

MICHIGAN WATER QUALITY AND AFFORDABILITY

EXAMINING DRINKING WATER QUALITY AND AFFORDABILITY IN THE BENTON HARBOR
COMMUNITY AND BEYOND

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1 | EXECUTIVE SUMMARY

1.1 | PURPOSE AND STRUCTURE

Our Dow Sustainability Fellowship Program team (the Dow team) partnered with the Michigan Environmental Council (MEC) to investigate drinking water quality and affordability issues at the community level to better inform statewide efforts to empower citizens and address water access concerns. The locality of focus, Benton Harbor, Michigan, shares similarities to Flint, Michigan – a city thrust into the spotlight when lead contamination was discovered in its drinking water. Benton Harbor, like Flint, has experienced an economic depression, a strained city governance, and aging infrastructure. Yet unlike Flint, municipal water monitoring has recently been free of violations. Despite a lack of documented quality breaches, the team uncovered significant issues related to Benton Harbor’s drinking water. City planners face challenges in planning for costly replacement of leaky water infrastructure, and residents are concerned about water quality and affordability. A lack of communication between residents and city water officials has bred a culture of distrust in the drinking water. By examining consumer perceptions of water in the context of factors at the community level, this work sought to guide efforts to create a toolkit for consumers, as well as influence the direction of advocacy and policy from grassroots to grass-tops.

1.2 | METHODOLOGY

The Dow team’s approach at the community level in Benton Harbor consisted of a convenience sample paper-based survey of residents on water issues related to quality and affordability. The population sampled (N = 104) represents approximately 1% of the city population. Once data was analyzed, focus group discussions (N = 9) were conducted to examine water issues in more depth.

1.3 | FINDINGS AND RESULTS

Findings supported the following themes:

1. Quality concerns, including health effects and physical characteristics, limit residents’ use of tap water for drinking.
2. A high level of bottled water consumption is reported for variety of reasons including quality, value, and health.
- 3 The high cost of water bills and increasing rates represent a significant concern for residents.
4. Many residents have limited knowledge of their water delivery system and monitoring, but are deeply concerned about water quality and cost.
5. Communication between the water utility and consumers is minimal and largely consists of water utility bills, water advisories, media coverage (e.g. Flint) and word-of-mouth from community networks. Residents report wide variation in whom they trust for water information.

1.4 | RECOMMENDATIONS

Based on the findings of this study, the Dow team has developed the following recommendations for the development and distribution of MEC's toolkit.

1. A short "power" survey, provided with this report, should be used to diagnose interests, comprehension, and concerns of a community about their water system. Word-of-mouth recruitment has proven successful, but surveyors should consider location and time of day when designing a surveying campaign to reach a representative sample population.
2. MEC might consider including a search feature through which a user is provided information and resources about a specific question or concerns.
3. The toolkit can be designed in such a way that it is useful to both resident-consumers and utility operators. Separate sections of the toolkit tailored to the needs and interests of each group could be an effective way of opening new lines of communication.
4. Community engagement in their water system can be fostered through encouragement of citizen science. Simple in-home test kits for common water quality indicators, such as free chlorine, are widely available. A public education and sampling campaign would not only provide an opportunity for residents to test their own water and learn about their water system, but also provide valuable data about the state of the distribution system to the water utility.

2 | INTRODUCTION

OVER THE COURSE OF THE PAST YEAR, A TEAM OF FIVE MASTERS AND PROFESSIONAL FELLOWS¹ FROM THE DOW SUSTAINABILITY FELLOWSHIP PROGRAM (THE DOW TEAM) CONVENED TO INVESTIGATE AND FIND SOLUTIONS FOR AFFORDABILITY AND QUALITY CHALLENGES IN MICHIGAN'S DRINKING WATER. THE DOW TEAM USED THEIR DIVERSE ACADEMIC AND PROFESSIONAL BACKGROUNDS TO APPROACH THE ISSUES FACING THE DRINKING WATER INDUSTRY IN A STATE WITH AGING INFRASTRUCTURE AND A SHRINKING POPULATION AND TAX BASE.

Michigan's difficulties with drinking water quality and, to a lesser extent, affordability are well chronicled. The Flint water crisis came to the national spotlight in the fall of 2015 and is still not fully resolved over two years later. Given the longevity of the crisis, the City of Flint continues to be saturated with researchers and volunteers. Recognizing that there may be similar communities with water concerns, the Dow team focused its efforts on Benton Harbor, a city of about 10,000 residents in southwestern Michigan. There they found issues comparable to those in Flint and by surveying the population were able to glean valuable qualitative and quantitative data from residents about the perceived quality and affordability of their drinking water. The Dow team used this data to develop a framework of resources that Michigan consumers could use to better understand the processes that determine the quality and price of their drinking water while empowering them to ask questions and become involved.

The Dow team partnered with the Michigan Environmental Council (MEC), who helped to guide the team's research and work product. MEC is a non-profit think tank based in Lansing, Michigan that supports research of environmental issues, lobbies for the protection of Michigan's natural resources in the state legislature, and strives to connect environmental, social, and political organizations across the state. In the aftermath of the Flint water crisis, MEC saw the need for an accessible, yet comprehensive toolkit through which Michigan residents could learn about their drinking water system. MEC approached the Dow team with the goal of better understanding the needs of Michigan's drinking water consumers and the best method by which to reach them.

Benton Harbor, a city that has experienced economic recession, a dwindling population, the departure of large manufacturing businesses, and other issues directly impacting residents' water quality, appeared to be an appropriate case study of the challenges facing Michigan communities and their drinking water systems. In addition, the City of Benton Harbor had previously reached out to the University of Michigan's Urban Collaboratory, an interdisciplinary team of faculty interested in working

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with cities to identify and tackle challenges facing residents. Since the City of Benton Harbor and the Urban Collaboratory have an established relationship, the Dow team was able to connect with interested individuals in the city and has maintained a working relationship with members of the Collaboratory, whose expertise has been invaluable to the Dow project. In particular, Dr. Glen Daigger, a professor of Civil and Environmental Engineering at the University of Michigan and member of the Urban Collaboratory, acted as the Dow team's faculty advisor throughout the project.

