Engaging Citizens Via Journey Maps to Address Urban Health Issues

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ABSTRACT: Effectively addressing urban health challenges requires engagement of citizens. However, citizens often face barriers providing feedback, and city officials likewise face difficulties incorporating feedback in a meaningful and systematic way. This paper shares one innovative approach to capturing citizens' stories about urban health concerns, developed by the Building Healthy Cities (BHC) project in 2 Asian cities (Indore, India, and Makassar, Indonesia).

Using ethnographic methods, BHC developed "journey maps" as a monitoring tool to follow key service issues over time. Several urban health-related issues were identified in each city. For this paper, we focus on wastewater management, which was a serious health issue in both cities. Qualitative data were collected from citizens in one neighborhood and city officials quarterly starting in early 2018; these data were supplemented by city spending data, usage statistics, photos and news articles. In both cities, the journey maps captured notable changes during the first 2 years of the project. At the start of the journeys (2018), informal settlement citizens in Indore reported poor drainage which was compounded by trash, narrow roads blocking vehicular removal of waste, and unsafe infrastructure leading to waterborne diseases and injuries (including several child deaths). Likewise in Makassar, dirty water overflowed from open drains due to frequent flooding and garbage. Citizens reported exposure to diarrhea, dengue and skin symptoms due to the drains, which was confirmed by the local health post. By the end of Year 2 (2019), these journeys captured increasing dialogue between citizens and the city, which resulted in several improvements. In Indore, changes included garbage vans built for narrow streets and construction of a safer bridge. In Makassar, while they still suffer from seasonal flooding, the city has increased garbage pickup, included drainage activities in the village-level budgeting process, and a slum improvement project has pledged funding to improve drainage and street issues in 41 neighborhoods. Journey maps work on the premise that capturing a community's experience and relaying it to government officials can bring about positive change. They also provide crucial grassroots level evidence to support more traditional research findings, which can lead to effective urban health solutions. As this work continues, BHC is training citizens to collect and share their own journeys.

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Introduction

Effectively addressing challenges to urban health requires engagement from multiple actors at multiple levels, including citizens. Cities often speak about engaging citizens, but it can be difficult to include citizen feedback into policies and planning in a meaningful and systematic way.[1] In addition, while more vulnerable citizens bear a heavier burden of ill health, they are often least able to register complaints or solicit solutions from the city, due to time constraints, technology, a lack of access to feedback mechanisms, or a lack of comfort in speaking about the challenges they face.[2,3] As such, some of the most significant barriers to improving urban health and reducing mortality rates are least likely to be reported or addressed.

Given this context, there is a need to expand methodologies for facilitating meaningful citizen-city engagement.[4] This paper shares one innovative approach to capturing citizens' stories about urban health concerns. Building Healthy Cities (BHC) is a U.S. Agency for International Development (USAID)-funded learning project that aims to increase understanding of the best methods for improving the social determinants of health in urban contexts in Asia, with a special focus on increasing equity of services for more vulnerable populations.

BHC's "healthy urban planning"approach supports cities by increasing multisectoral engagement, data-driven learning, and citizen participation to address urban health issues in a systematic way (see Figure 1).[5] Because this is a learning project, BHC has conducted multiple city-wide research activities including dynamic systems mapping, baseline assessments, representative surveys, and financial analysis (more information on BHC's activities and research can be found at www.jsi.com/buildinghealthycities). In order to gain more insight at the community level, BHC and our partner cities are also using journey mapping.

