Menstrual Friendly Public Toilet (MFPT) Toolkit
Guidance Note

December 2024

Conducting audits and stakeholder interviews to assess the menstrual friendliness of public toilets

Menstrual Friendly Public Toilet Working Group

Acknowledgements

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Introduction

Why do menstrual friendly public toilets (MFPTs) matter?

More than two billion people around the world menstruate each month[1], many of whom navigate the public domain in urban settings. For those who menstruate, a lack of **menstrual friendly public toilets (MFPTs)** in an urban context can make daily life difficult, affecting the ability to go to work, school, visit the market, or be a tourist. This may create unnecessary stress and anxiety in daily life and prevents full participation in public. Failing to provide menstrual friendly facilities may also lead to inappropriate disposal of menstrual products, creating costly maintenance and waste management problems for toilet operators and sanitation authorities.

Despite growing attention to the need to provide menstrual products in schools, shelters, and government buildings, little attention is given to the need for menstrual friendly public toilets. By making public toilets menstrual friendly, cities can enhance equitable access to the public space and ease burdens for those without home toilets. Considering the needs of those who menstruate is essential to allowing people to care for their bodies in a way that supports their preferences, hygiene, comfort, privacy, and safety, and has the added benefit of simultaneously improving the functionality of these spaces for everyone.

What is an MFPT?

Menstrual Friendly Public Toilets (MFPTs) are safe, clean, well-ventilated, and maintained toilets that allow users to comfortably manage menstruation (see **Appendix A: MFPT Graphics**). There are some features that can generally be used to define public toilets. As public toilets, MFPTs are at least partially funded, built and/or managed by the government, and available for anyone to use: not reserved for patrons or employees of a particular office. However, there is not a universally agreed definition of a "public toilet" and what is considered a public toilet does vary across contexts. Structurally, they can be standalone or located inside buildings. They may be single-user or multi-stall (see **Appendix B: Key Definitions**).

MFPTs include the same essential features that any well-maintained public toilet should, such as locking doors, lights, reliable water sources, and handwashing facilities.[2] The specific features of an MFPT will vary by context based on what is feasible and culturally appropriate. An early step in using this guidance is to review the included MFPT design (Appendix A: MFPT Graphic) and assess what components may be considered menstrual friendly locally.

1 Period Poverty – why millions of girls and women cannot afford their periods | UN Women – Headquarters. UN Women – Headquarters. Published May 24, 2024. https://www.unwomen.org/en/news-stories/explainer/2024/05/period-poverty-why-millions-of-girls-and-women-cannot-afford-their-periods#:~:text=Every%20month%2C%20more%20than%20two

2 For technical indicators of water, sanitation, hygiene, and waste management standards, review JMP's "Core questions and indicators for monitoring WASH in health care facilities in the Sustainable Development Goals" 2019 report.

Menstrual management components and supplies include:

- Menstrual product disposal units or lidded bins for disposing of used products
- Free or low-cost menstrual products available at the entrance or within private enclosure of facilities
- Mirrors for checking stains or adjusting clothing
- Hooks or shelves for hanging bags in stalls

Beyond these essential components, **accessibility features** include:

- Grab rails and design considerations for people with mobility-related disabilities
- Space to take care of babies and young children (e.g., diaper changing stations)

MFPTs should be considered an integral component within a broader sanitation system. In all contexts, they require:

- Attention to equity and accessibility needs in decisions about where to build and how to design facilities
- Adequate resources and planning for operations and maintenance
- Appropriate waste disposal and sanitation mechanisms

While this guidance note does not cover the full spectrum of sanitation infrastructure, it is important to keep this context in mind for planning coordination with stakeholders across sectors, including sanitation professionals. Ensuring that MFPTs are designed, managed, and maintained within a well-functioning sanitation system is key to creating inclusive and equitable public spaces. *See* **Appendix A: MFPT Graphics** for graphics depicting types and features of MFPTs.

Background on the multi-city MFPT study

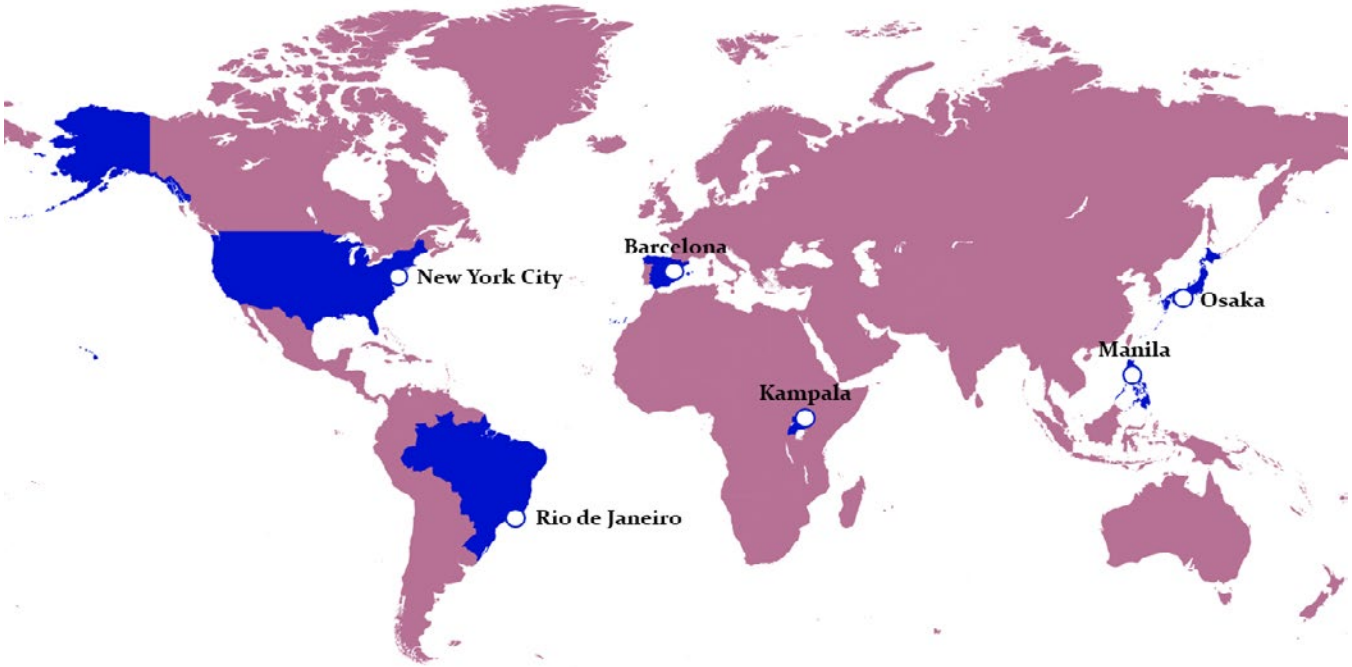
Since 2022, the GATE Program at Columbia University's Mailman School of Public Health has partnered with researchers and professionals around the world to generate evidence and promote MFPTs.

The Menstrual Friendly Public Toilet (MFPT) study was conducted in 2023 in six cities: Barcelona, Kampala, Manila, New York City, Osaka, and Rio de Janeiro. In each city, study teams assessed the current state of public toilets' menstrual friendliness and identified barriers and opportunities to improve public toilets for those who menstruate by:

1) Conducting toilet audits to explore how menstrual friendly current public toilet infrastructure is within four areas of each city: business, tourist, residential, and transit; and

2) Interviewing key stakeholders to better understand the challenges and possibilities for providing MFPTs.

Findings from this study highlighted critical service gaps in high-, middle-, and low-income countries throughout the world. To further build on this work, the Menstrual Friendly Public Toilet Working Group created the MFPT toolkit to share the tools developed and implemented through the six-city MFPT study. This guidance note, a key component of the toolkit, also includes **frequently asked questions (FAQs)** from this study.



Overview: how to use the MFPT toolkit

Who is the toolkit for?

Assessing the menstrual friendliness of public toilets through toilet audits and key informant interviews provides information that can be used to advocate for public spaces that are safe, equitable, and able to meet people's needs. This guidance note provides an overview of how to use the MFPT toolkit, which is designed for anyone interested in better understanding and documenting the availability and quality of MFPTs in their area. The toolkit is designed to provide resources for citizens, students, researchers, and anyone interested in gaining more insight into MFPTs, regardless of their technical background. The MFPT toolkit is flexible, allowing for use across various contexts and by a wide range of actors engaged in public health, sanitation, urban planning, and community advocacy.

The toolkit provides an adaptable set of instructions and tools to evaluate menstrual friendliness of public toilets in an urban context, which includes two key activities: a toilet audit and key informant interviews (KIIs).

What is included in the toolkit?

1. **Guidance note**
   - Appendix A: MFPT Graphics
   - Appendix B: Key Definitions
   - Appendix C: Spatial Information
   - Appendix D: Data Analysis
2. **Toilet audit tool**
3. **Training deck for the audit tool**
4. **Key informant interview guide**
5. **Dissemination examples: MFPT two-pagers**

What is not covered in this guidance note

This guidance note does not include detailed information about each step of using the audit tool. After reviewing the guidance note, please refer to the training deck for more details on how to conduct an audit.

This guidance note also does not include a detailed description about how to analyze the different data that are collected through the audit tool. Your team may take a few different approaches to analyzing your data from the MFPT Audit Tool. The audit tool was designed to capture a wide range of menstrual health and hygiene (MHH)-related characteristics that can be reported to a variety of audiences. You can conduct more or less rigorous analyses depending on whether you want to publish the results or simply present to a non-expert audience. Please refer to **Appendix D: Data Analysis**, which outlines steps for users to conduct analyses of the audit tool close-ended surveys. We have not included guidance on analyzing qualitative key informant interviews.