Through the research conducted in Benton Harbor, the Dow team was able to create a model for understanding the concerns of consumers regarding their drinking water and, crucially, the best channels by which to address them. The Dow team's analysis and recommendations have been presented to MEC, which will integrate the information into its ongoing efforts to understand and address drinking water issues throughout the state. The Dow team sought to empower MEC with a foundation on which to build a toolkit for community members interested in learning about their drinking water systems. The toolkit is currently published and is undergoing beta-testing. The project results will also provide MEC with valuable information directly from the Benton Harbor community, which can be leveraged to inform and influence community decision-makers and design responsive policy.

The objective of this project, and the drinking water toolkit, is to provide not only safe, affordable drinking water to residents but also the information necessary for them to have confidence, and a forum, to address those aspects.

3 | METHODOLOGY

3.1 | STAKEHOLDERS

3.1.1 | CONSUMERS

For many years, the focus of community water system managers was the protection of source water bodies and treatment processes at the water plant. The Flint water crisis highlighted the need for greater attention to regulation and supervision of water quality *after* it is introduced into a municipal water system and has resulted in a paradigm shift in the industry to better include consumer input in the regulation and management of drinking water systems. MEC's previous policy and research efforts emphasized maintaining the quality of water sources as regulated by the Clean Water Act and other legislation. The new drinking water initiative is meant to pivot attention and resources to the more immediate concerns of drinking water consumers: the quality and affordability of the water coming from their tap at home.

Water consumers in Benton Harbor are familiar with issues regarding accessibility, affordability and quality of drinking water. Like its better-known peers of Detroit and Flint, Benton Harbor experienced rapid population growth because of an industrial boom through the 1950's, and infrastructure, including the water distribution system, swelled to meet the needs of the population. However, when factories left in the second half of the century, the population rapidly declined. Benton Harbor's population is now just under 10,000 residents, approximately half of its peak. [1] Today, the city is primarily Black or African-American (89%) and over half the population lives in poverty. [2] In addition to a shrinking tax base, the Benton Harbor Utility Service Department (the Utility) has faced many delinquent water bills, resulting not only in water shut-offs at these residences, but also increasing water rates as the utility attempts to maintain the aging, oversized drinking water system. From 2011 to 2014, Benton Harbor was subject to emergency management due to financial difficulties.[3]

3.1.2 | MUNICIPAL WATER PROVIDERS

Nearly 286 million Americans receive their water from a community water system, a majority of which are public entities.[4] Drinking water can be sourced from both surface water bodies and groundwater, but is subject to state and federal regulations. The United States Environmental Protection Agency (EPA) sets the standards for maximum contaminant levels for over 90 contaminants, including bacteria like E. coli, metals such as lead and copper, and disinfection byproducts[4] for all water suppliers, although individual states may have stricter regulations. Daily sampling of treated water occurs at the entrance to the distribution system and routine monitoring of drinking water quality occurs throughout the distribution system, as required by the Clean Water Act, the Safe Drinking Water Act, the Lead and Copper Rule, and other rules and regulation.

Benton Harbor's water utility, like 88% of community water systems in the United States [5], is publicly owned. The financial and administrative management and water treatment plant operations are

overseen by the Benton Harbor Utility Service Department within the municipal government. The Utility is responsible for not only appropriately treating water sourced from Lake Michigan at the newly updated water treatment plant, but also maintaining the integrity of the City's drinking water infrastructure to ensure all consumers receive safe, clean drinking water.

3.1.3 | NON-PROFITS AND NON-GOVERNMENTAL ORGANIZATIONS

MICHIGAN ENVIRONMENTAL COUNCIL

The principal organization for the project was the Dow team's client, MEC. MEC is a "grass-tops" non-profit independent of the University of Michigan that utilizes community-based approaches to survey the environmental needs of Michigan communities and develop strategies to lobby for those communities at the state capitol. Naturally, water is a prominent environmental issue, particularly in a state surrounded by the Great Lakes while housing heavy industry for many companies. However, MEC has traditionally focused on the quality of drinking water before it was introduced into municipal water systems. Thus, MEC was concerned with surface and ground water contamination, but not specifically drinking water infrastructure beyond water source. The Flint water crisis reorganized priorities and resulted in a national discussion about the safety and quality of water after it leaves the treatment plant and travels to the consumers' tap.

To tackle the growing concerns surrounding drinking water quality, MEC began an initiative to determine the needs of Michigan water consumers in combatting future Flint-like events and create resources to empower citizens to meet those needs. By leveraging a methodology attentive to and embedded in actual Michigan communities, MEC hopes to harness resident engagement to custom-make the means for consumers to educate themselves on the quality of their community's water and its affordability. They hope to use interviews and surveys to create a "toolkit" of resources enables Michiganders to understand their water system and what to do if, for example, their water turns brown or their water bill spikes. The toolkit can also be applicable beyond Michigan, in other Midwestern communities facing similar issues of drinking water quality and affordability resulting from shrinking populations and aging infrastructure.

LOCAL COMMUNITY ORGANIZATIONS

In addition to MEC, the Dow team targeted local community organizations in Flint and Benton Harbor both for its research and in assisting MEC with creation of its toolkit. Those local community organizations were important for two reasons.

First, they provided support and access to the community for gathering survey data and interviews during the research stage of the project. Not only did they provide the Dow team information on when and where to collect data from local residents, they also gave crucial guidance on how to assimilate into the community. This proved vital in Flint, where the Dow team originally thought they would gather research. Instead, local community organizations, such as the Firestone Volunteer Center, cautioned

that Flint was highly saturated with research and aid, and that turning to different, less overwhelmed communities would be more fruitful.