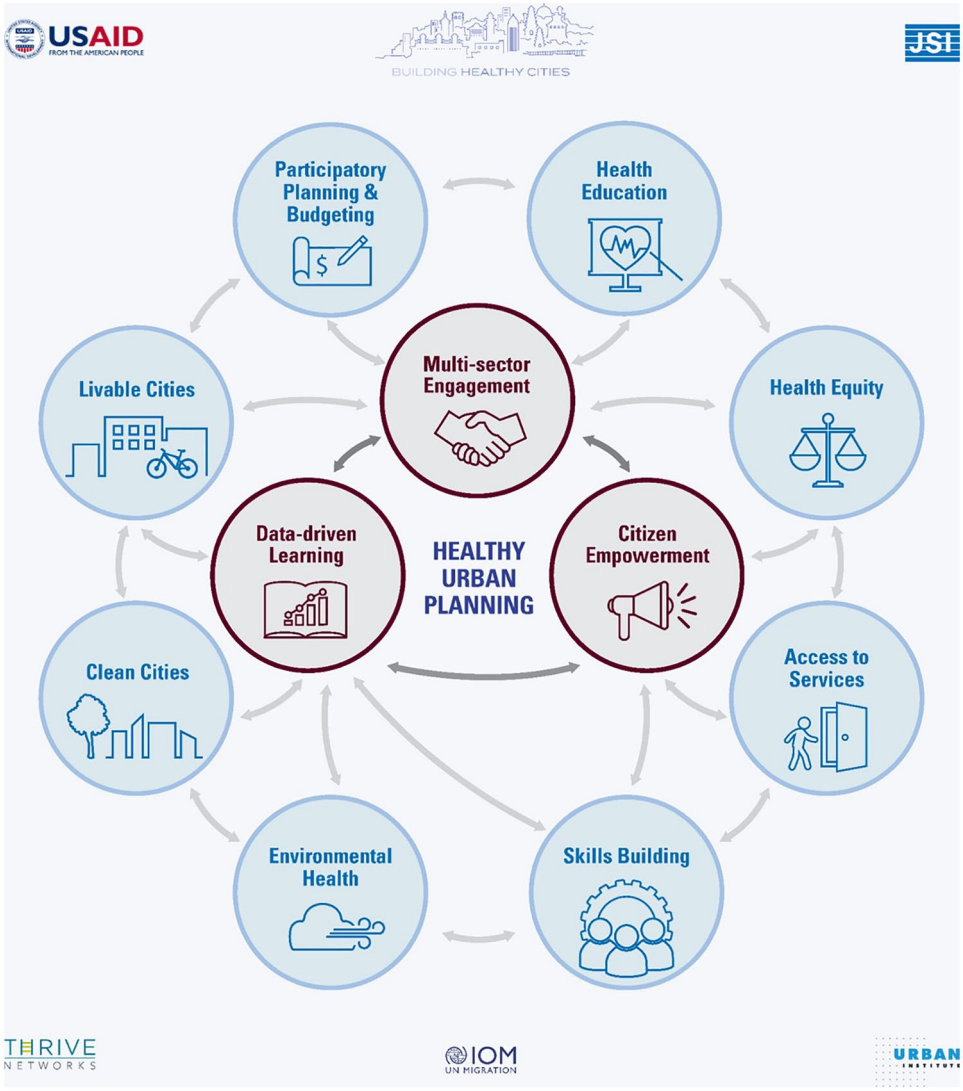


Figure 1. BHC's healthy urban planning approach.

Journey maps are a common design thinking tool used in the business and technology sectors. The journeys are meant to document how a customer interacts with a product, service, or company over a period of time, in order to better understand how to improve or optimize that interaction.[6] Citizens are like customers in that most pay taxes or direct fees to use city services, even if they are not legal citizens. To track perspectives of citizens and city officials, and to capture change at the neighborhood level over the course of this 5 year project, BHC is using journey mapping to document the experience (or "journey") of citizens who are trying to overcome service issues. These journeys are updated on a quarterly basis.

Originally included as a participatory monitoring tool for the project, journey mapping has emerged as one of BHC's more dynamic and useful applied research tools. These journeys have also been flexible and effective in facilitating 2-way communication between city service departments and underserved communities. By bringing the citizen experience directly to city planners on a regular basis, BHC hopes to better align city planning with community priorities such as health services, safe water, clean air, hygiene, traffic safety, and other key components of healthy urban living. As part of the project's efforts to increase citizen participation, BHC is also training individual neighborhoods on grassroots advocacy techniques, including developing their own journey maps.

Below, we describe the first 2 years of journey mapping in 2 cities, from which a key theme emerged across cities on the urban health issue of wastewater management.

Context

The BHC project is working with 3 cities in Asia, selected as fast-growing secondary cities with populations between 1 and 3 million and deemed "Smart Cities," which means they receive some form of support from the central government and/or private companies to improve their technology and built environment. The first 2 cities, Indore (India) and Makassar (Indonesia), started working with BHC in 2017, while the third city, Da Nang (Vietnam), started its work with BHC in 2019. While these 3 cities have some similarities, their cultural,

social, and environmental characteristics provide a variety of contexts for learning about urban growth in Asia.

Indore

Indore is the largest city in the state of Madhya Pradesh, and is a fast growing commercial capital. In 2017, the population was just under 2.5 million.[7] As its population has grown, so has the number of slum dwellers, estimated to make up 30% of the total city population.[8] In 2017, Indore was named the cleanest city in India by the National "Swachh Bharat" or "Clean India" campaign, based on major improvements to waste management and sanitation; it has held this title ever since. The city has experienced improvements in air, noise, and water pollution, but concerning environmental risk factors for disease remain.[9] Waterlogging of homes, particularly in slum areas, is an issue in Indore in part because many slums are built along rivers and other waterways (nallahs). For a visual example of this overlap, see Sharma et al.[10]