How to get started

The team lead(s) can review the guidance note and tools, and plan for the data collection and analysis. **Key steps include:** identifying the data collection sites and maps for the toilet audits, recruiting a team, training team members to conduct the toilet audits, selecting the key informants, conducting interviews, and ultimately analyzing and disseminating the findings.

NOTE: Although this guidance note describes planning for and conducting the toilet audit, and then the key informant interviews, these activities can be done in parallel.

How to plan and conduct a toilet audit

Toilet audits are observational surveys of the public toilets in a selected area. To conduct an audit, you will record information on toilet features and locations.

The below sections provide guidance for conducting a public toilet audit. Citizen scientists, researchers, MHH and sanitation advocates, and implementers are all welcome to use and adapt the tools and approaches as fits their needs, context, time, resources, and expertise. Your team does not need to have deep knowledge of any particular research method or sanitation policy or structure. However, team members should be, at a minimum:

1) willing to visit and observe public toilets to conduct field audits and/or conduct interviews with public officials and other key stakeholders

2) able to analyze, interpret, and communicate results to key stakeholders.

You and your team may choose to conduct toilet audits, stakeholder mapping and interviews in any order, or you may decide to do one activity and not the other. Data from the audits, however, can serve to inform the interview discussions. You should adapt the audit tool contents to your context and translate both tools into the language(s) that auditors and interview participants will feel comfortable using. Researcher should check ethical review requirements that may be required by your university or a government agency and submit a research protocol for review if relevant, especially if considering publishing findings.

The MFPT audit tool is designed to help you conduct audits in an urban environment. The tool assesses key aspects of MFPTs, including accessibility, structure and hardware (toilet components), basic supplies, safety and privacy, and the availability of menstrual management resources.

The audit tool will guide you to collect information that can be used to summarize or quantify public toilets' "menstrual friendliness" by calculating an MFPT Index score that was conceptualized in our study (see **Appendix D: Data Analysis**). These scores can help to understand the state and status of MFPTs throughout a city, and to provide evidence for advocacy if improvements are needed. You may also choose to take photos of the public toilets your team audits, though this is optional.

Planning the audit

The first step in planning the audit is defining the areas where the audit will be conducted. Locations of interest could include business areas, with markets and commercial streets; tourist areas, where one or more attractions for visitors are located; transit hubs, including buildings or areas that serve as key points for mass transit; and residential parks/plazas. We recommend identifying audit areas that meet criteria of these four neighborhood types to assess similarities and differences (see training deck on the GATE website). Each team can determine what would be most useful for their needs, and what types of sites are most relevant to their context.

Please see **Appendix C: Spatial Information** for details on how to identify sites and develop the spatial maps needed for the data collection of public toilets.

Team size will depend on the number of sites selected and the timeline for data collection, with teams of two people recommended to conduct the public toilet audits. Think about team composition and what is most feasible given the context and available resources. Team members should audit facilities they feel comfortable using.

Once sites are identified, the team leader should train the audit team (see training deck on the GATE website), and also check the availability of smartphones/resources. Auditors should always work in pairs when collecting data and researchers should confirm the safety of the sites in advance.

Data collection tools are designed to work digitally or on paper, so the study lead can determine the most appropriate approach for the selected areas. Some considerations include the potential risk of smartphone theft in selected sites, the additional time needed to record data by hand and extract that data later on.

Pre-Data Collection Checklist: Before heading into the field	
What to do:	**What to bring:**
• Know where you are going and how your audit team will get there and back • Examine a map of your data collection site • Know how to find latitude and longitude coordinates on your phone (see **Appendix C: Spatial Analysis**) • Set up communications (e.g., WhatsApp group) before beginning data collection to facilitate real-time troubleshooting during the audit • Notify your team lead that you are going to do data collection – send a message before/after you collect data	• The name and contact information of data collection partners and study team lead • A map of your data collection site(s) • A charged mobile phone with Google Maps installed • Printed copies of the toilet audit tool along with pens and a writing surface if your team is using the paper audit tool

Data collection

To conduct an MFPT audit, teams of two will visit designated areas to observe and record basic information about each area to be audited ("site"), facility latitude and longitude coordinates, and descriptions of toilet status, accessibility, structure, cleanliness, and function. Safety is of utmost importance throughout all phases of data collection. To ensure your safety throughout the process:

- Only conduct audits when and where you feel safest - during daylight hours, when there are other people around, when you know you can find help if you need it, etc. If at any point during data collection you feel unsafe, please leave the site and go somewhere safe.
- Call your team members and/or local emergency services if you need to.
- Be prepared to explain what you are doing, including your organizations and the purpose of the audit. It is important to emphasize that you are not collecting any information about people.

Audits are estimated to take 1-2 hours for each area, so it is usually not feasible for auditors (data collection teams) to visit more than one per day.

Collecting photos during the audit

Photos of toilets and their varying components and characteristics can be a useful consideration for audits, as they provide visual documentation of the current condition of identified toilets. Photos can capture details that might otherwise be overlooked. They can also be powerful tools for communication and advocacy. For example, photos that show a menstrual product dispenser or a dirty toilet facility could be useful for presentations on the findings of the audit exercise. However, photos are optional and should only be taken if it feels safe to do so. Do not take photos of people; if photos are taken, all auditors should be especially careful to ensure no toilet users are captured. Pre-determine a method for matching photos with the associated audit (e.g., recording the time and location). In some locations, taking *any* photos of facilities (whether they include users or not) might go against cultural norms. Toolkit users should explore the appropriateness of taking photos during the planning phase of the audit.

How to plan and conduct key informant interviews

A key informant is a person who is identified as having first-hand knowledge about a given topic or community, and can include a broad range of people such as community leaders, residents, professionals, and subject matter experts. The key informant interviews (KIIs) are a valuable complement to the audit, as they provide insight into the history and current status of public toilets and menstrual health in a city. KIIs can illuminate stakeholders' interrelationships, interests, power, and position related to the construction, maintenance, and operations of public toilets. They can also capture how menstrual friendly features may be understood and identify solutions to increasing the availability of MFPTs.

Key informants should include people familiar with sanitation, public toilets, and menstrual health-related policy and practice. These might include representatives of public health, sanitation, urban planning, transportation or parks departments; elected officials or their staff members; representatives from advocacy organizations; or researchers. Study teams can select key informants by reviewing relevant organization charts, annual reports, and other documents to identify people who are involved in the legislation, implementation, and maintenance of public toilets. Participants can also provide additional contacts for consideration.

Stakeholder Mapping

Teams should start with listing potential key stakeholders to interview, and then narrow down to individuals from 5-10 organizations or agencies to interview. Key informants might include, for example, local government staff members involved in sanitation policy within a city, menstrual health advocates, urban planners engaged in public works projects, community groups advocating for improved public toilets, and so on.

Study teams can then conduct KIIs with a sample of individuals. The number of KIIs will depend on the scope of your project, timeline, and resources. You should always collect informed consent for both conducting interviews and recordings. Interviewees must understand that their participation is voluntary and have a clear understanding of why you are interviewing them, what you want to learn, and what you will do with any information about them that you collect. If you take notes or record interviews, you should make sure to handle information carefully so that individuals cannot be identified.

For further details, please review the **KII interview guide** included in the MFPT toolkit. The guide uses a semi-structured interview format. That means, it is simply a guide to follow, and whoever on the team is conducting the interviews may ask additional probing or follow up questions. In addition, you should adapt your interview questions based on the interviewee's professional role, and you can change or skip questions as you go. For example, some questions may be more or less relevant to a stakeholder from a local government office versus a menstrual health advocate or a community member.

To interpret the interview data, you may simply review for key insights or developments that may not be evident in the audit data, such as common barriers or opportunities to establishing MFPTs, or examples of programs or policies to improve public toilets overall or introduce menstrual friendly features.

Recommendations for analysis and dissemination

Study teams team should clarify what they would like to learn and who they want to share their findings with before they begin the data collection. Analysis, and subsequent dissemination, should then be guided by these objectives. For recommendations and detailed guidance on analyzing the toilet audit data, please see **Appendix D: Data Analysis**.

The audit tool and key informant guide will capture detailed, comprehensive data that can be used to produce a wide range of research products and advocacy documents. Some dissemination approaches could include meetings or webinars to share back findings with key stakeholders, 1-2 page fact sheets that can be used by communities to advocate for different legislative or funding priorities, or to otherwise inform policy and planning. Considering advocacy goals early in the process, such as from the audit planning stage, can help research teams identify opportunities for collaboration, build buy-in from key stakeholders (e.g., sanitation entities), and increase research uptake.

Frequently Asked Questions (FAQs)

Question
Should we use the paper audit tool or the digital audit tool?

Answer
We recommend using the digital tool if you have the capacity and are able to navigate the technology well, however the paper tool will work just as well so it is your choice!

Question
What should we do if we are unsure about how to mark a certain item on the audit tool?

Answer
Take notes about the particular question and check in with your team leader to see how they would recommend marking it for consistency across your team.

Question
What should we do if we are unsure if we should survey a particular toilet (e.g., is it public or not)?

Answer
A "public toilet" will not be one in a shopping mall, restaurant, hotel or private business unless there is a specific law to provide access to toilets to the public in your city. If it is in a government-owned building, such as a university, police station, office or federal bank, the law may require that it is available for anyone to use without showing identification or passing through security gates. If it is, it would be considered "public." Public toilets will include toilets in public parks, beaches, streets, libraries, and in bus and train stations. However, it is also a good idea to take note of whether a particular site is truly "public" or a public-private partnership.

Question
Should we continue conducting toilet audits in an area that we have heard is unsafe?

Answer
Do not conduct toilet audits in areas that feel unsafe. Make a note of where you went and notify your team if you do not feel safe. For all audits, we recommend going with at least one other person, and conducting audits during daytime hours.

Question
What do we do if a single-occupant toilet is currently being occupied?