Second, local community organizations helped in distribution of the initial test version of MEC's toolkit and will play a vital role in distributing the final toolkit upon completion. MEC and the Dow team recognize that using community organizers to spread the word and educate consumers in their community will be more effective than trying to reach every consumer. So-called "watch dogs" in a community can kick-start awareness about water issues and resources more efficiently than efforts to blanket the community at the household level. They are also more likely to monitor and sound the alarm if and when a quality or affordability issue becomes critical. In other words, a community organization can both educate a community about its water as well as recognize when water quality is concerning or when rates exceed the community's ability to pay. This is especially true in low-income communities where water quality may take lower priority to residents who face more immediate concerns such as job security, housing, and safety.

3.1.4 | RESEARCHERS

The Dow team explored integrating itself into the ongoing research and assistance efforts in the City of Flint by using connections with organizations like the Firestone Volunteer Center to assimilate into the community. However, in discussions with other researchers in Flint and with its client, the Dow team learned that Flint was not an ideal community for its research. First, it was a crowded field. Flint was saturated with outside research and relief efforts following the widely-covered water crisis. Second, the community was unlikely to be a representative sample. Residents of Flint were intimately familiar with recognizing when their water was suspect and the regulatory issues surrounding drinking water quality. Other communities in Michigan had not experienced a recent, traumatic water crisis, and therefore were likely to be more representative of the average consumer's knowledge and awareness of their water system.

URBAN COLLABORATORY

The Urban Collaboratory is an interdisciplinary team of faculty and students from the University of Michigan with projects in cities across Michigan. Their goal is to improve the livability of cities by collaborating with stakeholders. In 2017, they were approached by the City of Benton Harbor to provide solutions to transportation and water challenges that have plagued the City for years. Led by Drs. Glen Daigger, Nancy Love, Seth Guikema and Joseph Eisenberg, the Urban Collaboratory is working closely with the Utility to identify risk assessment techniques to address drinking water quality problems associated with deteriorating water infrastructure.

3.1.5 | PRIVATE BUSINESS

Industry has had a direct and indirect impact on drinking water quality in Benton Harbor. Directly, it has contaminated drinking water with manufacturing waste including cadmium and lead at times throughout the last 50 years, which has required remediation as recently as the 1990's.[6] Industrial

activities have also had a substantial indirect impact on water quality and affordability as it has waxed and, most recently, waned over the last few decades. The water system has grown to meet the demands of manufacturers in the area and the distribution system has remained enlarged well after manufacturers have exited the City.

WHIRLPOOL

The Whirlpool Corporation maintained a substantial manufacturing presence in Benton Harbor up until the 1980's when it closed a majority of its appliance-producing plants. Whirlpool further reduced its manufacturing presence in the City in the wake of the financial crisis when it closed its last plant in 2011. However, Whirlpool has recently re-invested in the community by opening a \$68 million campus in 2012 in Benton Harbor for its technology. Despite Whirlpool's continued presence, its position as a major manufacturing employer has not returned.[7]

3.1.6 | PUBLIC HEALTH OFFICIALS

Benton Harbor is located within Berrien County and is served by the Berrien County Health Department.

The Berrien County Health Department building is located within the City of Benton Harbor and is tasked with providing essential public health services to protect and promote the health of the nearly 155,000 residents of Berrien County. As in other counties, a broad array of services is provided, including substance abuse prevention programming, Women Infants and Children (WIC) administration, food safety inspections, immunizations, tuberculosis testing. In 2016, Berrien County reported revenue totaling \$9,639,075 (largely from State and Federal funding sources, and grants), and total expenditures of \$9,545,699 (largely wages and indirect cost recovery), with revenue exceeding expenditures for the year of 2016 by \$93,376.[8]

In addition to services mentioned above, the Berrien County Health Department is responsible for surveillance of reportable diseases such as Legionnaires' disease, a deadly pneumonia caused by inhaling Legionella bacteria that can live in biofilms lining drinking water infrastructure. Legionella in drinking water is regulated by EPA under National Primary Drinking Water Regulations, with a legally enforceable maximum contaminant level (MCL) of zero.[9] Though there have been no recent Legionella exceedances or outbreaks associated with water provided by the Utility (the most recent microorganism exceedance was for Total Coliform in 2011[10]), this aspect was investigated by the Dow team due to outbreaks of Legionnaires' disease famously associated with declining water quality around the Flint water crisis, and because municipal water is a common vector for this bacteria.

The Dow team spoke with staff at Berrien County Health Department who were able to provide up-to-date county and city level data, shown at right.[11]

Legionellosis in Berrien County 2014-Present (11/22/2017)

	2014	2015	2016	2017
Total Cases	5	3	4	1
Benton Harbor	1	2	1	1

3.1.7 | LOCAL AND MUNICIPAL GOVERNMENT

Benton Harbor is normally governed by a single Mayor and an eight-member City Council.[12] However, the power to govern has in times past been usurped by a state-appointed Emergency Manager under the 2011 Emergency Manager Act and later the 2012 Local Financial Stability and Choice Act, relegating the Mayor and City Council to conduct only ministerial functions at council meetings.[13] Benton Harbor was run variously by an Emergency Manager (2011–2014) and a Receivership Transition Advisory Board (2014–2016) until the state renounced supervision in June 2016.[14][15] While running the municipal government, the Benton Harbor Emergency Manager, Joseph Harris, initiated several changes in order to reduce the City’s debt, which at its peak in 2011 reached \$6 million. One change was to combine trash collection bills with water bills, requiring residents to pay back payments on one service in order to receive either service. This was an effort to incentivize residents to pay their trash collection bills in order to continue to receive tap water.[16]

3.1.8 | STATE GOVERNMENT

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY (MDEQ)

MDEQ is the environmental agency for the State of Michigan.

