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# Scoping Provision of WASH Services for Unsheltered Individuals: Practitioners' Experiences from the West Coast (U.S.)

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**Abstract**

This study focuses on five West Coast cities in the United States (U.S.) to understand current access to water, sanitation, and hygiene (WASH) interventions targeted toward individuals experiencing homelessness. The study explores how services are provided, funded, and measured for impact. and how key partners in service provision are identified. While individuals experiencing homelessness often rely on public sources like water taps and porta-potties, they also face barriers such as economic constraints and stigma that can lead to the formation of informal governance systems for accessing WASH services. This research assesses institutional interventions by governments and nonprofits to improve decision-making for public health and inform funding and intervention designs. Key findings show that local individuals in nonprofit organizations, local government agencies, and utilities champion most WASH intervention programs. Such programs provide essential services while helping cultivate trust as a bridge to other social programs. Motivation for these interventions stems from public health concerns, ensuring WASH is a human right, recognizing homelessness as a humanitarian emergency, and wanting to provide a fresh start for individuals. However, the ad hoc nature of the work presents a challenge for securing long-term funding and navigating local government programs.

Keywords: homelessness; WASH; water; sanitation; unsheltered; social policy

## 1. Introduction

Management of water systems, especially in urban spaces, has seen a recent shift in framing how infrastructure is managed and maintained. In the United States, cities have begun to adopt a One Water Approach that establishes that "all water has value and should be managed in a sustainable, inclusive, integrated way" (US Water Alliance 2016, 5). This new approach seeks to increase the environmental resiliency of city infrastructure by challenging previously held assumptions about how public services are provided. The defining characteristics of this approach include seeking out co-benefits, integrating the various types of water sources, fit-for-purpose design, and the focus of this paper: inclusion and engagement for all. This last hallmark creates a new approach for governments and service providers to ensure equitable access to basic water and wastewater services. As cities readjust, communities who still may be outside of these efforts should be ensured equitable outcomes; one such group are people without shelter who also lack stable access to water, sanitation, and hygiene services (WASH).

Emerging studies highlight this gap, positioned in the water insecurity discipline (Meehan et al. 2023; 2020; DeMyers, Warpinski, and Wutich 2017). A 'dwelling paradox' exists in that access to safe and reliable water and sanitation is connected to housing, which is unavailable to everyone (Meehan et al. 2023). With environmental changes creating acute challenges for people already without access (Keith and Meerow 2022; Goodling 2020), interventions are being called for that open more opportunities for people to access water in public spaces (Hale 2019). For example, in Phoenix,



 

unsheltered groups experience both heat stress and high water insecurity; surface water serves as a primary water source for encampments but contain pollution and contamination (DeMyers, Warpinski, and Wutich 2017) and for individuals outside of encampments, water sources are inconsistent (e.g., water trucks) or unavailable (e.g., accessing public businesses and closed public toilets). Similarly, people experiencing homelessness in rural areas use rainwater or surface water for non-drinkable purposes and utilize public access points that may be inadequate (Ballard et al. 2022).

Cities' efforts to reduce homelessness have resulted in 'camp sweeps,' which disrupt encampments, resulting in a loss of trust with local government agencies and further pushing unsheltered groups away from access to infrastructure due to a need to hide their living situation (Palta et al. 2016). As a result of enforcement efforts in San Diego, people experiencing unsheltered homelessness utilized public porta-potties, public toilets, businesses, and in some cases, open defecation for bathroom access. They accessed water through public taps (e.g. bathroom faucets or hose spigots) and bottled water, although the latter posed a significant economic barrier (Flanigan and Welsh 2020; Verbyla et al. 2021). To avoid criminalization, people moved out to river and canyon areas (Flanigan and Welsh 2020).

Public toilets themselves can pose a significant challenge, with facilities lacking sufficient staff to maintain cleanliness, operating at limited times, and requiring permissions for use, as was observed in New York City (Maroko et al. 2021). People resort to open defecation due to "the lack of public resources, perceptions about public toilets, feelings of being unwelcome at service centers, concerns about safety, and physical and mental illness" (Frye, Capone, and Evans 2019). However, recent studies have shown that increasing the availability of public toilets has a relationship to a decrease in reports of open defecation (Amato et al., 2022)

In addition to the dwelling paradox, another dichotomy exists among formal institutions attempting to meet the needs of people experiencing homelessness and unsheltered individuals simultaneously creating informal governance for accessing WASH services due to stigma and efforts to remove encampments (Meehan et al. 2023). Lack of trust in formalized mechanisms extends even to service providers, where people living in encampments avoid contact due to negative perceptions and poor past interactions (Verbyla et al. 2021); this has also been observed with city employees in urban areas and public toilets (Rose 2019).