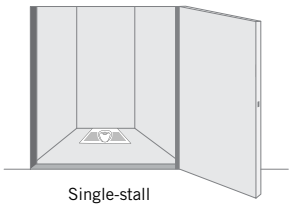
Answer
We recommend waiting a few minutes (~10 minutes) in the area to see toilet facility becomes available. If a toilet facility continues to be occupied, indicate this selection on the item related to toilet status, write the end-time, and move onto another audit.

Question
We believe there are some additional toilet facilities nearby but are outside of the defined buffer area. Should we conduct audits for any of these?

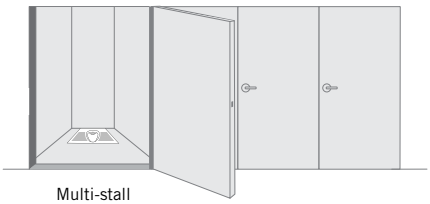
Answer
If the facilities are right outside the defined buffer area, it is up to the data collection team to decide if they want to conduct the toilet audits. Be sure to collect location information (latitude and longitude geographic coordinates). During data analysis, the team will decide whether to include these observations depending on the distance outside of the defined 500-meter buffer zone.

Appendix A: MFPT Graphics

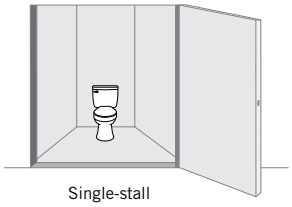
Types of toilet



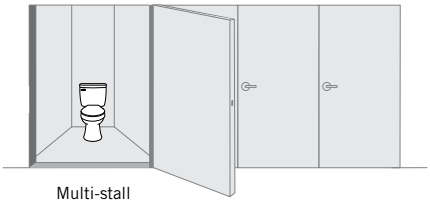
Single-stall squat



Multi-stall squat



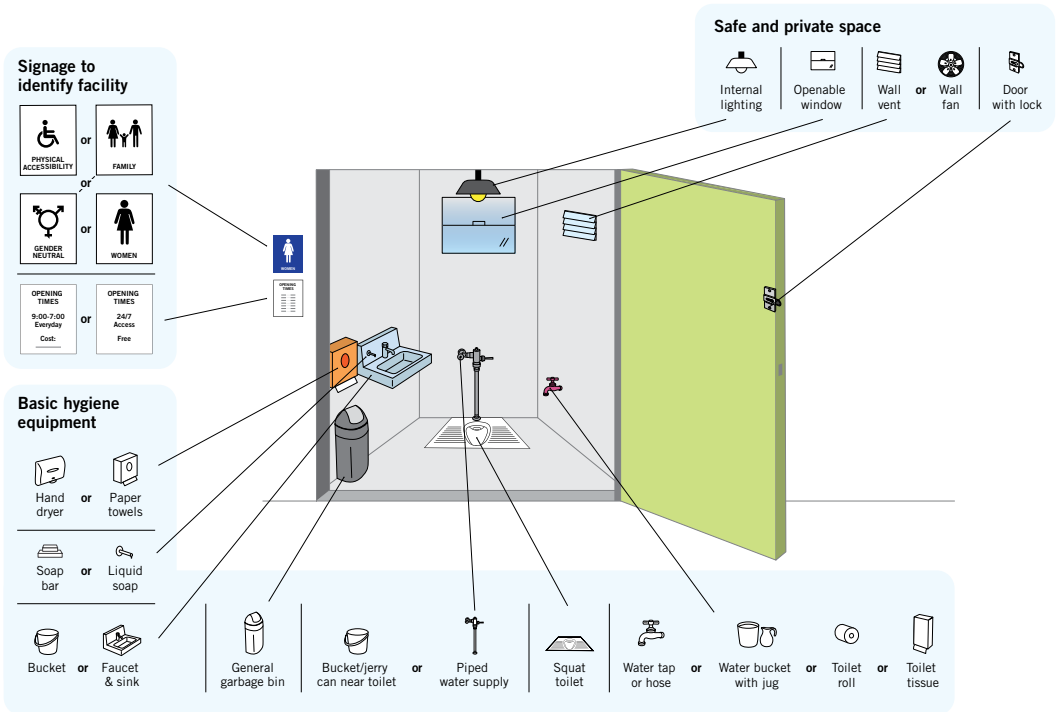
Single-stall Western



Multi-stall Western

Single-stall, squat

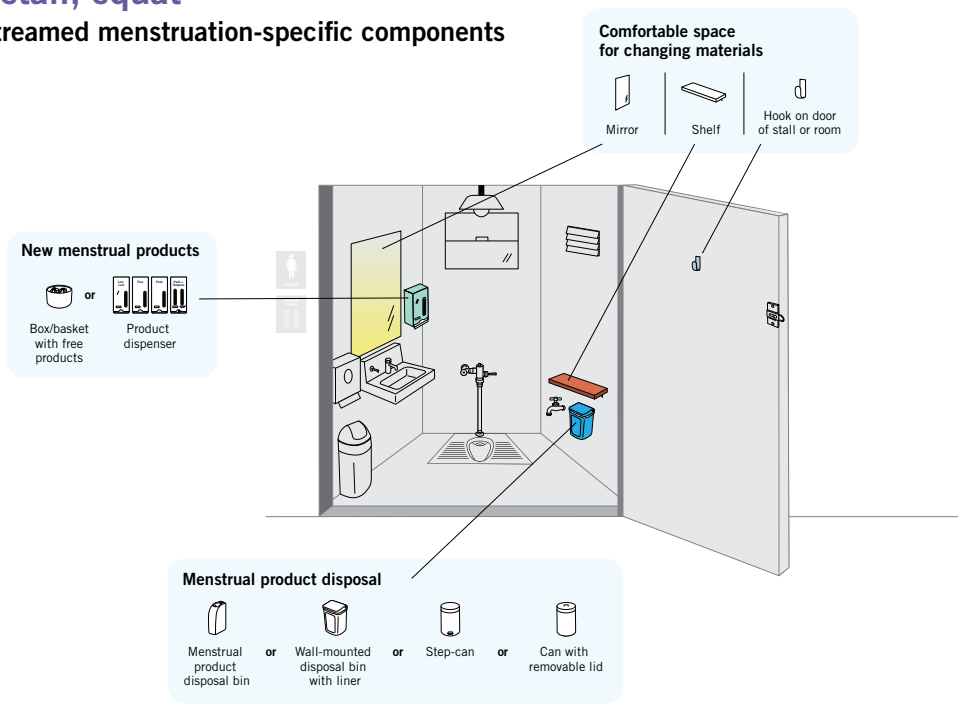
A. Basic features of an accessible working public toilet



