	36,0%	20,5%
	Very important	25,7%	46,2%

Table C4.34: Crosstab of the importance of public restroom environments to have natural elements, like plants.

Variable	Pearson's <i>r</i>	Approx. significance
Lack of space	.405	< .001
Waiting line	-.215	.001
Bad grooming facilities	.213	.001
Not sufficiently accessible to less abled	.385	< .001

Table C4.35: Overview of the statistically significant outcomes for a difference between barriers faced using public restrooms by physical abilities.

	Ability	
	No physical disability	Physically less abled
1.	Bad hygiene	Bad hygiene
2.	Lack of privacy	Lack of space
3.	Sense of unsafety	Bad restroom facilities
4.	Too long of a waiting line	Lack of privacy
5.	Bad restroom facilities	Bad grooming facilities
6.	Mandatory payment	Sense of unsafety
7.	Bad grooming facilities	Not sufficiently accessible to less abled
8.	Lack of space	Mandatory payment
9.	Separation between gender	Too long of a waiting line
10.	No separation between gender	Separation between gender
11.	Not sufficiently accessible to less abled	No separation between gender
12.	No restroom for less abled	No restroom for less abled

Table C4.36: Overview of the barriers faced when using public restrooms by physical ability, ranked 1 to 12.

		Physical ability	
		No physical disability	Physically less abled
Bad hygiene	No	10,1%	20,0%
	Yes	89,9%	80,0%

Table C4.37: Crosstab of bad hygiene being a barrier to respondents or not, by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Lack of privacy	No	50,5%	55,0%
	Yes	49,5%	45,0%

Table C4.38: Crosstab of lack of privacy being a barrier to respondents or not, by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Sense of unsafety	No	53,7%	70,0%
	Yes	46,3%	30,0%

Table C4.39: Crosstab of a sense of unsafety being a barrier to respondents or not, by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Bad restroom facilities	No	65,6%	55,0%
	Yes	34,4%	45,0%

Table C4.40: Crosstab of bad restroom bound facilities being a barrier to respondents or not, by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Mandatory payment	No	68,8%	82,5%
	Yes	31,2%	17,5%

Table C4.41: Crosstab of mandatory payment being a barrier to respondents or not, by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Lack of space	No	91,7%	52,5%
	Yes	8,3%	47,5%

Table C4.42: Crosstab of lack of space being a barrier to respondents or not, by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Too long of a waiting line	No	56,0%	85,0%
	Yes	44,0%	15,0%

Table C4.43: Crosstab of a long waiting line being a barrier to respondents or not, by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Bad grooming facilities	No	89,9%	70,0%
	Yes	10,1%	30,0%

Table C4.44: Crosstab of bad grooming facilities being a barrier to respondents or not, by physical ability.

		Physical ability	
		No physical disability	Physically less abled
No separation between gender	No	94,5%	95,0%
	Yes	5,5%	5,0%

Table C4.45: Crosstab of gender-neutral facilities being a barrier to respondents or not, by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Separation between gender	No	91,7%	95,0%
	Yes	8,3%	5,0%

Table C4.46: Crosstab of gender separated facilities being a barrier to respondents or not, by physical ability.

		Physical ability	
		No physical disability	Physically less abled
No restroom for less abled	No	99,5%	97,5%
	Yes	0,5%	2,5%

Table C4.47: Crosstab of a lack of facilities for less abled being a barrier to respondents or not, by physical ability.

		Physical ability	
		No physical disability	Physically less abled
Not sufficiently accessible for less abled	No	99,5%	80,0%
	Yes	0,5%	20,0%

Table C4.48: Crosstab of a restroom not being sufficiently accessible to less abled being a barrier to respondents or not, by physical ability.