Through interviews with key stakeholders in five West Coast cities offering institutional interventions organized by governments and nonprofit organizations, this study sought to understand current WASH interventions targeted towards individuals experiencing homelessness by exploring how services are provided, funded, and measured for impact, and by identifying the critical partners in service provision. Addressing this topic may improve decision-making for public health and better inform cities as they request funding and design interventions.

## 2. Materials and Methods

### *2.1 Study Locations*

The West Coast of the U.S., including California (CA), Oregon (OR), and Washington (WA), has an increased prevalence of homelessness compared to the rest of the country (NAEH 2018). In 2022, these three states encompassed 37 percent of the total homeless population and 60 percent of the total population of unsheltered individuals in the U.S. (HUD 2022a). This study focuses on WASH interventions taking place on the West Coast due to the high demand for services.

To select study locations, we conducted a desk review incorporating the prevalence of unsheltered homelessness by Continuums of Care (CoC) alongside local news and resources identifying existing WASH interventions. We reviewed data at the CoC level because CoCs are "responsible for coordinating the full range of homelessness services in a geographic area" (HUD 2022b, 4). We included the following locations in this study: Los Angeles (CA), Portland (OR), San Diego (CA), San Francisco (CA), and Seattle (WA). These five areas were in the top fifteen CoCs with the highest unsheltered populations in the U.S. in 2022. Table 1 highlights the prevalence of homelessness in these CoCs.

*Table 1. Overview of prevalence of homelessness, including total population and total unsheltered population, based on Point-In-Time Counts from the U.S. Department of Housing and Urban Development (HUD 2022a).*

| ***Location*** | ***Overall Homelessness*** | ***Unsheltered Homelessness*** |
|---|---|---|
| **City, State**<br>Name of Continuum of Care (CoC) Area | **Area Total**<br>(% of U.S. Homelessness) | **Area Total**<br>(% of U.S. Unsheltered Homeless) |
| **Los Angeles, CA**<br>**Los Angeles City & County CoC** | **65,111**<br>(11.2%) | **45,878**<br>(19.6%) |
| **Seattle, WA**<br>**Seattle/King County CoC** | **13,368**<br>(2.3%) | **7,685**<br>(3.3%) |
| **San Francisco, CA**<br>**San Francisco CoC** | **7,754**<br>(1.3%) | **4,397**<br>(1.9%) |
| **San Diego, CA**<br>**San Diego City and County CoC** | **8,427**<br>(1.4%) | **4,106**<br>(1.8%) |
| **Portland, OR** | **5,228**<br>(0.9%) | **3,057**<br>(1.3%) |

| **Portland, Gresham/Multnomah County CoC** |
|---|

California implemented a policy recognizing the Human Right to Water in 2019 (Feinstein and Daiess 2019). While there are policy efforts to expand this right to include sanitation, the operationalization of this policy is still underway. Homelessness is part of the larger conversation; other impacted communities include those outside of incorporated areas and community water systems. In addition, some of these cities conducted needs assessments for community access to WASH by the unhoused community (Coalition on Homelessness, San Francisco 2021; San Francisco Estuary Partnership 2022; Avelar Portillo et al. 2023). Other studies have evaluated interventions to inform local decision-making and funding choices (Greene et al. 2022; Marshall and Dugan 2022). Across these existing studies is an opportunity to understand how these efforts at a city/regional level compare to one another.

### *2.2 Data Collection and Processing*

WASH interventions are limited along the West Coast, resulting in a small collection of participants. To reach saturation, the research team first conducted a desk review to identify resources, documents, and information related to specific WASH initiatives in each of the five locations as well as associated contact information. Government, nonprofit, and utility providers engaged in WASH interventions identified during our desk review were invited to participate in the study (N=29). Semi-structured virtual interviews were conducted with representatives willing to participate (n=12). It is acknowledged that this data set is limited due to the emergent nature of the topic area. However, this analysis focuses on identifying general themes in the data collected. This 'theme saturation' allows for smaller sample sizes greater than nine to reach saturation during analysis (Wutich et. al 2024).

Interviews lasting between 45-60 minutes elicited information on the participant's organization and background, characteristics of the WASH intervention, implementation of the intervention, initiative participant responses, intervention impact, funding strategies, and reflections on the path forward for WASH services. At the end of each interview, participants were asked who else they worked with to implement WASH interventions, also known as a snowball method (Crouse 2018). Table S1 (Supplementary Information) includes the interview guide and prompts. Table S3 (Supplementary Information) offers an overview of stakeholder participants. Interviews were audio-recorded with oral informed consent. Audio recordings were professionally transcribed and reviewed by the research team to ensure quality control in the transcription process. Participants are deidentified to protect their identities.