Appendix A: MFPT Graphics

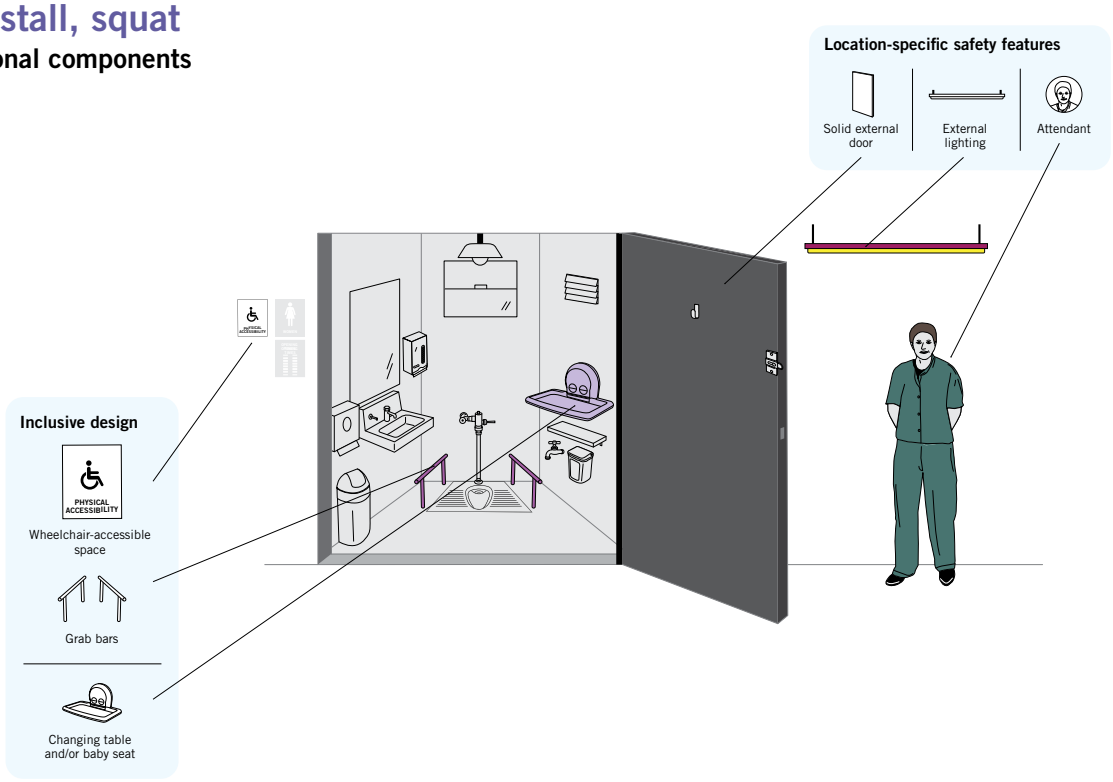
Single-stall, squat

B. Mainstreamed menstruation-specific components



Single-stall, squat

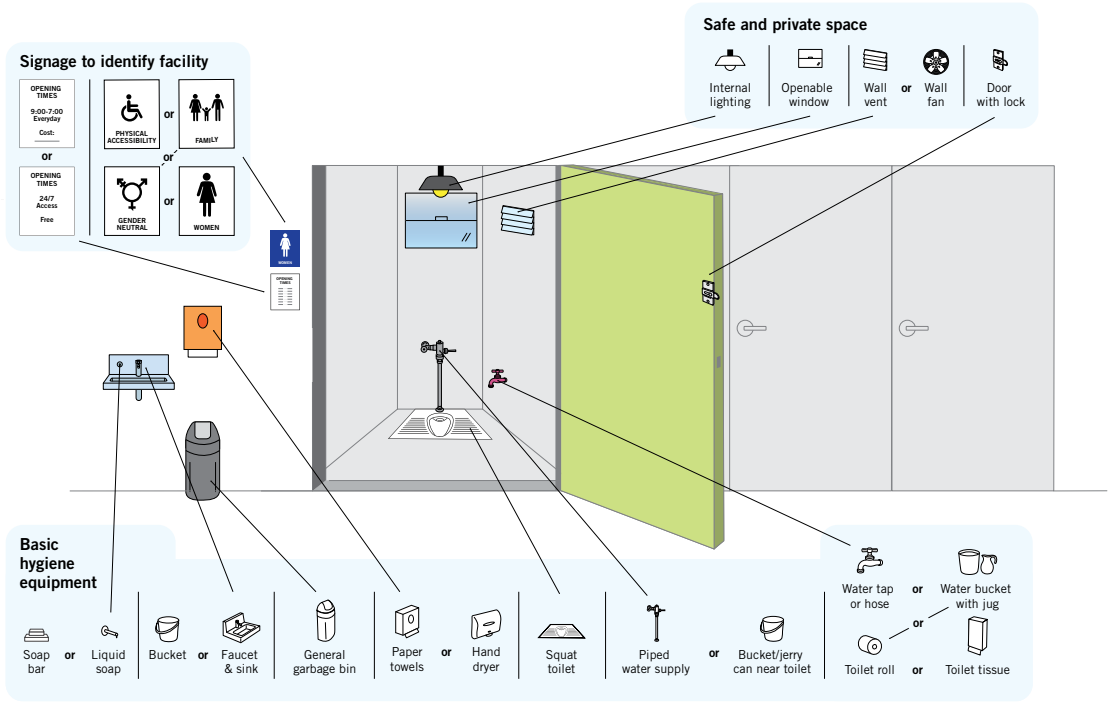
C. Additional components



Appendix A: MFPT Graphics

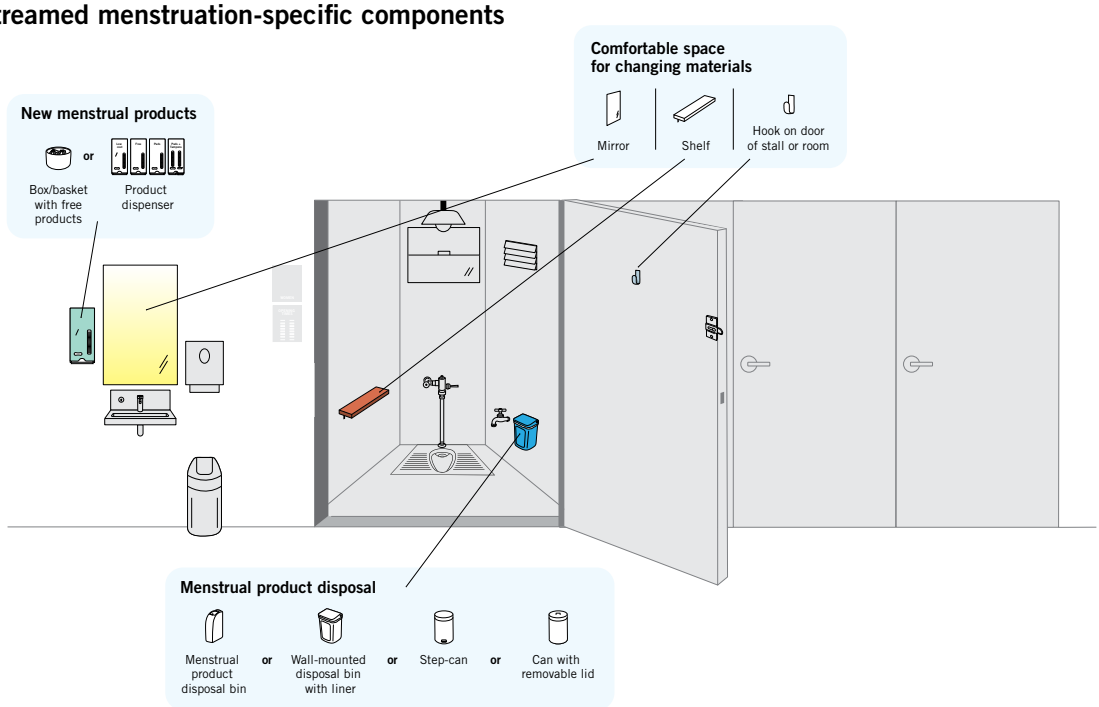
Multi-stall, squat

A. Basic features of an accessible working public toilet



Multi-stall, squat

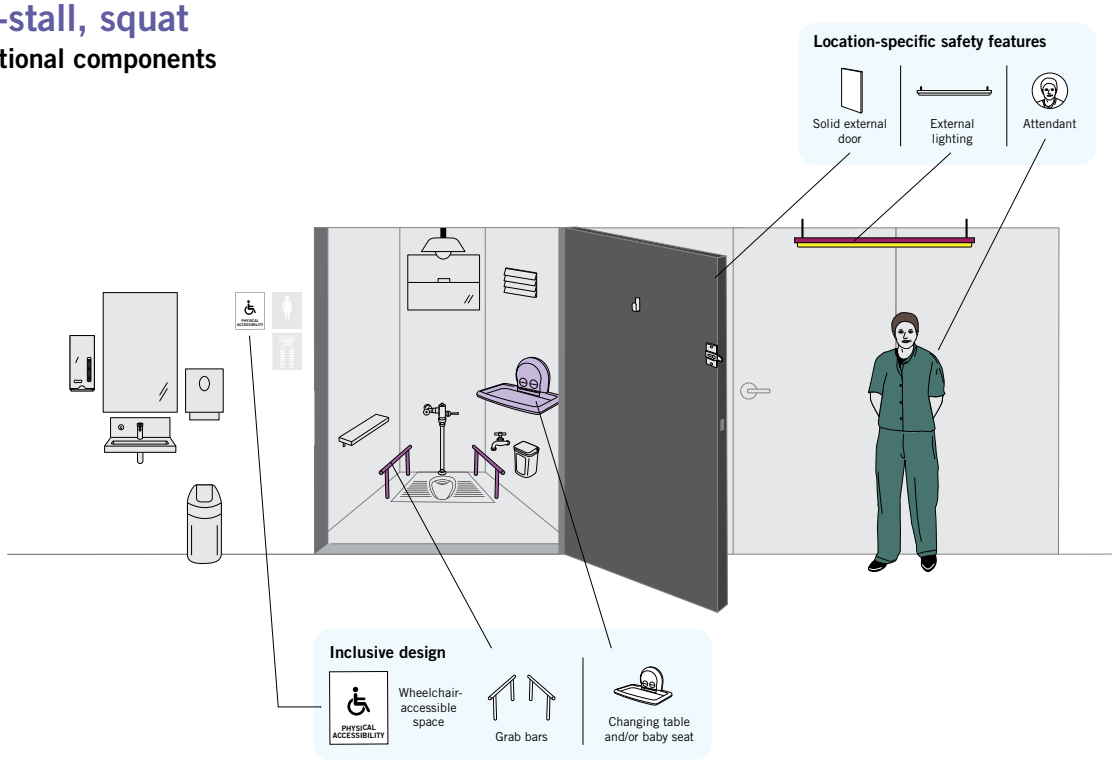
B. Mainstreamed menstruation-specific components