Historically, the agency has struggled to fulfill its responsibilities to monitor public water systems under the federal Safe Drinking Water Act and EPA regulations promulgated thereunder. A report by the EPA in 2010 [17] — well before the Flint water crisis in 2015 — found several flaws with MDEQ’s monitoring and calculation methods. Specifically, the report found that MDEQ did not complete collection of the requisite number of lead samples required by the Lead and Copper Rule (LCR). Further, the agency did not calculate the average percentile levels from collected samples, which it is required to directly by the LCR, until a sample exceeded twice the action level for the contaminant, nor did it consistently notify public consumers when an exceedance was detected. Despite these documented flaws in MDEQ’s monitoring plan, public water operators continued to struggle with LCR compliance for monitoring and notification.[17]

MICHIGAN DEPARTMENT OF HEALTH AND HUMAN SERVICES

The Michigan Department of Health and Human Services (MDHHS) is a State entity charged with providing structure and programs aimed at preserving and improving the health of the people of Michigan. It is expected to track, monitor and react in a timely manner to outbreaks of reportable diseases. MDHHS does not directly carry out drinking water monitoring but does assume some liability with respect to water quality. In June 2017, Health Director Nick Lyon was charged with involuntary manslaughter and misconduct in office connected with the Flint water crisis, both of which are felonies, and is alleged to have known about the Legionella outbreak for nearly a year before alerting the public in Flint. Chief Medical Executive Eden Wells was charged with obstruction of justice and lying to a police officer. [18]

MDHHS interacts with water affordability issues in Michigan via various assistance programs it administers. Health coverage under Michigan's Medicaid program was extended to people served by the Flint water system between April, 2014, and "a date to be determined in the future"[19] who were pregnant at the time and those under the age of 21. MDHHS also lists on its website assistance for people in Detroit affected by recent massive water shutoffs, but the team could not confirm that this assistance program is still in effect, as calls to the phone number listed connect with a recording stating the number is "a non-working number", and call by the team to the contact personnel listed with the program was not answered or returned.[20] The team was also able to gain anecdotal information in April, 2017, as a team member attending a meeting of the Detroit People's Water Board was told by members that they knew of no water assistance programs that were solvent or dispensing any aid.

GOVERNOR

The governor of Michigan, currently Rick Snyder, manages MDEQ. The governor is also responsible for appointing emergency managers in struggling communities throughout the state which have the authority to exercise the power of local governments without input or approval from the residents impacted. This includes administering public water systems.[21][22] Use of governor-appointed emergency managers has been heavy since the most recent iteration of the emergency manager law was passed in 2012 (despite a public repeal of an identical law the year prior); Detroit, Pontiac, Benton Harbor, Saginaw, Allen Park, Ecorse and, famously, Flint, have all been under emergency management at one point.[23] In some cases, a municipality is placed under an emergency manager multiple times, leaving the community whipsawed between the public accountability of elected officials without an emergency manager and near-complete authority under a non-representative emergency manager.

MICHIGAN LEGISLATURE

Benton Harbor is in the 79th District of Michigan's House of Representatives and the 21st District of Michigan's State Senate.[24] Those districts include other cities in the area including St. Joseph and each district sends a single representative and a single senator to the state legislature.

Although Benton Harbor's emergency management period was dictated by the Governor's office (first Jennifer Granholm, later Rick Snyder), the Michigan legislature empowered that office to make the emergency manager designation and appointment.[25] The initial emergency management designation made by Governor Granholm was expanded under Governor Snyder by a series of laws passed by a Republican majority in both chambers of Michigan's legislature.[25] The legislature provided the statutory authority for the appointment of Emergency Managers Joe Harris and his successor Tony Saunders II, as well as their supervisory authority over the city government including its water utility.

The Michigan state legislature also appropriates funding for city-specific projects from the state budget, including water infrastructure improvements across the state, as well as public safety and education funding for cities like Benton Harbor.[26]

3.1.9 | FEDERAL GOVERNMENT

ENVIRONMENTAL PROTECTION AGENCY

Under the Safe Drinking Water Act[27] (SDWA), the federal government regulates any system that provides water to the public for human consumption through pipes or other constructed conveyances such as ditches, canals, culverts, and other waterways.[28] Systems that serve less than 25 people year-round are excluded, which creates an exemption for private wells and small water distribution systems. The responsibility for formulating national drinking water standards under the SDWA is delegated to the EPA, which is a non-cabinet executive agency.[29] Enforcement of the maximum contaminant levels and maximum contaminant level goals set by the EPA are primarily enforced by state-level contamination control programs, such as MDEQ. However, when a state water regulator proves unsuccessful in ensuring the EPA water quality standards are met, the EPA is empowered to issue orders compelling water system operators to meet the standards and sue the operators if the standards are not met.[30]–[32]

The SDWA requires the EPA to set rules regulating drinking water, including the Lead and Copper Rule (LCR).[33] All public water systems must be regularly sampled by the water system operator and when samples indicate that lead or other contaminants are present in levels that exceed the LCR, the operator must report the fact to the state environmental agency, the EPA and—crucially—the public that consumes the water from the system.[34], [35] When levels are high enough to potentially cause serious harmful health effects, the operator must report the variance from LCR levels not later than 24 hours after the public water system operator learns of the exceedance.

The EPA used its enforcement powers most recently and prominently during the Flint water crisis beginning in the fall of 2015. After several months of urging both the City of Flint and its state regulator MDEQ to address the rising lead levels, EPA created a federal task force and ordered the city, together with the state, to make water quality parameter measurements throughout the city’s distribution system.[36] EPA mandated that the city and state create a website for public access to water testing results, weekly status reports and all remediation plans, as well as maintain corrosion inhibition additives to the system until contaminant levels were reduced to safety.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

The U.S. Department of Health and Human Services (HHS) is a source of both health information and funding resources for local governments in Michigan facing health issues including drinking water quality. HHS is responsible for funding state and local health departments, along with other essential programs within the state of Michigan. In 2016, the MDHHS received the bulk of its funding from HHS,[37] and the Berrien County Health Department received the bulk of its funding from HHS and MDHHS.[8] HHS awarded grants to assist with the Flint water crisis. In June 2017, \$15 Million was awarded to Genesee County Healthy Start Program, and \$14.4 Million to Michigan State University which will use funds “to address community health concerns related to lead exposures, monitor health outcomes among registrants, and expand efforts to reduce and eliminate lead in the community”.[38]

Additional assistance came in the form of deployment of 14 officers from the US Public Health Service Commissioned Corps, some of whom arrived in April 2016.