To help mitigate potential limitations due to the small sample size, a virtual workshop was held with interview participants to share initial findings and to solicit additional feedback to ensure thematic saturation accurately represented participants' shared experiences. This virtual workshop also met the minimum threshold for thematic saturation of more than four attendees (Wutich et. al 2024).

### *2.3 Data Analysis*

Due to the exploratory nature of this study, we used an inductive coding approach. Inductive coding is a form of qualitative analysis that examines raw data, creating space for themes and subthemes to emerge (Vanover, Mihas, and Saldana 2021). We attached codes to transcript excerpts to describe their focus (i.e. open coding). We then followed an iterative process to review and revise codes and to identify emerging themes. Following this process, six major themes emerged: Motivation, Operations (type of intervention, site selection, and ideal design), Funding (current and ideal funding mechanisms), Key Partners (coordination and ideal entity for oversight), and Measuring Impact (information collected, lessons learned, challenges, and information needed). We reviewed coding applications and results for continuity and presented them to interview participants during a virtual workshop to elicit feedback and validate major themes and findings. Table S2 (Supplementary Information) provides a full coding dictionary, including themes, definitions, and examples.

## 3. Findings

Participants represented the civil and public sectors, offering perspectives on WASH interventions provided by city governments, county governments, nonprofit organizations, and water/wastewater utilities. Participants had between 1-15 years of experience in their roles. Findings summarize their perspectives on local WASH interventions and reflect how services are organized across the West Coast. Overall, we identified a wide range of experiences, with limited consensus across the six major themes (i.e., Motivation, Operations, Funding, Key Partners, and Measuring Impact).

Participants described four major types of WASH interventions: porta potties, public access points, hygiene stations, and mobile showers, or some combination of these four categories. Porta potties provide bathroom access, and public access points provide drinking water through standalone facilities. Hygiene stations included some combination of personal hygiene services, such as showers, laundry, and/or bathroom facilities. In some cases, mobile showers were paired with bathroom facilities, whether hosted via an adjacent building, porta potties, or a built-in restroom. Hand-washing stations were typically installed with facilities providing bathroom access. Each city utilized different types of WASH interventions; while the broad themes were

represented across interviews, the small sample size of this data set limits the summary of findings by city to preserve anonymity of responses. Specific topics around implementation vary by the type of WASH intervention, which motivates the discussion of results by theme rather than locality.

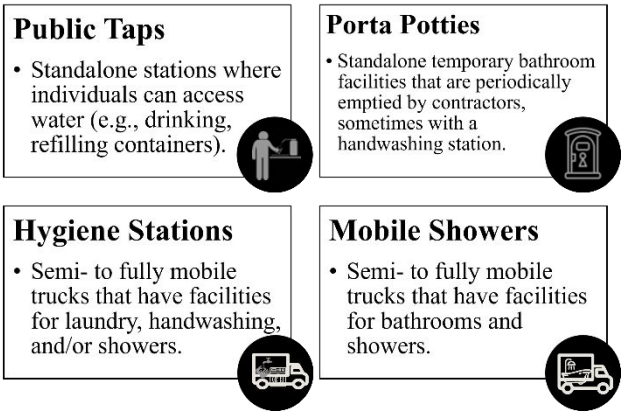


*Figure 1. Overview of the types of WASH interventions in five West Coast cities (U.S.).*

The following sections review key results in each of the major themes (summarized in Table 2): Motivation, Operation, Funding, Key Partners, and Measuring Impact. To help protect the anonymity of participants, results are organized by general theme rather than by city.

### *3.1 Motivation for WASH Interventions*

A majority of participants referenced WASH as a human right as the motivation for the intervention: *"Access to adequate housing is a human right. Access to clean water is a human right." (Nonprofit Organization, Interview 6)*. Another key motivation was protecting public health; some cities initiated WASH programs to help reduce the spread of COVID-19, or in response to Hepatitis A or Shigella outbreaks. Dignity was another motivation, as expressed by one individual: *"We want to restore dignity. We do that through our philosophy of radical hospitality, which is just really meeting people where they are and treating them with an extreme level of care" (Nonprofit Organization, Interview 3)*. Other examples of how WASH interventions were framed and their motivations included seeing cleanliness as a way to improve mental and physical health, a "fresh start" for individuals who are in a transition to stable housing, and the perspective that WASH interventions could be treated similarly to an emergency or humanitarian response. In a crisis, shelter, water, sanitation, and other basic services are typically established as emergency response transitions to recovery; these are seen as minimum humanitarian standards (Sphere Project 2018) and can be found in examples of short-term to long-term responses to displacement events (Hacker, Kaminsky, and Faust 2019). An analysis of these motivations was done across the type of intervention, type of sector, and city; no clear patterns emerged other than the human right framing of these services as a key priority and motivation for participants.