Appendix A: MFPT Graphics

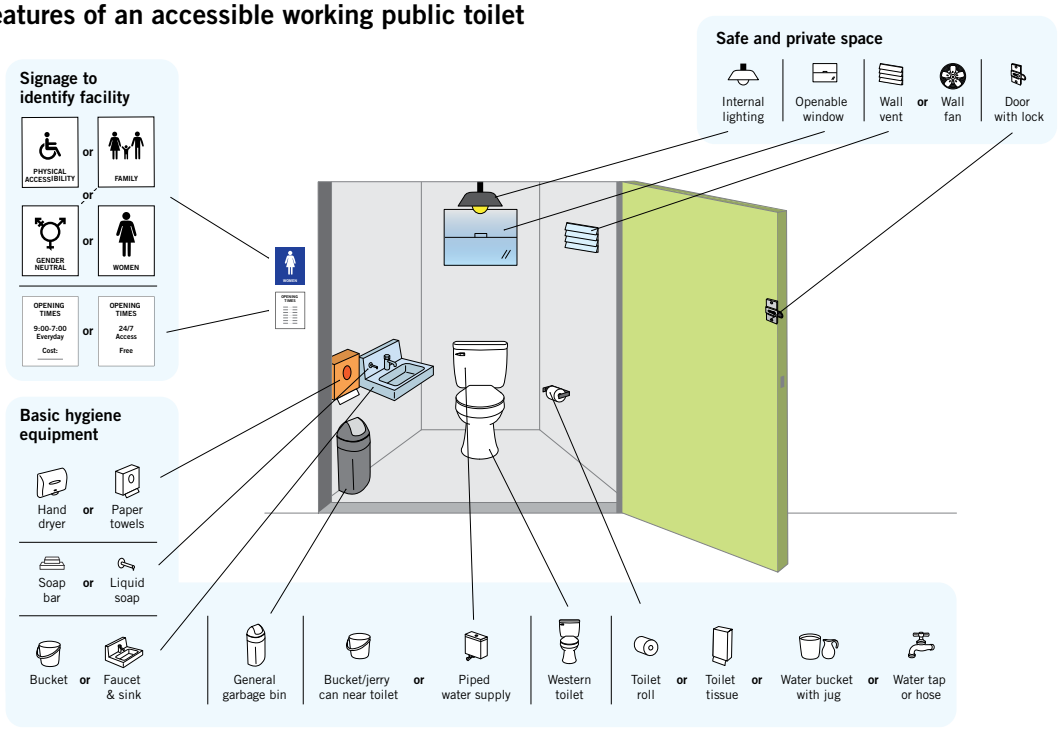
Multi-stall, squat

C. Additional components



Single-stall, Western

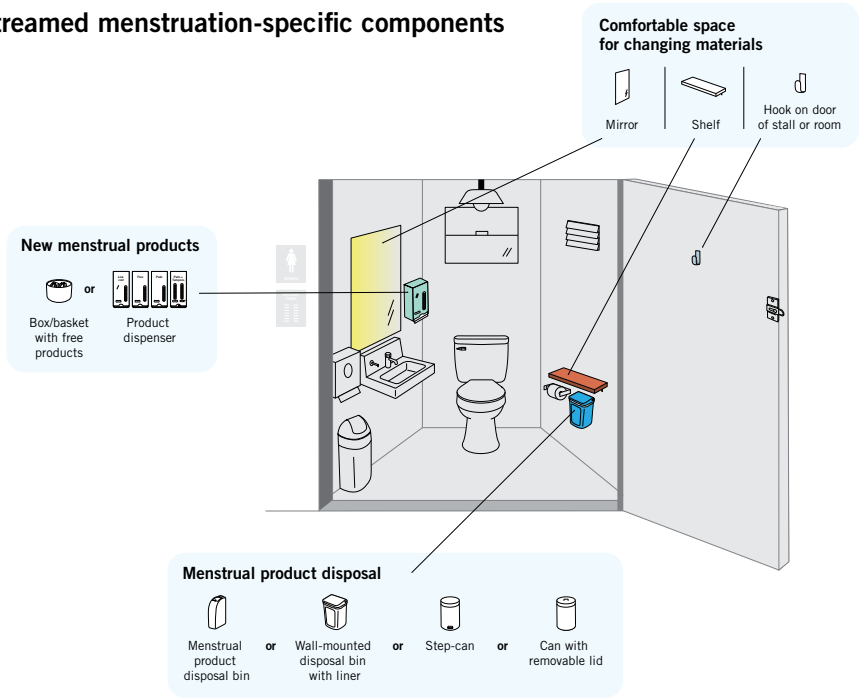
A. Basic features of an accessible working public toilet