Makassar

Makassar is the fifth largest city in Indonesia, with a population of 1.6 million as of 2018[10,11] and a 1.29 growth rate.[12] It is a trading center and is the provincial capital of South Sulawesi. Almost half of the economy of South Sulawesi is concentrated in Makassar, and the city is expected to double its current population by 2030.[13] Due to its status as a trading port as well as its location, migrants, the majority of whom come from other parts of Indonesia, make up approximately 7% of the total population in Makassar. Most migrants stay in Makassar to attend university, start businesses, or seek out better economic opportunities than are available in rural areas. Waterlogging and flooding are issues in Makassar, especially in low-lying areas, which are often the locations of low income or informal settlements. Makassar City assessed levels of risk for drainage overflow in 2016 as part of their master drainage plan.[14]

Methods

Using ethnographic methods including repeated interviews and observation, each journey map follows one key service issue related to urban health.

For this project, we identified key service issues through the qualitative baseline Health Needs Assessment[15,16] and Data Use and Access Assessment, both conducted by BHC in early 2018.[17] We also pulled information from other BHC research to triangulate a few key issues to be tracked in each city's journey maps.[18-21] Special focus was given to issues that disproportionately affected low income citizens, women, and children, given the vulnerability of these sub-populations. We acknowledge the term "citizen" in its current usage can exclude some of the most vulnerable such as migrants and residents without legal citizenship, but here the selection of neighborhoods was inclusive of anyone living or residing within city limits. The issues selected included widespread disparities in environmental health, health service provision, and citizen participation. Separate journey maps were created for each city on each of these issues, specialized to each context.[22-27] In both Indore and Makassar, wastewater management came up as a primary urban health service issue that warranted its own journey map, and over time it became clear that there were many cross-city similarities on this issue

Typically, a journey map tracks the experience of one person, but for this project, our team tracked the experience of a neighborhood, which allowed for greater anonymity for citizens to share their perspectives. One neighborhood was selected for each of the journeys, and follow-up data were collected every quarter, starting in January 2018. Data collection will continue through September 2021, but this paper is based on the first 2 years of data. For the wastewater management journey in Indore, we followed a neighborhood within the Smart City area-based development zone, which has a population consisting primarily of working-class, long-term citizens, and informal housing. For this particular journey in Makassar, we followed a densely populated neighborhood, where the majority of citizens are informally employed in the service sector and as daily laborers.

Our team developed a qualitative data collection guide to collect repeated cross-sectional data from both citizens and city officials. Convenience sampling was used to select citizens with a rough break down of 2 to 3 citizens sampled for each journey, each quarter. During the first 2 years of the wastewater journeys, women made up approximately 60% of the citizens sampled in Indore, and 75% of those in Makassar. City officials were purposively selected each quarter so that the appropriate officers overseeing each issue were briefed and then asked to comment. This means the same officers could be interviewed for several quarters of the journey map, while we aimed to have no re-sampling among citizens. We supplemented these firsthand accounts with observation of the physical environment, analysis of spending data for these services, usage statistics, and photos of any physical changes. In some cases, we cited news articles to help validate or elaborate on points made by citizens or city officials.

The journey map format is straightforward, easy to read, highly visual, and includes insights to capture policymakers' attention. Anonymized citizen feedback, responses from city officials, and descriptions of relevant actions taken each quarter were arranged along a timeline. The height of the timeline increased or decreased each quarter to indicate positive, negative, or no change. Photos were also included when possible. To keep the format flexible and accommodate outside evidence, BHC defined general types of journey inputs in the legend (see Figure 2). These journeys were completed using a PowerPoint template.

Results

From the baseline assessments in Indore, citizens living in several informal settlements reported that poor drainage and infrastructure for storm and wastewater were major concerns.[15]

Figure 2. Legend of types of journey map inputs.

Evidence from other studies suggested that open drains have been a pervasive problem throughout informal settlements in Indore for several years.[28] Poor drainage was compounded by the build-up of trash in the drains, and roads and lanes were too narrow for trash vans to automate disposal of waste. Unsafe infrastructure built around the drains—for example, an unstable bridge over one open drain—posed a risk of waterborne diseases and injuries (especially to children) in this neighborhood.