HHS monitors the deleterious effects of certain compounds present in quotidian life including, for example, designations of lead and lead compounds as probable human carcinogens.[39] HHS issues health advisories based on its research findings to health providers and government agencies about exposure to lead and other harmful contaminants in drinking water especially in areas of acidic water supplies and pre-1930s indoor plumbing.[40]

HHS also partners with the Environmental Protection Agency to provide human health-based recommendations on drinking water quality by for instance determining the optimal level of fluoride in drinking water.[41] Additionally, HHS provides funding for a diverse set of wellness projects including a 2008 grant to connect hiking trails in Benton Harbor as well as health support resources to migrant workers throughout Michigan including in Benton Harbor and adolescent mental health programs in Benton Harbor.[42]–[44]

3.2 | REVIEW OF ACADEMIC LITERATURE

3.2.1 | WATER QUALITY

Following the Flint water crisis, there has been a push for greater investment in drinking water infrastructure and a reevaluation of the LCR both in Michigan and nationally.

Infrastructure investment is key to maintaining safe and healthy water systems. In its fifth Drinking Water Infrastructure Needs Survey and Assessment, the EPA estimated a twenty-year capital improvement need of \$384.2 billion to continue to provide safe and healthy drinking water to communities across the country. This estimate includes investments in all aspects of drinking water systems, from treatment plants to storage tanks to distribution pipes. Michigan alone requires at least \$13 billion in drinking water investments, one of the highest investments in the country.[45] In December 2016, Michigan’s 21st Century Infrastructure Commission, created by Governor Snyder, presented a report detailing recommendations for infrastructure improvement, including transportation, water, storm water, wastewater, and energy infrastructure over the next 50 years. Several of these recommendations specifically address the need for financial assistance to communities with aging infrastructure that poses a threat to public and environmental health and the need for more comprehensive drinking water quality programs, especially in areas serving children and the elderly.[46]

In addition to the 21st Century Infrastructure Commission, Governor Snyder has pushed to create a stricter statewide LCR that will serve as a model for other states. Among other changes, Michigan’s LCR will reduce the Lead Action Level from the EPA’s 15 parts per billion (ppb) to 10 ppb by 2020. Additionally, the Michigan LCR will require a Water System Advisory Council for public water systems in an effort to ensure citizen membership and input in decisions affecting drinking water. Finally, more robust sampling protocols, including annual sampling in schools and other state-funded institutions, and public access to sampling results will be included. [47]

3.2.2 | WATER AFFORDABILITY

Municipal water utilities are responsible for treating drinking water to meet federal and state quality standards. These regulations not only include adequate treatment at the plant, but also monitoring and maintaining infrastructure so pipes and fixtures do not deteriorate to such an extent that they negatively impact the quality of treated water flowing through them. In many communities, the pipes that make up the drinking water distribution system are near the point of retirement, especially in those parts of the Midwest where a water distribution network swelled to meet the needs of population that has shrunk significantly since. Restructuring and replacement of this aged water infrastructure is estimated to cost half a trillion dollars over the next 20 years.[45], [48]

To fund these necessary infrastructure upgrade, municipal water rates nationwide have greatly increased in recent years. This is especially noticeable in many Midwest cities, where declining populations mean that the fixed costs of treating and distributing water are spread over a smaller consumer base, increasing household water bills. The average annual cost of water for a household using 60,000 gallons/year in the Midwest was \$305 in 2016 [49], but this could quadruple in the next few decades. While this may not pose a large problem for wealthier consumers, low-income consumers will find it increasingly difficult to pay water bills and will likely face water shut-offs, such as the 50,000 shut-offs that occurred in Detroit, MI in 2014. [50]

3.3 | STUDY IRB

This study was reviewed and given exempt status by the University of Michigan International Review Board (IRB). The IRB identification number is HUM00131281.

3.4 | SURVEY DESIGN AND IMPLEMENTATION

3.4.1 | SURVEY DESIGN

A comprehensive survey was designed to understand consumer usage and communication preferences and to uncover consumer perceptions of water quality and affordability. The basic structure of the survey built upon a short, but similar study conducted by the Ann Arbor Public Services Administration [51]. A draft version of the survey was piloted with six Benton Harbor residents on June 9th, 2017. Each resident who participated in the pilot survey received a \$15 gift card to Meijer, a regional grocery store chain, as compensation. Based on feedback collected in the pilot, the survey language, particularly technical phrases, was simplified to increase reader accessibility and understanding.

In its final version, the survey includes 38 questions of various forms, including Likert scale, multiple choice, rating, and open-ended questions. Questions cover aspects of the community water system, quality and personal usage, information and communication preferences, and demographics. In accordance to survey objectives and IRB requirements, two questions at the beginning of the survey select for Benton Harbor residents who are at least 18 years of age. All participating residents received a \$10 Meijer gift card.

A complete copy of the final survey is provided in Appendix A.

3.4.2 | SURVEY IMPLEMENTATION AND ANALYSIS

Surveying was conducted on July 18 and July 21, 2017. The survey team set up a table at the Benton Harbor Public Library. Both a hard-copy and an online version (created using Qualtrics software) of the test was available to the residents. Each resident who completed the survey received a \$10 gift card to Meijer as compensation. Survey responses were kept confidential and residents' names were not linked to their completed surveys.

The target response number for the survey was 100 individuals. This represents approximately 1% of Benton Harbor's population of 9,919 residents [52].

A total of 114 Benton Harbor residents participated in the survey. 110 preferred a hard-copy survey and 4 preferred the online form. On average, the survey required 15 to 20 minutes to complete. Of the total number of surveys taken, ten were deemed not suitable for analysis (due to very short completion times, patterned responses, questionable literacy and comprehension, and other factors).