Appendix A: MFPT Graphics

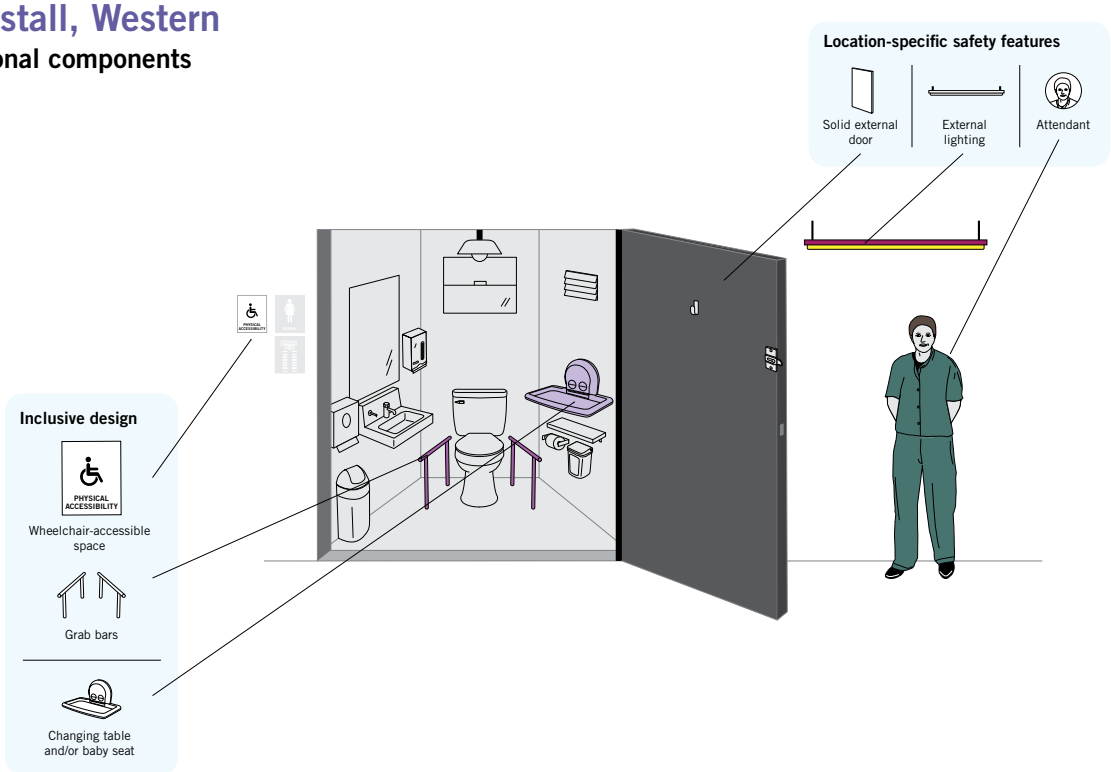
Single-stall, Western

B. Mainstreamed menstruation-specific components



Single-stall, Western

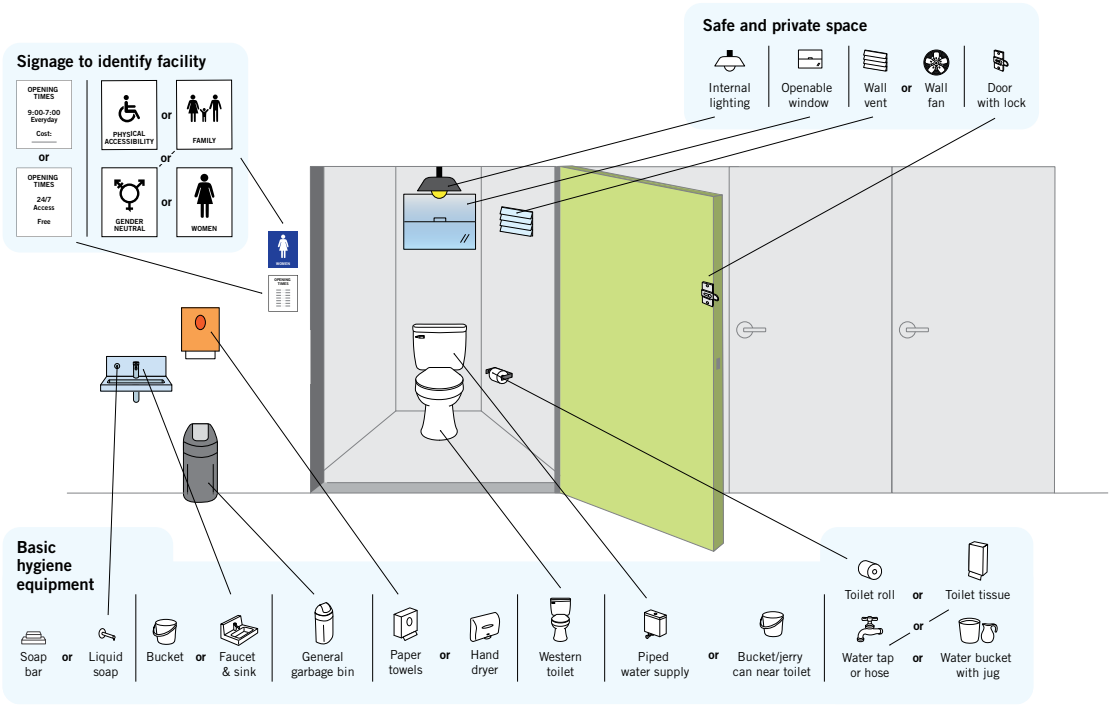
C. Additional components



Appendix A: MFPT Graphics

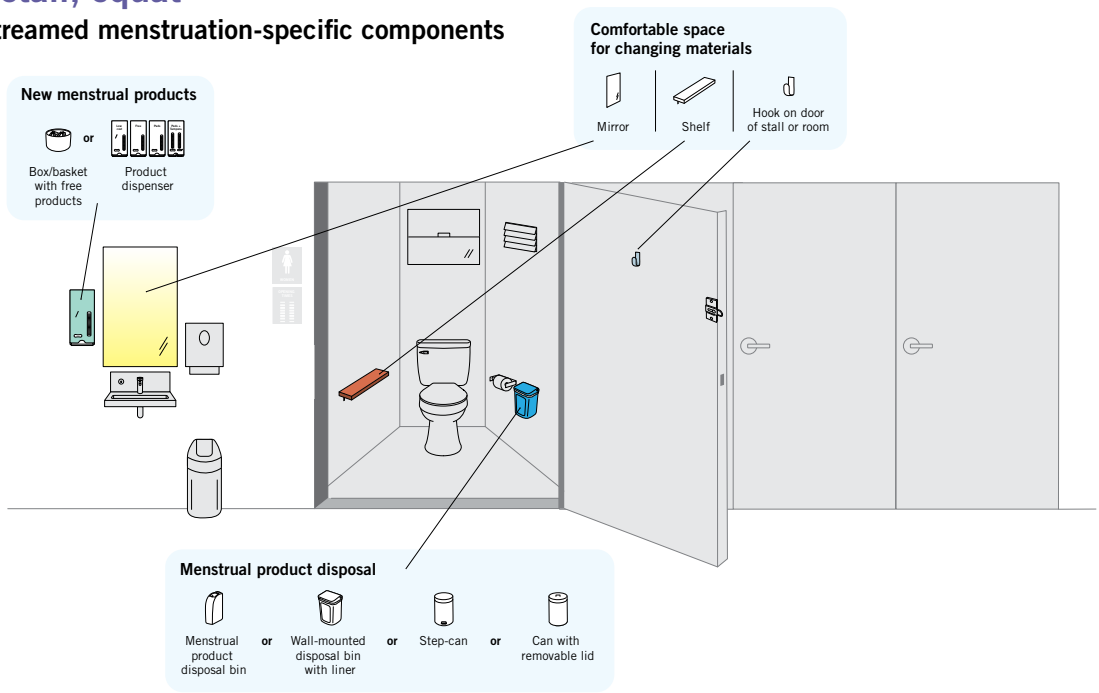
Multi-stall, Western

A. Basic features of an accessible working public toilet



Single-stall, squat

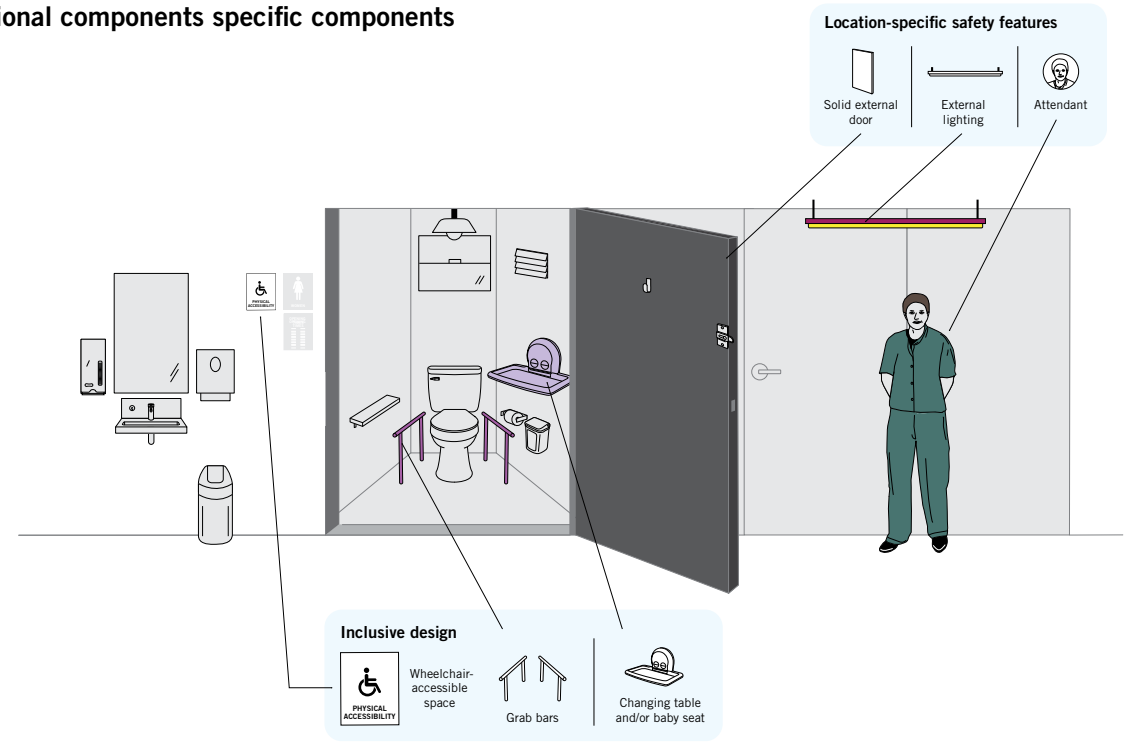
B. Mainstreamed menstruation-specific components



Appendix A: MFPT Graphics

Multi-stall, Western

C. Additional components specific components



Appendix B: Key Definitions

Building

Refers to the physical structure where the toilet facility(s) are located. Building may be a stand-alone toilet structure or a multi-use building that includes public toilets

Toilet facility or toilet

Structure or reserved space, also known as a bathroom, WC, etc., that contains one or more individual toilets (squat, stance, commode, etc.). This may be single-or multi-occupant use. You can adopt the terms that will be best understood in your context

Single-occupant toilet facility with stall/cubicle

A facility designed for one person to use at a time, in which the toilet is enclosed with side panels and/or a door

Single-occupant toilet facility with no stall/cubicle

A facility designed for one person to use at a time, in which the toilet is NOT enclosed or separated from the rest of the room

Multi-occupant stall toilet facility

A facility with more than one toilet, enclosed with side panels and/or doors, designed for more than one person to use at a time

Western toilet

Term used in the MFPT study to refer to a toilet with a raised seat and flushing mechanism. The term "Western toilet" can also be used interchangeably with the term "seated toilet" for the purposes of this guidance note

Menstrual health

A state of complete physical, mental, and social well-being in relation to the menstrual cycle. Achieving menstrual health implies people who menstruate throughout their life-course can, among other things, care for their bodies during menstruation in a way that supports their preferences, hygiene, comfort, privacy, and safety. This includes access to effective and affordable menstrual materials and having supportive facilities and services, including water, sanitation and hygiene services, for washing their bodies and hands, changing menstrual materials, and cleaning and/or disposing used material[3]. Menstrual health and hygiene (MHH) is also used interchangeably in this guidance note

3 Hennegan J, Winkler IT, Bobel C, et al. Menstrual health: a definition for policy, practice, and research. Sexual and Reproductive Health Matters. 2021;29(1):1911618. doi:https://doi.org/10.1080/26410397.2021.1911618

Appendix C: Spatial Information

There are two main tasks associated with spatial information: (1) creating the buffers to be used in the field and (2) capturing the latitude and longitude of audited toilets. These tasks are not necessary in order to complete toilet audits, but they are encouraged for several reasons. Creating buffers will allow for a systematic approach to conduct audits. Collecting information on latitude and longitude is helpful for quality assurance and analyzing the built environment.

Creating Buffers

The first part of this task involves plotting a location to represent the "center point" of the neighborhood to be audited. It could be a building (e.g., train station), a built feature (e.g., park or plaza in a residential neighborhood), or other points of interest (e.g., tourist attraction, approximate center of a business district, etc.). A 500m buffer is then drawn around the point to indicate the area that the data collection teams should audit. Optionally, a 250m buffer can also be created which may help the data collectors orient themselves. For our original study, these tasks were completed using ArcGIS Pro (ESRI), however any number of GIS packages can be used, including free and open-source ones such as QGIS and Google Earth. Once the points and buffers are created, they should be exported and saved as a KML file so that the data collection teams can access them in Google Maps. If your team does not have the option of using a GIS, it is possible to simply "drop a pin" in google maps and then manually draw a 500m buffer around the point, or print out a map (from any source) and manually draw points and buffers in the neighborhoods to be audited.

Capturing latitude and longitude

This task will take place during (or after) auditing a facility, and can be employed even if the team decides not to use the buffers described above. If the data collection teams are working directly from Google Maps while in the field (i.e., using a mobile device such as a smart phone or tablet with location enabled), the coordinates can be retrieved directly (e.g., touch/hold the point on the map where the toilet is, which will create a pin and show the latitude and longitude in the search box). If using paper maps, mark the toilet location on the map, then when back from the field, if you have access to a mobile device use the method above by touching/holding the location shown on the paper map, or if you have access to a laptop, right-click on the indicated location to view the coordinates. Similar approaches can be used in different mapping applications depending on what is available to the team (e.g., Bing Maps). It is also possible to adapt the audit tool to free mobile data collection platforms like Kobo ToolBox, which have built-in GPS capture.

Appendix D: Data Analysis

Your team may take a few different approaches to analyzing their data from the MFPT Audit Tool. The audit tool was designed to capture a wide range of MHH-related characteristics that can be reported to a variety of audiences. Consider your objective, research questions (if any), and who this information will be for. Research, policy, and other audiences may have different views. In this section, we provide steps and guidance for users to conduct analyses of close-ended surveys.

We present two approaches for analyzing the data: 1) basic descriptive approach analysis; and 2) the MFPT framework approach, including utilizing the MFPT Index. Decision-making around handling missingness should include assessing whether data is structurally missing, not applicable to the local context, or due to human error. We encourage consulting with statistician if you/your team are processing a large dataset.

Before choosing an analytical method (examples presented in the follow section), consider the following questions:

- What is the primary goal(s) or objective(s) of your data analysis?
- Who will you be sharing your findings with? Who is your target audience?
- What level of detail is required to meet your goals or objectives?
- Do I/Does my team have the resources (e.g., time, technical skills) to conduct the analyses?

Preparing data for analysis

1. **Identify appropriate software for survey data analysis**

   We recommend using a software application (e.g., R Studio, SAS, Tableau) that you are most comfortable with that will allow you to sort, clean, analyze, and visualize data for reporting

2. **Download response data**

   If using Qualtrics, you can export all of the responses to be saved on your computer for analysis in another software platform. Each row of the file is a unique recorded toilet facility, and each column is a unique variable (item from the survey). More details on exporting response data on Qualtrics can be found on Qualtrics' guidance on "Exporting Response Data."