### *3.2 Operation of WASH Interventions*

Site locations and conditions were the most critical considerations across all interviews. Of the factors considered, the most common included proximity to people experiencing homelessness as well as other homeless services. For example, some participants described a need to spread out access to bathroom facilities equally to ensure unsheltered communities across the city had an equal opportunity to access the intervention. On the other hand, participants with hygiene trailers reported looking for partners at existing "brick and mortar" establishments that already provided programming such as social services, meals, and resources for other needs in their continuum of care. This was adjacent to another operational consideration: access to utilities and infrastructure connection points. The four major interventions required a spectrum of connection to existing infrastructure. For instance, porta potties require regular disposal but are not connected to existing sewer systems, and access points require connection to existing drinking water distribution systems with metering used to understand how much water is being withdrawn at each location. Depending on the specific type of facility, hygiene trailers, and mobile showers require a connection to the existing wastewater collection system or close proximity to a disposal location to remove blackwater and greywater. In each case, different parts of the city needed to work with each other or the nonprofit entity to ensure that appropriate permits were issued. In some cases, additional permits were needed if the intervention operated in a right-of-way or required street/parking closure.

Participants also expressed the need to ensure the WASH intervention achieved its intended purpose. Some participants would "vet" a location for a period of time (e.g. 4-6 weeks) to allow enough time for individuals experiencing homelessness to learn about the facilities and gauge their interest in utilizing them. As part of this vetting process, critical consideration was given to communicating about the facility and services provided and ensuring consistency in adhering to hours of operation to build trust with potential guests. Communication took various forms; some interventions partnered with community groups to build apps for facility locations, others communicated through existing housing programs and community centers, and still others worked with members from the unsheltered community to spread the word throughout their network. Trust was a key component to whether guests frequented facilities; a majority of interview participants mentioned this in some capacity. In describing the importance of trust, one participant summarized the misgivings some guests might feel initially accessing services:

*"There was just a lot of hesitation in accessing [the WASH intervention]. They felt like maybe they would be exploited, especially for a shower where you're physically vulnerable" (Nonprofit Organization, Interview 6)*

*Table 2. Overview of emergent themes for WASH interventions across five participating West Coast cities*

| *Major Theme* | *Public Taps* | *Porta Potties* | *Hygiene Stations* | *Mobile Showers* |
|---|---|---|---|---|
| **Motivation** | • Cleanliness Improves Mental/Physical Health<br>• Water as a Human Right / Supporting Dignity | • Protect Public Health<br>• Cleanliness Improves Mental/Physical Health<br>• Water as a Human Right / Supporting Dignity | • Protect Public Health<br>• Cleanliness Improves Mental/Physical Health<br>• WASH as a Humanitarian Emergency<br>• Water as a Human Right / Supporting Dignity | • Protect Public Health<br>• Cleanliness Improves Mental/Physical Health<br>• WASH as a Humanitarian Emergency<br>• Water as a Human Right / Supporting Dignity |
| **Operation** | • Requires a water connection<br>• Partner with nearby resource programs to help with ownership of tap (e.g. operations and maintenance)<br>• Oversight or dedicated staff help keep the taps operational – vandalism happens often | • Don't require utility connection (can go anywhere)<br>• Prioritized access to unhoused communities<br>• Pushback from local housed community members<br>• Siting is a challenge due to dynamic nature of target population | • Requires water and electric utilities (or a generator)<br>• Typically discharges greywater, not blackwater – sewer connection not necessarily needed<br>• Parking access needed<br>• Prioritize access to unhoused community<br>• Partner with existing resource programs to help connect guests to services and avoid permitting barriers<br>• Consistency is key for establishing trust with guests | • Requires utility connections (water, sewer, electric)<br>• Parking access and out of traffic/right-of-way needed for safety of guests/employees<br>• Prioritize proximity to unhoused community<br>• Prefer to locate by existing resource program or bathroom facilities (to avoid transporting blackwater)<br>• Pushback from local housed community members<br>• Consistency is key for establishing trust with guests |
| **Funding** | • Special project funding from city/utility budget<br>• "Add backs" – funds approved by city council for special projects<br>• Unsustainable funding due to informal sources<br>• Outside the scope of the utility – this should be coordinated through local city taskforce/coalition on homelessness | • Local city funding through mayor/city council<br>• Federal funding during COVID<br>• Local funding depends on political will (potentially unsustainable)<br>• Federal funding provided only during the pandemic<br>• Ideally local governments should oversee this type of program | • Local funding through city homelessness taskforce/coalition (supportive employment)<br>• Grants through local foundations<br>• Federal funding during COVID (ARPA)<br>• Local funding is a reimbursement model – major challenge for sustainable operation | • Local city funding (general programming)<br>• Scaling/expanding operation requires much more coordination and funding<br>• Foundation funding<br>• Community donations (not significant)<br>• Federal funding (ESG-HUD) |