In Makassar, citizens noted that dirty water overflowed from open drains in many neighborhoods, and was often compounded by frequent flooding. Household behaviors, including the disposal of garbage in storm water drains, exacerbated overflows. When storm water drains were blocked, rainwater had nowhere to go, and houses flooded with dirty water. The issue of flooding was a key topic of discussion in the Health Needs Assessment focus groups with citizens; flooding was the biggest complaint in terms of city services.[16] According to information received from the Makassar Smart City office in 2017, the city reported 21 flood-prone areas and 7 critical hotspots for flooding.[29]

In both cities, the maps captured notable changes from these baselines over time. In Indore, the journey began in the second quarter of 2018 with a citizen reporting "There have been 3 deaths on this bridge [over the drain], all children." Both citizens and city officials knew garbage was contributing to the build-up of water in this open drain, and both acknowledged that garbage collection vans could not safely make it through the narrow alleys of the settlement. A representative of the government office that provides waste management services stated, "We can't service this area because it is unsafe for our workers." Simultaneously, a citizen noted, "The streets are too narrow for the trucks to come in, clogs pulled from the drains just sit in the street." Right as the data collection began, the Indore Municipal Corporation (IMC) Commissioner visited this sentinel neighborhood to see the issue firsthand. Figure 3a and b show the full journey map through the end of year 2, which captures 7 rounds of data collection.

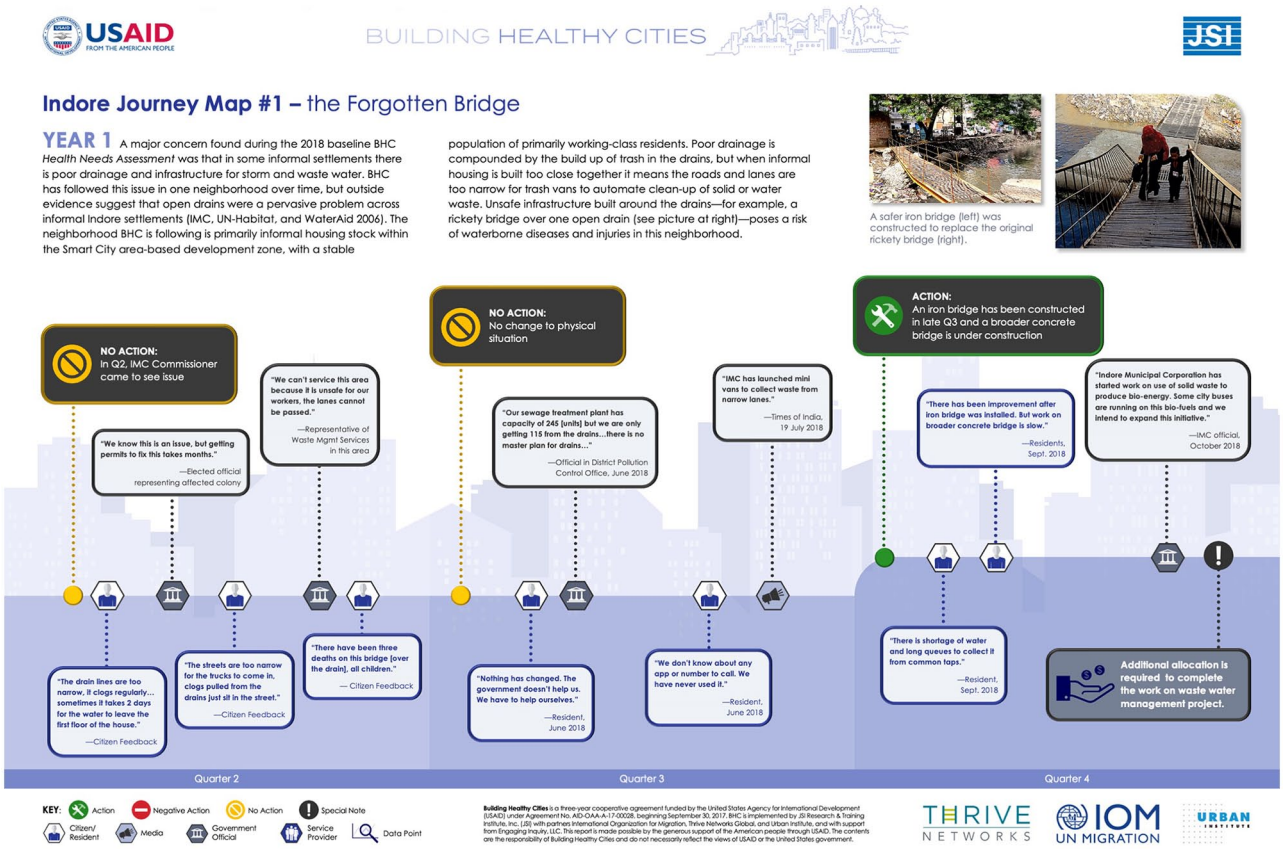
At the end of the second quarter, citizen feedback was shared with city officials, and was fed into other citizen reporting systems including an app and phone line, which the city uses to track service issues. As of the third quarter, citizen feedback was still largely negative, with 1 citizen saying, "Nothing has changed. The government doesn't help us. We have to help ourselves," and "We don't know about any app or number to call. We have never used it." Shortly after, however, IMC initiated the use of mini-vans that could fit within the narrow alleys for trash collection, and both city officials and citizens noted progress on constructing a new bridge. One citizen reported, "There has been improvement after iron bridge was installed. But work on broader concrete bridge is slow."