The survey software Qualtrics was used to organize and analyze the survey results. Microsoft Excel was also used for a portion of the analysis.

3.5 | FOCUS GROUP DESIGN AND IMPLEMENTATION

Focus groups were conducted to connect with residents and develop a deeper understanding of themes identified in the surveys. Two one-hour-long focus groups were conducted in the Benton Harbor Public Library on October 11, 2017 with one group comprised of four residents and three Dow team members, and a second group comprised of five residents and two Dow team members. Focus group participants were recruited by the Dow team after expressing interest via the survey and providing contact information.

During the focus groups, Dow team members asked residents a small number of broad, open-ended questions which were informed by survey data. These questions aimed to prompt residents to speak to those topics they consider to be most important, to more fully capture resident experiences around water, and to give residents a platform to provide greater detail than is possible in a survey – in the form of personal anecdotes (their own or taken from their friends, families, or communities), explanations of patterns of tap and bottled water use, and reasoning behind varying levels of trust placed in different local and governmental agencies. Focus group recordings were transcribed and independently analyzed by Dow team members who identified representative quotes and further refined main themes.

A complete copy of focus group questions and transcripts is provided in Appendix B.

4 | RESULTS AND DISCUSSION

4.1 | KEY FINDINGS

An analysis of survey results and focus group discussion led to a deeper understanding of the drinking water concerns of Benton Harbor residents and the larger scale issues facing the community. Based on the data collected within the community, the literature review, and the conversations held with water experts, the obstacles and opportunities facing the consumers of Benton Harbors water system been consolidated into five themes focused on quality concerns, bottled water consumption, affordability, resident knowledge, and preferred avenues of communications. By understanding these major themes, potential opportunities for the improvement of Benton Harbor’s water system can be recommended.

4.2 | FIVE THEMES

THEME 1: QUALITY CONCERNS, INCLUDING HEALTH EFFECTS AND PHYSICAL CHARACTERISTICS, LIMIT RESIDENTS’ USE OF TAP WATER FOR DRINKING.

While a plurality of Benton Harbor residents (47%) drink their tap water every day, over one-third of residents (35%) rarely or never drink it (Figure 1). The quality and health concerns of the respondents and their understanding of the water system as a whole differs among those who regularly consume their water out of their home faucet and those who do not. Of the residents who do not (or rarely) drink water from their home faucet, there is a higher level of dissatisfaction for several physical characteristics (Figure 2). Of those respondents who rarely or never drank tap water, the greatest concerns center around the overall quality (71% unsatisfied), taste (82% unsatisfied), odor (60% unsatisfied), and appearance (64% unsatisfied) of their tap water. The presence of chemical additives is also a concern with the majority of respondents who never or rarely drink tap water dissatisfied with the presence of chlorine (61%) and the presence of fluoride (53%). It is unclear from the survey questions whether the chlorine concern is health-based or taste/odor-based; however, a focus group participant specifically mentioned the presence of a chlorine odor and associated it with poor water quality.

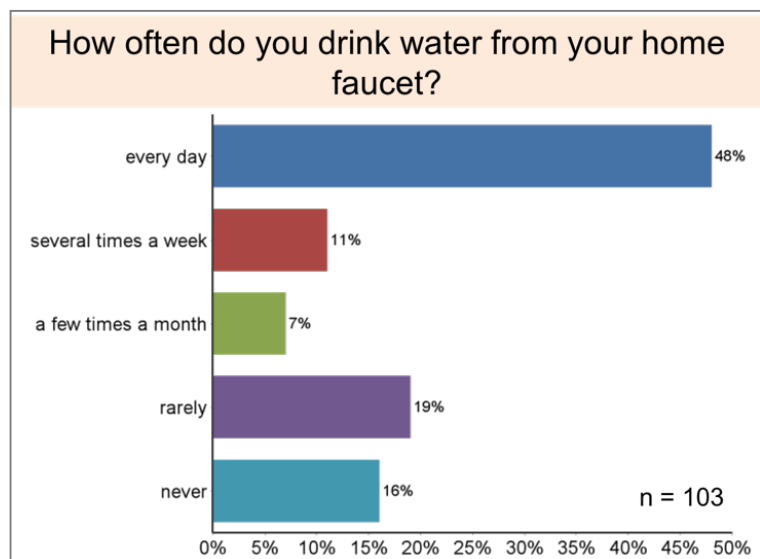
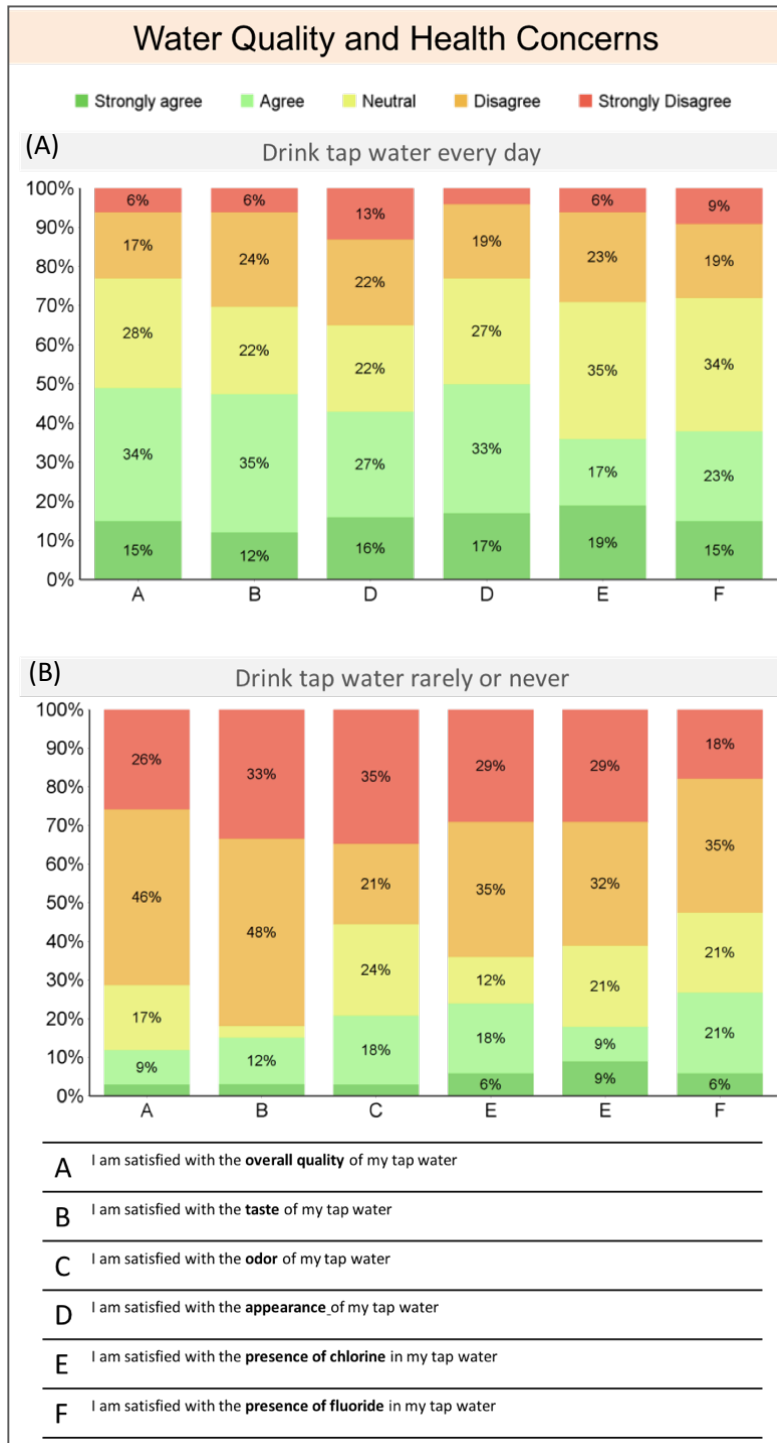