| | | | | |
|---|---|---|---|---|
| **Key Partners** | • Utility (installation)<br>• Nonprofits (siting, maintenance)<br>• Local city homelessness taskforce/coalition | • Mayor's office (identify locations)<br>• Local businesses (need buy-in before installing)<br>• Utility (oversees program)<br>• Contractors/vendors (empty facilities)<br>• Nonprofits (education & outreach) | • Local public health departments (oversight)<br>• Local city departments (administration)<br>• Nonprofits (operations, siting, outreach)<br>• Local universities (additional resources, data collection) | • Utilities for permitting and metering<br>• Local city departments (oversight)<br>• Local city homeless taskforce/coalition (feasibility assessment)<br>• City council (outreach)<br>• Nonprofits (partnering, outreach) |
| **Measuring Impact** | • Water usage through metering<br>• Metering shows how much water is used, but not the number of unique guests<br>• Maps of encampments could inform siting | • Number of guests<br>• Some do collect data on guests using porta potties (others do not)<br>• No data collected on usage (e.g. water volumes, etc.)<br>• Observational data (e.g. saw commuters using facilities along trail routes)<br>• Map of encampments could inform siting | • Number of guests<br>• Number of guests that access to other resources<br>• Number of hygiene kits distributed<br>• Transition stories<br>• Need data on how hygiene stations support transition to stable housing and protection of public health (exposure)<br>• Attempted to do a Transect Method to assess access | • Number of guests<br>• Number of showers / locations<br>• WASH needs of guests<br>• Demographic data<br>• Guest narratives<br>• Information on returning guests would be helpful but aware of sensitivity of collecting data / power dynamics |

### 3.2.1 Operational Challenges

Several challenges emerged from interviews, including how the WASH facilities were designed and implemented. Permitting was commonly mentioned, specifically for sewer connections for greywater and/or blackwater disposal. Aside from one city, there were no formally adopted guidelines for decentralized WASH interventions. This meant that the sizing of facilities did not always include people with disabilities. Yet, for other interventions, compliance with the American Disabilities Act (ADA) was a major priority for where facilities were located: *"I think [ADA compliance is] number one on the checklist … If we can't put an ADA unit there, we don't do it" (City Government, Interview 12).*

As mentioned in the last section, trust was a major factor for success. Participants had challenges, ranging from interactions with local business owners and community members with stable housing who protested or vandalized facilities to building relationships with community members without stable housing who frequently moved or were displaced from their temporary shelters. This was another byproduct of the WASH facility structure and whether sufficient resources were available to provide staffing for ongoing maintenance and existing relationships in the local community, as expressed by one participant:

*"It is not insurmountable, but there are a bunch of partnerships and relationships you have to have with the community when you site these things. And then to really maintain them so that they serve their function." (City Government, Interview 11)*

Vandalism was discussed more for standalone facilities (e.g., porta-potties and public access points) than for facilities that required staff presence.

## 3.3 Funding

Across cities, no standard organizational model or funding mechanism was consistently used by all WASH interventions. Across the five cities and four intervention types, services were governed through government agencies (municipal/regional), utilities, and nonprofit organizations. Examples of funding included federal grants, local/state grants through homeless programs, philanthropic grants (primarily accessed by nonprofit organizations), and funding through or outside the general budget. During interviews, we asked participants about the relationship between the WASH intervention and COVID-19, including access to funding. Two cities shared that they used federal funding available during COVID-19 to initiate or sustain WASH services. In general, interventions required dedicated leadership to identify potential funding opportunities to sustain programs; this was additionally emphasized during the culminating workshop.

### 3.3.1 Funding Challenges

One of the main challenges participants identified was sustainability for WASH interventions. They reported that the ad hoc nature of this work requires dedicated individuals to advocate for funding and leverage relationships with local partners and government agencies. One participant explained: *"I think it can be done privately without involving the city, but at the end of the day, if you want to do it correctly, you really want to have an advocate within the city, especially if it's something you want to sustain. It does take money to do this, and you can do it with all private donations, but at some point in time, you may need the city involved to help you. So, we always advocate for, you know, creating a relationship with the city." (Nonprofit Organization, Interview 9)*

During this study, at least one nonprofit organization discontinued services due to lack of funding. In addition, available funding often follows distribution models that don't align with service needs. For example, in one city, the local government used a reimbursement model that did not provide funding upfront; nonprofit organizations had to pay for intervention expenses upfront and then request reimbursement. In cases where larger WASH interventions (e.g. hygiene trailers and mobile showers) required maintenance, repairs could be too expensive for the organization to front, and service would be interrupted. Conversely, for services provided through local governments, participants described needing to predict annual service costs in advance without underestimating what the intervention would require or overestimating and producing a large surplus. Other funding through foundations or philanthropic partners requires alignment of beliefs and interests, which is not always the case. Finally, in some cities, more grassroots initiatives for WASH interventions have been emerging, and participants expressed support for meeting gaps in capacity; however, without dedicated funding mechanisms, these initiatives end up competing with each other for limited resources.