Nine months later, in June 2019, one arm of the concrete bridge was completed and in use by pedestrians, cyclists, and even a solid waste collection van. A citizen shared, "Due to Ramadan fasting month, on request by citizens, work on concrete bridge was rapidly completed on one arm. This was important as mosque is on one side of the drain and citizens from across the drain do come across bridge to attend prayers." In September 2019, a sub engineer from IMC noted, "We have [sent] many notices to contractor but he is not responding. Our superiors are also not reviewing the progress seriously. This bridge is likely to complete at end of November with all respect." By the end of 2019, citizens were happy to see progress but still stressed the need to fully complete the bridge.

In Makassar, journey mapping in early 2018 mentioned issues affecting both drainage and clean water supply. A main dam that fed the neighborhood was breaking, and officials received multiple complaints about how garbage made storm flooding worse. Several citizens noted knee-high and higher flooding in their homes over the first 6 months of 2018. Figure 4a and b show the full journey map through the end of year 2, which captures 7 rounds of data collection.

Throughout 2018 and into 2019, citizens noted how they got involved with neighborhood officials and saw seasonal improvements, but reported that the flooding returned every rainy season, and was especially bad in low-lying areas. In late 2018, 1 citizen provided details on the health implications of this flooding, saying "In this rainy season, we are suffering by flooding that risk for water borne disease such as diarrhea and skin symptoms. . .We have been proposing this alley to be repaired. . . since 2005." A worker at the local health post confirmed, saying, "In January-March 2019, there are 9 cases of dengue, and 84 diarrhea in Maccini Sombala [neighborhood for wastewater journey]. I engage communities every month through Posyandu [health post] program to deliver health promotion on environmental related disease."

Citizens also provided useful suggestions on how to fix the flooding, including adding trash bins to keep garbage from clogging drains, covering drains, and increasing the frequency of garbage collection. One example of how citizen feedback from the journey mapping exercise sparked a response with the city occurred in April 2019. The village officer stated, "Nice idea, we will try to provide any sign like certain music when garbage collectors coming to communities every day. We have