Figure 1. Respondents tap water daily usage. [N = 103]

In general, many of the focus group discussions focused on concerns about the odor, taste, and appearance of Benton Harbor’s tap water, indicating a general sense of mistrust regarding the quality of the water itself.

It is difficult to identify where in the distribution system water quality begins to worsen. The available Consumer Confidence Reports (CCRs), published annually by the Utility, do not list any major violations



of drinking water standards since 2014 [53]–[55]. However, due to the oversized drinking water system, high water age, suspected high leakage and intrusion rates, and low system pressure, there are many potential causes of water quality deterioration. “River water smells” and “dirt taste” are indicative of intrusion of groundwater into the drinking water pipes and the growth of bacteria.

Aging infrastructure and in-home plumbing and threats to Benton Harbor’s water supply (Lake Michigan) are also concerns in the community. 61% of survey respondents are either very concerned or extremely concerned about lead in their in-home plumbing. A slightly higher number (66%) are very or extremely concerned about lead in the distribution system. It should be noted that at present Benton Harbor is not in violation of the LCR [55]. Therefore, the concern may stem from increased awareness due to the water crisis in Flint and/or a lack of information on the city’s water treatment system, which treats for corrosion. During the focus group, residents did connect their water quality concerns to the Flint water crisis. However, there was not a direct connection to lead.

Figure 2. (A) Water quality concerns of residents who drink their tap water every day [N = 44 to 49] (B) Water quality concerns of residents who rarely or never drink their tap water [N = 33 to 35]

“I just don’t trust the water period. I see what’s going on in Flint, I don’t even drink it. I just buy my water.”

“It smells like...like you know how if you go by the river, you know how you can smell the river water? Well, if you go run that water out of your faucet, it’s similar... **I always thought water [is] not supposed to have a smell.**”

“[The water is] clear but it [has] a **dirt taste** to it. Like it’s been sitting there for a long time... That’s why they always say let the water run, don’t [get any] water straight out of the tap. You always got to let your water run...”

THEME 2: HIGH LEVELS OF BOTTLED WATER CONSUMPTION ARE REPORTED FOR VARIETY OF REASONS INCLUDING QUALITY, VALUE, AND HEALTH.

According to the survey results, bottled water consumption in Benton Harbor is widespread (Figure 3). The majority (59%) of residents reported drinking at least one bottle of water every day, while only 12% drink bottled water rarely or never. Additionally, the number of water bottles consumed by those who drink them daily appears to be high. Of the daily bottled water drinkers, 50% drink four or more bottles per day. (The survey did not ask residents to indicate the volume of the bottle, so the average volume of bottle water consumed cannot be estimated.) However, it is clear that of the residents surveyed more prefer to drink bottled