## 3.4 Key Partners

Partnership and collaboration were key to all WASH interventions throughout the planning and implementation process. For siting interventions, programs worked with local advocates and existing organizations to understand where WASH interventions could be most beneficial in terms of proximity to unsheltered communities. In some cases, WASH interventions partnered with existing programs, providing other services to maximize impact.

*"Sometimes it's really hard for unhoused people to get to different resources just being on the streets. So why not bring all the resources that they need to the streets to them? So that's how that kind of comes. And we continue to do that in our*

*weekly shower service." (Nonprofit Organization, Interview 9)*

Depending on the type of intervention and location, interventions required operating permits; participants emphasized the utility of having a local advocate within the government to help navigate the various departments for permits and permissions. As previously mentioned, sometimes a WASH intervention would draw pushback from community members with stable housing; some participants mentioned working with local city council members to help communicate with these housed communities. Communication helped gauge expectations, debunk false assumptions, and build trust with communities that could impact ongoing WASH operations. Universities were also identified as key partners, providing supportive services, like medical care and social services, or helping with measuring the impact of the WASH program.

### *3.4.1 Partnership Challenges*

The follow-up workshop with interview participants emphasized the *ad hoc* nature of initiating a WASH intervention. Specifically, interested individuals and organizations may not know where to begin the process, especially those working with local governments. Participants from both the civil and public sectors noted the difficulty in navigating government departments, as no department had clear responsibility for the programs.

## *3.5 Measuring Impact*

Participants universally described the importance of data to help understand the intervention's impact, determine future needs, and work with local community members. All interventions collected basic data, such as the number of guests, the number of hygiene kits distributed, or the volume of water used at public tap access points. Across intervention types, both quantitative and qualitative (anecdotal) measures were prioritized. In at least three cities, participants identified local universities as key partners in data collection efforts to assist the local government in allocating funding and siting interventions proximal to areas with larger populations of people experiencing unsheltered homelessness.

One city had an open-access geospatial application that documented the location of public restrooms and porta-potties. Data collected during the implementation of their WASH intervention tracked the number of people using facilities to determine the effectiveness of its execution. However, participants expressed that measuring 'successes' went beyond the intervention program. Further, they described trying to balance demonstrating the usefulness and impact of interventions to secure continued funding and ensuring that their efforts didn't seem extractive or transactional with guests using the intervention. Participants suggested that in addition to how many people were utilizing WASH interventions, documenting how guests connected to other social services was also important. One participant commented on the complexity and nuance related to data outcomes and defining success:

*"We see how many new guests versus returning guests; do we have more returning guests than before? And I think that's a bit difficult to kind of define success, right? Because if we have more returning guests, it's successful because that means that people do trust us and people are here; they know that they can rely on us for hygiene services. But it could also mean that they weren't able to transition out of homelessness - they weren't able to find housing yet. And if we have more new guests, it's successful because that means we've expanded our scope, that more people are learning about us, and they felt that they could trust us enough to travel all the way and take showers with us." (Nonprofit Organization, Interview 6)*

In addition, participants voiced a juxtaposition between the temporary nature of WASH interventions and the need for long-term housing for guests who utilize them. In almost all of the interviews with direct WASH service providers, their intention was to 'work themselves out of a job,' seeing the WASH intervention as a basic necessity that should be used only temporarily while people find long-term housing. The tension between the short-term needs and long-term goals created a challenge for collecting data to inform service provision and document intervention effectiveness.

Beyond WASH implementation, cities explored data for public health outcomes and future WASH needs. For example, one participant tried to use the Trans Sec Line method to measure proximity to WASH facilities, also termed a "potty audit," to see how far people experiencing homelessness need to travel to access bathroom and shower facilities. When asked what information would be helpful for the ongoing operation of WASH services, participants provided a range of suggestions, but the majority referenced the need to demonstrate the importance of this work. In some cases, this looked like guest stories of transitioning to stable housing or other social services. Others wanted to use statistics of access to bathrooms and hygiene facilities or the wait time to access available services. One participant expressed the linkage between key narratives and data:

*"I really think that…there are calculations that would let you show what the availability is of bathrooms for people and then would let you show the exposure to human waste and then linking that to the human rights obligations and showing the disparity in what we provide versus what we have said we would provide" (City Government, Interview 4)*

Across cities and interventions, a narrative emerged that those with stable housing and in-home bathrooms and showers can take for granted access to WASH services. Communicating

the necessity of these interventions through data could help with their integration into residential communities.