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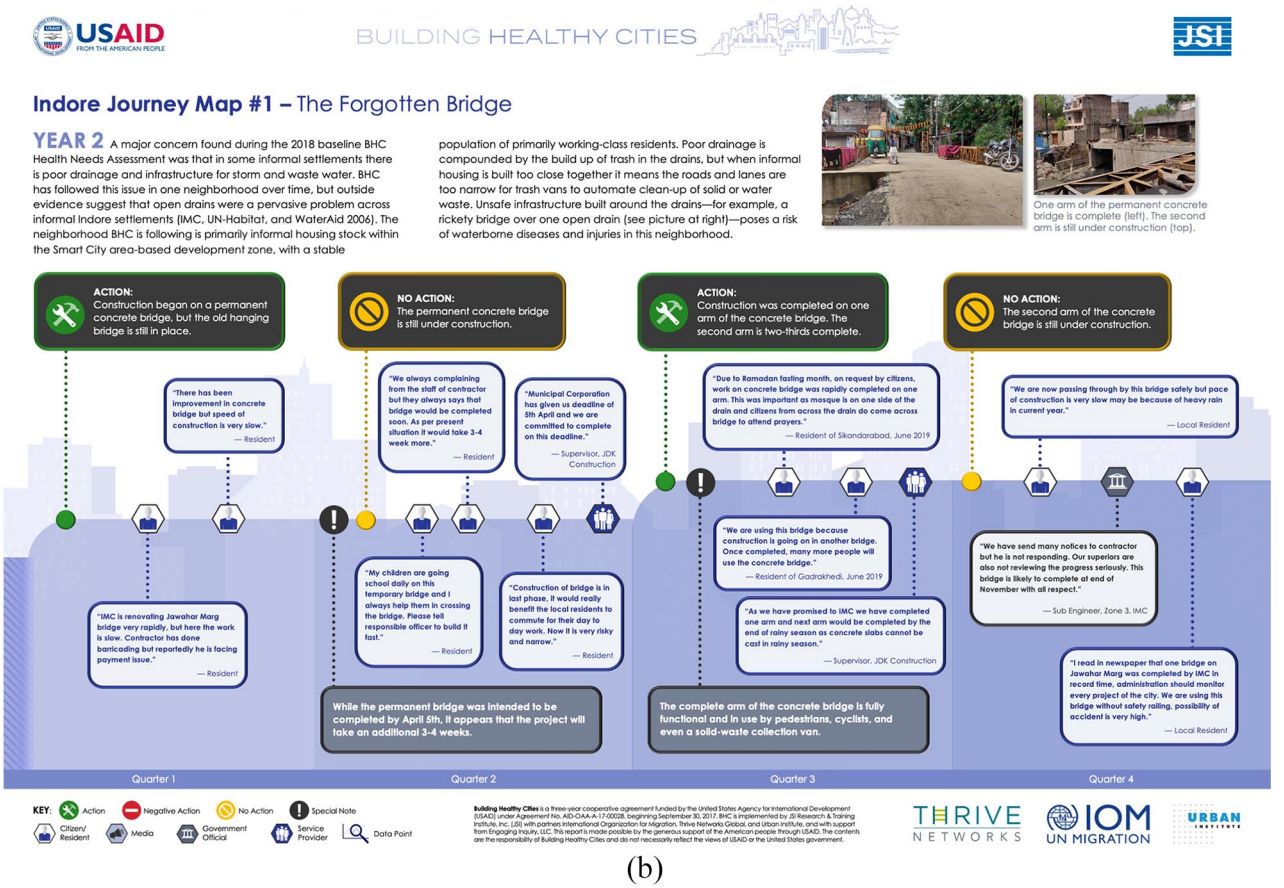
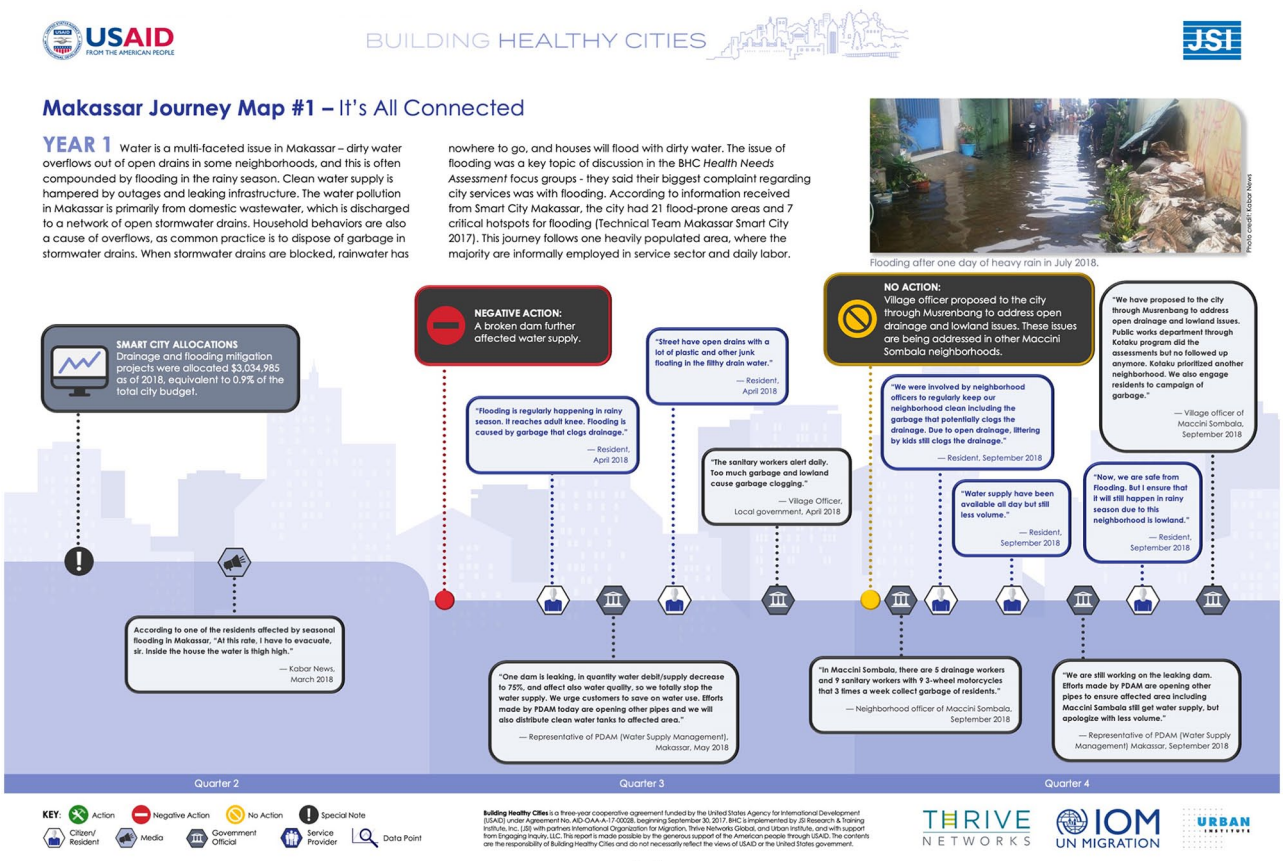


(b)

Figure 3. (a) The forgotten bridge journey map, year 1. (b) The forgotten bridge journey map, year 2.