3. **Clean and process data**

   Examine the raw data to flag and/or resolve the following scenarios:

   - Rows (facilities) with incomplete data, most likely due to being closed or inaccessible
   - 'True' missingness versus not applicable responses, data outliers, mismatched data types
   - Duplicate observations that may need to be removed
   - Open-ended text data
   - Variables that may need to be recoded/ transformed (e.g., combining categories or values together, dichotomizing variables)

4. **Determine analysis methods based on research and/or communication objectives**

   Basic descriptive approach

   - Provide basic information to directly describe all or select items from survey using percentages or count data
   - *Recommended for individuals who are less familiar with quantitative analyses*

Appendix D: Data Analysis

Example: Snapshot from the MFPT Audit Tool

Section 8: Availability of menstrual management items & other supplies		
62	**Is there at least one mirror in adequate condition and long enough in length that can be used for adjusting clothing?**	○ No ○ Yes
63	**Is there a changing table/station and/or a place to care for a baby** (e.g., family cubicle/stall)?	○ No ○ Yes
64	**Are there menstrual products available in the toilet facility** (e.g., dispenser with menstrual products, basket with menstrual products)? ○ No, not available ○ Yes, stocked and/or machine is working ○ Yes, but cannot confirm stock or dispenser function ○ Yes, but not stocked and/or machine is not working	

Snapshot of a dataset:

Audit ID	Item_62	Item_63	Item64
BUS_01012001_01	0	1	0
BUS_01012001_02	1	1	1
BUS_01012001_03	1	0	0
BUS_01012001_04	0	0	0
BUS_01012001_05	0	1	3
BUS_01012001_06	1	1	2
BUS_01012001_07	0	1	1

Item 62 and 63: coded as 0 = No, 1 = Yes
Item 64 coded as: 0 = No, not available, 1 = Yes, stocked and/or machine is working
2 = Yes, but cannot confirm stock or dispenser function, 3 = Yes, but not stocked and/or machine is not working

Snapshot of a descriptive table, presenting results from above:

Availability of select menstrual management items	N (%)
At least one mirror available	3 (42.8%)
Changing table/station	5 (71.4%)
Functioning products/machines (stocked or not stocked)	3 (42.7%)

Note: For Item 64, response categories 2 and 3 were combined.
Data for all response categories can be reported as is or collapsed depending on preference.
N = number of observations, % = percentage of item present

Appendix D: Data Analysis

MFPT framework approach (see guidance in next section)

- An exploratory approach used to generate sub-domain and overall MFPT Index scores, to summarize information on key sub-domains related to accessibility, privacy/safety, other MFPT sub-domains, and overall "menstrual friendliness" of public toilets.
- Recommended for individuals with quantitative research training and experience using statistical software

MFPT framework approach

In order to systematically analyze audit data, we can consider potential of sub-domains of interest. Each subdomain includes criteria integral to a menstrual friendly public toilet. Our previous study focused on six sub-domains with each sub-domain comprised of 4-8 items from the survey audit tool (see table below). For each sub-domain, MFPTs can be described as meeting a proportion, if not all of the sub-domain's criteria (see guidance in "Creating an MFPT Index").

Key MFPT Sub-domains[1]

Domains	Examples of MHH characteristics we measured
Accessibility	No permission needed to use the bathroom
	Open 24 hours, 7 days a week
Privacy/Safety*	>75% of stalls with functional locks
	Functional electric light
Structure	>75% of cubicles/stalls with functional hooks/shelves
	"Good condition' toilets
Availability of Resources (general)	Available and useable trash cans/dust bins
	At least one functional hand-dryer or stocked towels
Cleanliness	Visibly clean
	No noticable odor
Availability of MHH Resources	Full-length mirror
	>75% of cubicles/stalls with disposable bins
	Menstrual products stocked or working machine

1 Only select characteristics shown above for each identified category.

Appendix D: Data Analysis

The six sub-domains, as shown in the table above, are described in detail in the following section. Each characteristic within its respective sub-domain will need to be generated from 1 or more items from the audit tool. For example, the sub-domain "Accessibility" consists of 5 characteristics generated from 7 audit tool items. In statistical software, the specified audit tool items (variables) below will need to be dichotomously recoded as new variables indicating whether the desired MHH characteristic is present or not (Yes = 1, No = 0). In the following guidance section, the "indicated" response levels should re-coded as '1' (Yes), and all other values coded as '0' (No). Some characteristics will require several steps of re-coding in order to generate a dichotomous Yes/No characteristic.

Coding guidance on MFPT sub-domains

Sub-Domain	Sub-domain characteristics	Item from Audit Tool	#	Response/Indicator	Code
Sub-Domain 1: Accessibility	No permission needed	Do you need permission to use the toilet facility?	10	"No" for both Items 10 and 13	1
		Do you need a code or a key to access the toilet facility?	13	All other response combinations	0
	Visible sign indicating restroom or toilet entrance	Is there a visible sign indicating the toilet facility entrance?	9	No	1
				Yes	0
	Unrestricted building access	Do you need to gain access to a building before you can access the toilet facility?	7	No	1
				Yes	0
	Open 24/7	Is the toilet facility open 24 hours, 7 days a week?	5	All other responses	0
				Yes	1
	No fee	Is there a fee to use the toilet facility?	12	"No" for both Items 8 and 12	1
		Do you need to purchase something to use the toilet facility?	8	All other response combinations	0
	Sum scores and divide by the number of items to get the sub-domain score				/5

Appendix D: Data Analysis

Sub-Domain 2: Structural Privacy/Safety	Functional door for entrance	Is there a functional door(s) for the main toilet facility entrance(s)?	19	No	0
				Yes	1
	>75% stalls with functional doors	Of the stalls/cubicles you were able to access, how many have a functional door?	26	Calculation: if Item 26/Item 24 => 0.75	1
		How many number of toilets/ stalls/cubicles are in this facility?	24	Calculation: if Item 26/Item 24 < 0.75	0
	>75% of stalls with functional locks	Of the stalls/cubicles you were able to access, how many have functional locks?	27	Calculation: if Item 27/Item 24 => 0.75	1
		How many number of toilets/ stalls/cubicles are in this facility?	24	Calculation: if Item 27/Item 24 < 0.75	0
	Electric light	Is there a source of electric light (overhead lighting, lamp, etc.)?	22	Other responses	0
				“Yes, and operating”	1
	Sum and divide by the number of characteristics (4) to get the sub-domain score				**/4**
Sub-Domain 3: Facility Structure	>75% of stalls with functional hooks/shelves	Of the stalls/cubicles you were able to access, how many have functional hooks/shelves?	28	Calculation: if Item 28/Item 24 is =>0.75	1
		How many number of toilets/ stalls/cubicles are in this facility?	24	Calculation: if Item 28/Item 24 is <0.75	0
	Natural or electric light	Is there a source of natural light (window, skylight, etc.)?		"No" to both Items 21 and 22	0
		Is there a source of electric light (overhead lighting, lamp, etc.)?		"Yes" to both Items 21 and 22	1
	Toilets in adequate or good condition	Toilet(s) condition (select one)	39	"Good" or "Adequate”	1
				"Poor"	0
	Functional sinks	Sink(s) condition (select one)	53	"Good" or "Adequate	1
				"Poor" or "No Sink Available"	0
	Ventilation	Ventilation (Select all that apply):	57	"Vent or Fan" or "Natural (window)" are selected	1
				All other responses	0
	Sum and divide by the number of characteristics (5) to get the sub-domain score				

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Sub-Domain 4: Availability of General Resources	>75% of stalls with at least 1 roll of toilet paper	Of the stalls/cubicles you were able to access, how many had at least 1 roll or sheets of toilet paper?	36	Calculation: if Item 36/Item 24 is =>0.75	1
		How many number of toilets/ stalls/cubicles are in this facility?	24	Calculation: if Item 36/Item 24 is <0.75	0
	Available and useable trash cans/bins	Availability of a general trash can(s) or dust bin(s) in the toilet facility	54	"Available and useable/ not full" or "Not inside, but available outside near the facility"	1
				All other responses	0
	>75% of stalls with functional toilets	How many of the total number of toilets have functional seats?	38	Calculation: if Item 38/Item 24 is =>0.75	1
		How many number of toilets/ stalls/cubicles are in this facility?	24	Calculation: if Item 38/Item 24 is <0.75	0
	>75% of stalls with functional toilets	Is there water available in the toilet facility?	44	No	0
				Yes	1
	Ratio >0.5 sinks per number of toilets	Total number of functional taps/sinks	46	Calculation: if Item 46/Item 24 is =>0.50	1
		How many number of toilets/ stalls/cubicles are in this facility?	24	Calculation: if Item 46/Item 24 is <0.50	0
	Ratio >0.5 soap/ liquid dispensers per number of toilets	Total number of functional liquid soap dispensers	49	Calculation: if (Item 49 + Item 50)/ Item 24 is => 0.50	1
		Total number of soap bars	50		
		How many number of toilets/ stalls/cubicles are in this facility?	24	Calculation: if (Item 49 + Item 50)/ Item 24 is <0.50	0
	At least one functional hand-dryer or stocked towels	Are there paper towels/paper towel dispenser(s)?	51	"No" for both Items 51 and 52	0
		Are there hand dryer(s)?	52	"Yes" for either Items 51 or 52	1
	Sum and divide by the number of characteristics (7) to get the sub-domain score				**/7**

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Sub-Domain 5: Cleanliness	Visibly clean	Are there visible feces, urine, insects, used toilet paper or other materialsin the space?	56	No	1
				Yes	0
	No noticeable odor	Odor	58	"No noticeable odor" or "Some noticeable odor"	1
				"Strong noticeable odor"	0
	Good/clean floors	Floors	59	"Good" or "Adequate	1
				"Poor"	0
	Good walls/roof coverage	Walls/Roof	60	"Good" or "Adequate	1
				"Poor" or "No walls/roof available"	0
	Sum and divide by the number of characteristics (4) to get the sub-domain score				**/4**