### *3.5.1 Data Challenges*

Participants expressed hesitation towards what type of data to collect and how to communicate it to avoid exacerbating challenges with community members with stable housing, as shared by one participant:

*"The problem is that there's a stereotype that…services attract homeless individuals and thus invites more crime into the neighborhood. And people have outwardly said. 'This brings down the value of our community by inviting more homeless individuals.'" (Nonprofit Employee, Interview 6)*

Participants suggested that even data identifying where communities of people experiencing unsheltered homelessness reside could be a security risk for those individuals and that data measuring WASH service use could reinforce stereotypes around homelessness and criminalization, creating a need to contextualize the value of WASH service provision. A major challenge exists with collecting data in a way that respects peoples' experiences with the WASH interventions and finding approaches that provide the story of an individual's access to the full continuum of care.

## 4. Discussion

Given the diversity of experiences with WASH interventions across the five West Coast cities included in our study, this discussion focuses on the structural design of such programs at the institutional level. Based on findings related to our major themes–*Motivation, Operations, Funding, Key Partners,* and *Measuring Impact*–we explore the larger literature related to the governance of WASH services, the messaging used to justify continued funding, and the changing role of utilities.

### *4.1 Making the Case for WASH Services*

Funding was one of the consistent challenges for the sustainable provision of WASH services identified by interview participants. Coupled with this challenge is the need to convey the importance of WASH services to both program administrators and locally housed community members to mitigate local tensions. Participants emphasized the importance of WASH in justifying future funding and garnering support for WASH interventions.

The concept of "Water as a Human Right" was accepted as a policy position at the state level in California and is used by academics and the legal community for framing access to water and sanitation by people experiencing homelessness and forcible displacement (Hardberger 2005; Khadka 2010; Kozikis and Winkler 2020; Meehan, Odetola, and Griswold 2022; Kaminsky and Faust 2017; Meier et al. 2014). Moreover, intersections between social policy and infrastructure have been identified through the protection of public health (Rose 2019; Flanigan and Welsh 2020; Verbyla et al. 2021). Looking at the motivation for WASH interventions, interview participants typically leaned into normative messaging (e.g., water as a human right), with demonstrated benefits to broader society and the targeted group (e.g., protecting public health). Although recent work has focused on access to water and sanitation in the U.S., highlighting gaps in service (Feinstein and Daiess 2019; Roller and Gasteyer 2019), water services are often taken for granted, as has been seen since the beginning of the 20th century when households were able to install in-home access points for bathrooms and showers (Thornton Williams 1992). Similar to WASH services, homelessness itself was expressed as an accepted state, as shared by one participant:

*"I think that homelessness is a norm in our country right now. And it needs to be treated like that. And I don't think it is. I think that people feel like if they're contributing to helping [the] unhoused, they're allowing people to become, to stay unhoused and that's not what it is." (Nonprofit Organization, Interview 3)*

Participants provided a word of caution in reinforcing saviorism through these messaging approaches. People either within the unhoused community or with past experience need to be represented in decision-making, partnerships, and organizations providing services:

*"If you have a group of individuals who have been radically excluded from representation, right? There's no mechanism for [people in the unhoused community] to get in. You can't just invite them to the table. You have to really make an effort to radically include them in order to try to rectify that." (City Government, Interview 4)*

### *4.2 Incorporating WASH into Institutional Approaches*

The provision of WASH services lies at the intersection of a policy and structural gap in local governance structures (Meehan et al. 2023). Essential WASH services do not fall under the purview of existing homelessness programs; the key goal for these programs is to achieve long-term housing, and there is a tension between short-term mitigation and long-term initiatives. Similar services, such as public restrooms, typically reside in local Parks and Recreation departments due to the location of facilities on public property, but as was found during interviews, people working with WASH services do not always see linkages between permanent bathroom facilities and mobile WASH units due to the frequent relocation of displaced populations. Utilities provide water and sanitation collection; however, utility governance models are not always part of local municipal governments, and the inherent structure of the utility caters primarily to ratepayers. Individual champions within government agencies coordinate,

implement, and maintain WASH services instead of structuration through policy, rules, and regulation (Scott 2014).