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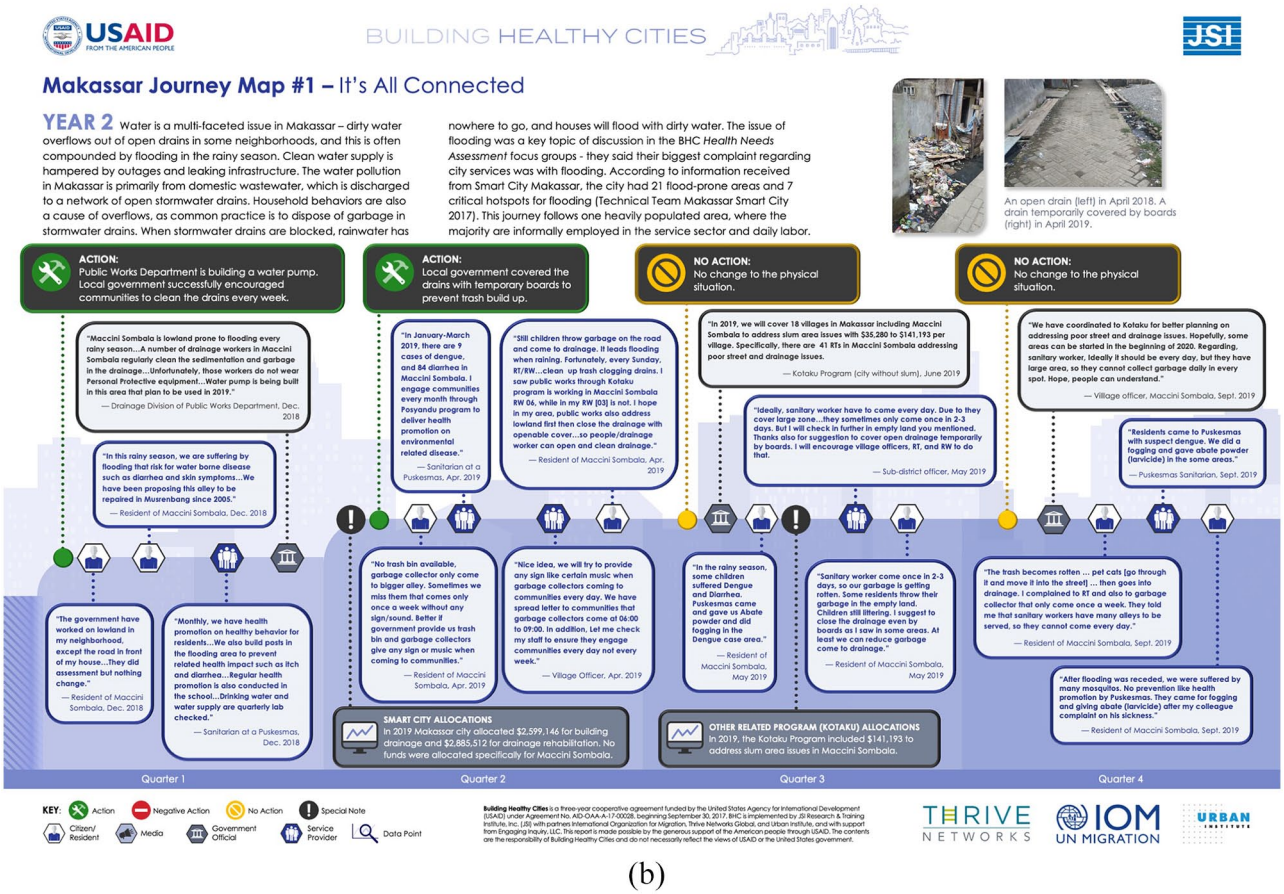

(b)

Figure 4. (a) It's all connected journey map, year 1. (b) It's all connected journey map, year 2.

spread letter to communities that garbage collectors come at 06:00 to 09:00. In addition, let me check my staff to ensure they engage communities every day not every week."