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Sub-Domain 6: Availability of MHH Resources	Sizable/full-length mirror	Is there at least one mirror available that can be used for adjusting clothing?	62	No	0
				Yes	1
	>75% of stalls have bins	Of the stalls/cubicles you were able to access, how many had menstrual product disposal bins?	30	Calculation: if Item 30/Item 24 is =>0.75	1
		How many number of toilets/ stalls/cubicles are in this facility?	24	Calculation: if Item 30/Item 24 is <0.75	0
	>75% of stalls with liner bags	Of the stalls/cubicles you were able to access, how many product disposal bins had a liner bags?	31	Calculation: if Item 31/Item 30 is =>0.75	1
		Of the stalls/cubicles you were able to access, how many had menstrual product disposal bins?	30	Calculation: if Item 31/Item 30 is <0.75	0
	>75% of stalls with lidded bins	Of the stalls/cubicles you were able to access, how many product disposal bins had a lid?	32	Calculation: if Item 32/Item 30 is => 0.75	1
		Of the stalls/cubicles you were able to access, how many had menstrual product disposal bins?	30	Calculation: if Item 32/Item 30 is <0.75	0
	Available menstrual products (stocked or working machine)	Are there menstrual products available in the facility?	64	"Yes, stocked and/or machine is working"	1
				All other responses	0
	Sum and divide by the number of characteristics (5) to get the sub-domain score				**/5**

Appendix D: Data Analysis

Creating an MFPT Index

To further quantify the level of menstrual friendliness of MFPTs, the descriptive statistics for the sub-domains above can be summarized as a single number by creating a simple index value. In order to do this, each of the sub-domains described above needs to be calculated to reflect overall "met criteria" for the given sub-domain. Following this, all of the numbers can then be summarized to reflect an "overall MFPT" Index score. In order to generate the summary sub-domain scores and an overall MFPT score, the steps are outlined below:

1. **Summarize *each* sub-domain for each facility:** generate a new variable for each sub-domain by calculating an average value ranging from 0-1, representing the proportion of characteristics met within the sub-domain

   Example: the sub-domain "Cleanliness" consists of four characteristics as described in the previous section. For toilet facility BUS_01012001_02, we observe 2 out of the 4 characteristics in this sub-domain were met for that criteria. The calculated summary value for "Cleanliness" would be (1 + 0 + 1 + 0)/4 = 0.50 = MFPT sub-domain Cleanliness score for that toilet facility.

   Snapshot of a dataset:

Audit ID	Clean_1	Clean_2	Clean_3	Clean_3	Domain_ Clean
BUS_01012001_01	1	1	1	0	0.75
BUS_01012001_02	1	0	1	0	0.50
BUS_01012001_03	1	1	1	1	1.0
BUS_01012001_04	1	0	0	0	0.25
BUS_01012001_05	1	0	1	1	0.75

   Each row represents a unique toilet facility (labeled with its Audit ID). Characteristics in the sub-domain Cleanliness are labeled as "Clean_1", "Clean_2" and so forth. The summary sub-domain variable is labeled as "Domain_ Clean".

Appendix D: Data Analysis

2. **Summarize each MFPT sub-domain *across all* facilities:** generate the average value for each sub-domain (Accessibility, Privacy/Safety, Structure, General Resources, Cleanliness, and MHH Resources) across facilities (the entire dataset).

   Example: For the sub-domain Cleanliness, this would simply be the average of all "Domain_Clean" values for the entire dataset as shown in the table above (in this case, there are 5 observations): (0.75 + 0.50 + 1.0 + 0.25 + 0.75)/5 observations = 0.65 = MFPT sub-domain Cleanliness score for all observed facilities.

3. **Summarize *across all* MFPT sub-domains for *each* facility:** after repeating steps 1-2 for the other sub-domains, you can then generate a new variable by calculating the average value of all sub-domain MFPT values to produce an overall MFPT Index score, ranging from 0 to 1, for each facility.

   Example: For toilet facility BUS_01012001_02, this would simply be the average of all "Domain_X" values shown in the table below:

   (0.8 + 1.0 + 1.0 + 0.75 + 1.0 + 0.8)/6 sub-domains = 0.89 = MFPT Index score for that toilet facility.

   Snapshot of a dataset:

Audit ID	Domain_ Access	Domain_ Privacy	Domain_ Structure	Domain_ Resources	Domain_ Clean	Domain_ MHM	MFPT_ Index
BUS_01012001_01	0.80	0.66	1.0	1.0	1.0	0.6	0.84
BUS_01012001_02	0.8	1.0	1.0	0.75	1.0	0.8	0.89
BUS_01012001_03	0.6	1.0	1.0	1.0	1.0	0.6	0.87
BUS_01012001_04	0.8	1.0	1.0	1.0	1.0	0.6	0.90
BUS_01012001_05	0.8	0.71	1.0	1.0	1.0	0.6	0.85

   Each row represents a unique toilet facility (labeled with its Audit ID). MFPT sub-domains are labeled as Domain_ Access, Domain_Privacy, and so forth. The summary sub-domain variable is labeled as "MFPT_Index".

4. **Summarize the "MFPT_Index" scores *across all* facilities:** generate the overall MFPT Index across facilities (the entire dataset).

   Example: The overall MFPT Index would simply be the average of all "MFPT_Index" scores for the entire dataset as shown in the table above (in this case, there are 5 observations): (0.84 + 0.89 + 0.87 + 0.90 + 0.85)/5 observations = 0.87 = MFPT Index score for all observed facilities.

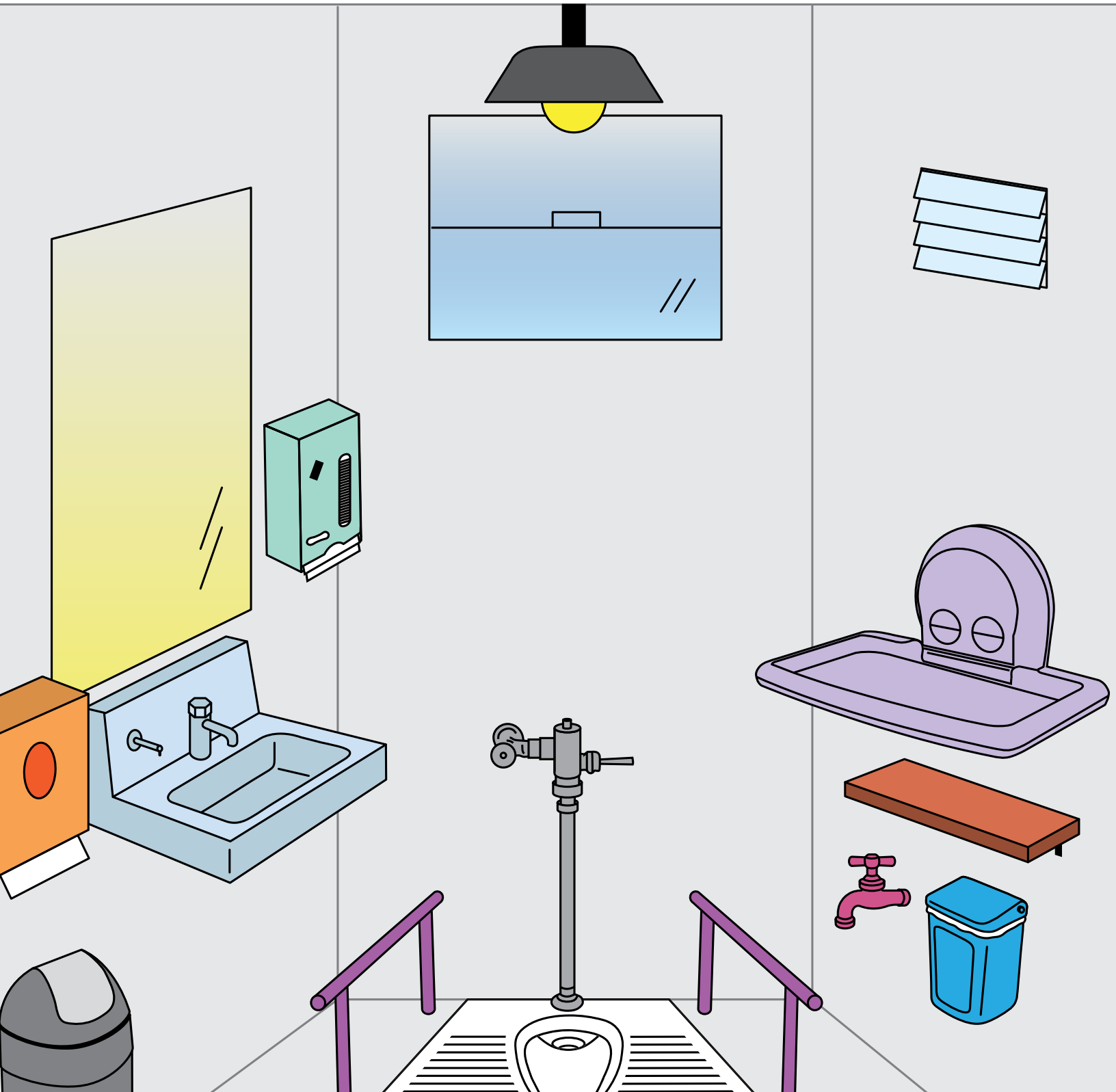
Appendix D: Data Analysis

5. **Interpret the sub-domains and overall MFPT Index scores:** Values closer to 1 indicate that toilets have a relatively higher level of "menstrual friendliness" either for a given sub-domain or overall MFPT.

   Example: The MFPT sub-domain "Cleanliness" score from earlier was calculated to be 0.65, which indicates that, on *average*, 65% of the characteristics were met for that sub-domain across all toilet facilities. The overall MFPT Index score was 0.87, indicating, on *average*, adequate menstrual friendliness across the observed facilities.

Note: the scores for MFPT sub-domains and overall summary score have not yet been validated. Scores are to be interpreted with caution as this methodological approach is purely descriptive and exploratory. The purpose of generating sub-domain scores and an overall MFPT score is to better understand broader areas for needed improvement and assess for overall adequacy or inadequacy of menstrual friendliness.

Reporting findings

We recommend reporting findings from the audit tool by producing tables with frequency distributions, histograms or pie charts. Overall MFPT scores should be presented alongside their sub-domain scores and interpreted with consideration. In addition, we recommend conducting 1) correlation analyses to examine relationships between characteristics and 2) stratified analyses to assess for any differences by sub-group, such as neighborhood type or geographic area.

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