During the follow-up workshop with participants, this gap in governance and identifying the ideal responsible entity for overseeing services was a familiar problem. However, participants agreed that services should continue regardless of the ambiguity of "who is responsible." There was some consensus based on existing models that government departments are well-positioned to oversee programs and distribute funding, yet clarity is needed on what this arrangement looks like. Consideration should be given to where programs reside, as some government departments are also responsible for cleaning up encampments, which may be in direct conflict with providing basic services. In the process, it undermines service provision and trust building with impacted communities. For example, one participant described the challenge of having the department responsible for administering funds for WASH services being in the same department that oversees encampment sweeps: *"The challenge is that you are trying to provide supportive services and you're also committing structural violence." (City Government, Interview 4)*

A lack of clear institutional responsibility also creates challenges for creating dedicated funding sources to support such institutional activities and programs. Interview participants found the future funding of existing programs unclear without the support of champions in local government or philanthropic funding.

### *4.3 Role of Data in WASH Service Provision*

Data serves a critical role in WASH programs, from helping identify where interventions can provide the most benefit in local communities to measuring the impact of people who use the facilities. The challenge is not so much with the data itself but what is done with it and its presentation to external audiences. Data is also a critical advocacy tool for continuing resource allocation for WASH programs. What is unclear is the best way to collect information that meets these objectives. Recent studies have leveraged city data on open defecation to show the impact of installing public restrooms (Amato et al., 2022). Participants also experienced the opposite, where data on where WASH interventions were located by zip code was used to advocate for criminalization by local community members with stable housing.

Basic information was consistently collected across the cities included in this study, and one major theme was the need for a mixed-methods approach that brought the full narrative of individuals experiencing homelessness and how their interaction with WASH interventions was coupled with the larger story of securing stable housing. Systematic collection of data would help understand the scope of WASH needs across cities, but this goes back to the challenge of where these programs sit within other governmental programs.

### *4.4 Changing Role of Utilities*

One final point is the emergence of water and wastewater utilities as stakeholders in the operation of mobile WASH programs. WASH service providers had to work with city departments to obtain the necessary discharge permits for greywater and blackwater, or programs sidestepped this step by working with preexisting programs that had already received these permissions. Utilities typically engage with ratepayers; this coordination with social services and outreach programs is a shift in the role of utility providers. This shift is consistent with other utility initiatives with affordability and water equity (US Water Alliance and Stantec 2022; US Water Alliance 2017). Similarly, recent policy documents move utilities from behind the "curtain" into a more central role in local communities, positioning themselves as "anchor institutions" that are part of protecting public health, creating jobs, and other critical components of community functions (US EPA 2021). Effective utility management entails utilities actively engaging in partnerships, involving stakeholders in the decisions that will affect them, and understanding what it takes to operate as a 'good neighbor' (US EPA 2017, 5). Encampments and lack of adequate access to solid waste management and sanitation services sometimes contribute to polluted runoff. Utilities with National Pollutant Discharge Elimination System (NPDES) permits are required to address discharge runoff, which has resulted in service areas creating integrated adaptation plans or programs to understand sources of discharges, some of which include or acknowledge impacts from encampments in total maximum daily loads (TMDLs).

With the gap in social policy, utilities are involved with mobile WASH programs and have some incentive to be aware of service provision, but their role needs to be clarified. The utilities involved in this study either sought to align their role with the human right to water and sanitation or their utility's strategic mission. For example, one participant expressed their involvement as integrating with the utility's organizational goals:

*"I guess our organizational goals are more community-centered. It may be out of the norm, you know, we provide water to the city, right? Dealing with the unsheltered community just wasn't a thing we've ever done. Now here we are doing it. And so that's when we speak of part of the [utility] mission statement, which is, you know, community-centered. It's like, okay, it makes sense." (Utility Employee, Interview 12)*

Utilities' involvement ranged from providing permits and connection points to assisting in siting interventions and working with local nonprofit organizations in implementation. This involvement is limited by capacity, funding, and

organizational will to be involved beyond the scope of traditional 'ratepayers.' While it remains uncertain what this means across the utility space, it provides an entry point for further discussion and exploration.

## 5. Conclusion

A gap exists in social policy regarding how water, sanitation, and hygiene services are provided to communities experiencing homelessness. This study assessed WASH interventions by governments and nonprofits in five West Coast cities. The exploratory research found a variety of interventions, funding models, and partners behind these interventions. Without an established position in local institutions, WASH services were reinvented in each location with variable certainty for future funding. Local champions fueled efforts in each city, whether in government departments, nonprofit organizations, utilities, or universities, and partnership is a key aspect of intervention success. WASH services, particularly when coupled with other social service programs, help build a bridge to continuums of care by addressing basic needs and helping build trust with impacted communities. Although cities have called attention to increasing resources for securing long-term housing for communities experiencing homelessness, WASH services are seen as a point of tension where services are needed but may be competing for the same funding as housing solutions. This tension underscores the need to identify a place for WASH services within the institutional fabric of local communities. We found that water and wastewater utilities are emergent partners in the process but identified a need for more integrated solutions.

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## Ethical Statement

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