These quarterly stories also helped to capture, and in some cases influence, more systemic changes. In September 2018, a village officer had suggested using the Musrenbang process, a planning forum for stakeholders to develop the regional workplans, to start the address these issues.[30] The Musrenbang is a participatory planning process that gathers input from the village level, which is the lowest level of city administration, and funnels it up to the city and national levels.[31] This comment in Year 2 of the journey map preceded actions and funding allocations we are now hearing about in Year 3 of journey mapping. In addition, in part because of the quarterly discussions facilitated by the journey mapping process, the Makassar city planning office asked BHC to convene donors, private sector stakeholders, and nongovernmental organizations to think about how to address the wastewater issue. As a result of that convening, the Kotaku (City Without Slums) program announced in June 2019 that "In 2019, we will cover 18 villages in Makassar including Maccini Sombala to address slum area issues with $35 280 to $141 193 USD per village. Specifically, there are 41 [neighborhoods] in Maccini Sombala addressing poor street and drainage issues." This is important, because BHC documented that while Makassar allocated over $2.5 million USD to building drainage in 2019, none was allocated specifically for the slum areas in Maccini Sombala where the journey map data were captured.

Limitations

BHC's original intent in using journey mapping was to simply monitor community-level issues and use that information to help spur government action. The journeys are not representatively sampled nor do they aim for saturation on an issue, and therefore cannot replace more rigorous research methods. However, BHC has found them to be more useful than expected as a data stream to follow key issues identified in our baseline data to additional cross-sectional datasets and, eventually, to our endline analyses. In terms of their utility as a tool for government engagement, they can risk missing more macro-level issues by following just one neighborhood, and can potentially lead to preferential treatment for that one neighborhood over others experiencing the same issues. BHC has worked to protect against this by first ensuring that the journeys are based on issues that surfaced through more rigorous research methods. Second, when presenting the journey maps to the city we make sure to tie these "micro" grassroots journeys to "macro" city-level trends, and provide support to planning and budgeting offices to define how to budget for broader municipal action on these issues.[18,19] Finally, as a citizen reporting tool, these journeys are still to be tested. Some areas to investigate as BHC trains neighborhoods to take over the process will be the acceptability and sustainability of this tool if it is not attached to a funded project, and how to set up reporting so that it does not fall to elite capture, with certain influential groups biasing the journeys to suit their needs.

Discussion

Despite the potential limitations, BHC has found many benefits to using journey mapping. For BHC, the journeys have expanded from simply monitoring key issues and providing a structure for regular citizen check-ins, to offering a more genuine understanding of daily life with these issues. This new perspective has influenced the design of urban health action plans that BHC is developing with each city, and caused us to change the design of at least one research activity to be more citizen-led. While few other studies have been published on the outcomes or effectiveness of journey mapping, there is some evidence that one of the main expected benefits increased empathy for the person whose journey has been mapped, so BHC's experience is not unique in this finding.[32,33] For city leadership, the journeys provide a more engaging way to understand the human impact of sometimes unattractive service issues, as well as direct feedback on their performance (which they may or may not appreciate). While there are other citizen reporting systems in both cities, these journeys highlighted issues that citizens were not reporting through traditional channels, possibly due to the lack of governmental response in previous years.[34]

The journey map process seems to be an effective way to spur discussion with city officials about identifying practical solutions to community problems, by combining an engaging visual story, first person perspectives, key facts, and a regular schedule of communication. Similar positive results around increasing communication and establishing partnerships were found by another study that focused on using journey mapping to engage a First Nation community in Canada to better communicate their needs to health providers.[35] Additional evidence is needed to supplement these journeys in order to turn interest into action, but the journeys provide an accessible entry point to discussion.

From the citizen perspective, other research by BHC revealed the conundrum that when citizens did not see changes to services based on their feedback, they stopped engaging with the city.[36,37] Proper follow-up to soliciting citizen feedback is crucial to build trust.[4] So far, BHC's experience with journey maps demonstrates that this pattern can be reversed and trust can be re-built when continuous community feedback leads to visible changes, as well as greater ownership in the process. Citizens also benefit from improved community awareness on how seemingly non-health issues can in fact affect their health. In this case, awareness is being raised both among the community and city officials of how inadequate wastewater management is linked to communicable disease (diarrhea, cholera, typhoid, hepatitis), skin conditions (scabies, bacterial infections), and stress on mental health.[38,39]

Conclusion

The journey map process provides crucial grassroots level perspectives to bring to life issues affecting urban health. Sharing these journeys with the government can create opportunities to develop practical, effective solutions to city-wide barriers to health. As our journey mapping work continues, BHC is moving toward providing training for citizens in the areas of data literacy, analysis, and advocacy skills so they can collect and share their own stories. By the end of the project, we hope that citizens from a range of underserved areas will have the skills and confidence to take over the creation of these journeys, adapt them to suit their needs, and use them to achieve access to services and demand improvements in existing services.

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