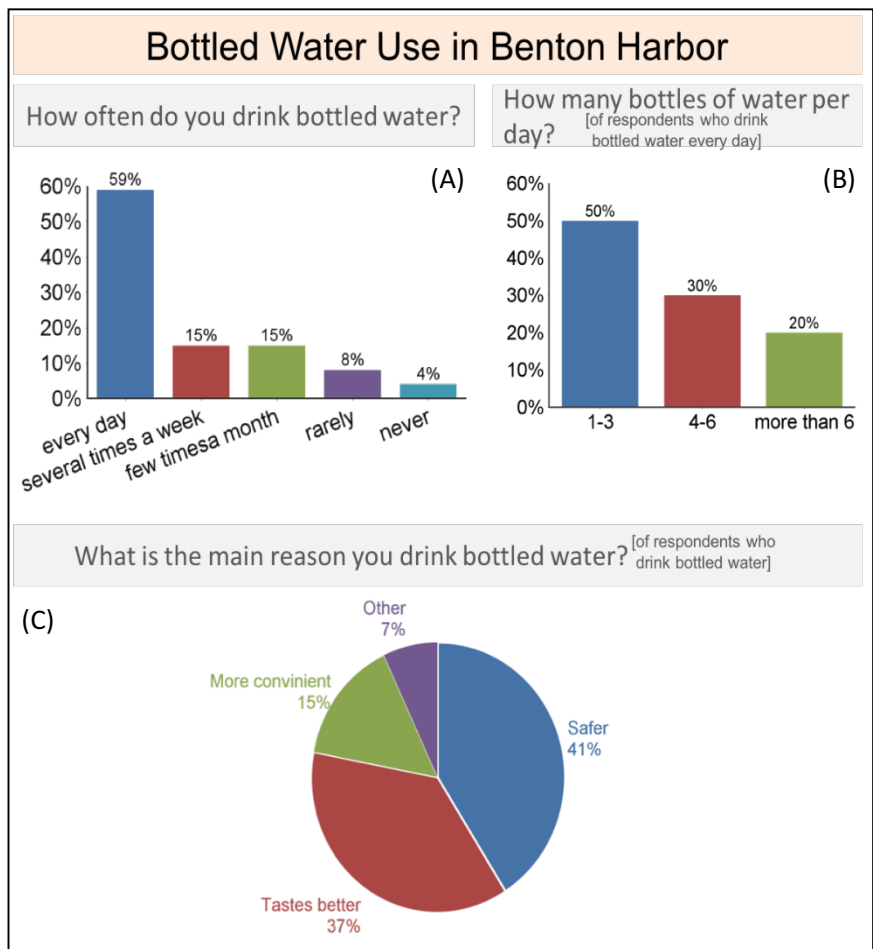


Figure 3: (A) Bottled water consumption of survey respondents [N = 103] (B) Daily bottle water consumption of respondents who drink bottled water every day [N = 56] (C) Primary motivation for drinking bottled water of respondents who drink bottled water

water (59% daily) than tap water (48% daily).

Bottled water consumption is driven by concerns about taste and safety. When asked about the primary reason for drinking bottled water, residents indicated that they feel bottled water is safer (41%), tastes better (37%) and is more convenient (15%) than tap water.

The Dow group was intrigued by the high bottled water use given that Benton Harbor is a lower-income community and bottle water costs on average 300 times as much as the average cost of tap water when normalized by volume.[56] As a follow up to the survey results, the focus group moderators asked participants the following questions:

- Raise your hand if you buy bottled water sometimes. What influences your decision to drink (or not drink) bottled water?
- Think back to the last time you paid for drinking water, whether that be your tap water bill or buying a pack of bottled water, what sticks out to you about the amount you paid?

Notably, focus groups participants largely discussed the purchase of bottled water as having high value and cost-benefit. The ubiquitous nature of bottled water in Benton Harbor and the preference of bottles over tap due to taste and safety concerns was further supported during the discussion with residents.

“Bottled water is best, because, you know those people who drink the water from the fountain? They [are] sicker. They always end up in the hospital... so **bottled water is one of the best solutions.**”

“Yes, [I drink bottled water] because **I like the water it tastes!** ...it’s a particular kind of taste that I like. Aquafina is one of my favorites.”

“You see people **more around here buying bottled water than you would see a person that’s drinking [tap water]**, unless it’s a person that just don’t care. But, other than that, you’d see most people buy water.”

THEME 3: THE HIGH COST OF WATER BILLS AND INCREASING RATES REPRESENT A SIGNIFICANT CONCERN FOR RESIDENTS.

Though information about the average Benton Harbor water and wastewater utility bill is not publicly accessible, general comparison can be made between the utility costs reported in the survey and estimated national and city averages. Based on self-reported bill averages, water costs in Benton Harbor are similar than the national average of \$120 per month for a family of four, as estimated by researchers

at Michigan State University [50]. Circle Blue, an organization focused on achieving safe and affordable drinking water, reported a slightly higher average bill for the city of Detroit at \$139 per month for the same size household [57]. In Benton Harbor, the majority (51%) of respondents, who report to be the primary bill payer in their household, spend between \$80 to \$160 on their combined water and wastewater bill every month, and about 13% of respondents spend more than \$160 per month (Figure 4A). However, although our survey results indicate that Benton Harbor has near average water and waste water utility bill, residents' incomes are lower than the national average with the median household income at \$18,085 (compared to \$56,516 nationally). [1],[58] Therefore, the water utility bill is a higher percentage of Benton Harbor residents' income than the average American citizen.

Of residents surveyed, 42% are extremely concerned regarding affordability of water bills, while 34% are moderately or very concerned (Figure 4C). A plurality of residents also believe that their water bills have

"A lot of people don't pay their bill – [we're] paying for the people who [are not] paying"

"Even though they going up on the water bills though... I guess... they supposed to because... ain't nothing going to stay the same forever. **You still got to pay for it, because we still need it.**"

risen over the last five years with 48% indicating that it has increased "a lot" and 28% indicating it has increased (Figure 4B). Given the high utility bills and resident concern about water affordability, it is surprising that the majority (57%) of survey respondents did not know about any community assistance programs in their area. However, residents do appear to be taking water costs into their own hands and are actively trying to lower their

water bill - for example, 51% of respondents stated they attempt to conserve water in order to reduce their bill. Despite the burden of water utility bills on the already economically stressed residents, many believe their bills are reasonable; 43% strongly agree or agree that the amount their household spends on tap water is appropriate for the water they receive.

In focus groups, frustration with the cost of water was a prominent theme with several participants voicing concern or confusion about the ultimate use of the money they send (in the form of bill payment) to the utility. Two residents voluntarily brought copies of their water bill to the focus group to illustrate both the high cost and the difficulty in deciphering the bill's charges. There was a general concern that the payment residents were sending to the utility was not being reinvested in infrastructure or used to improve water quality. There appeared to be some lack of trust in the government of Benton Harbor to manage money and address resident concerns. Additionally, a few participants were frustrated with the perceived lack of payment by others in their community as they felt they were personally paying higher water bills because others were failing to pay theirs.

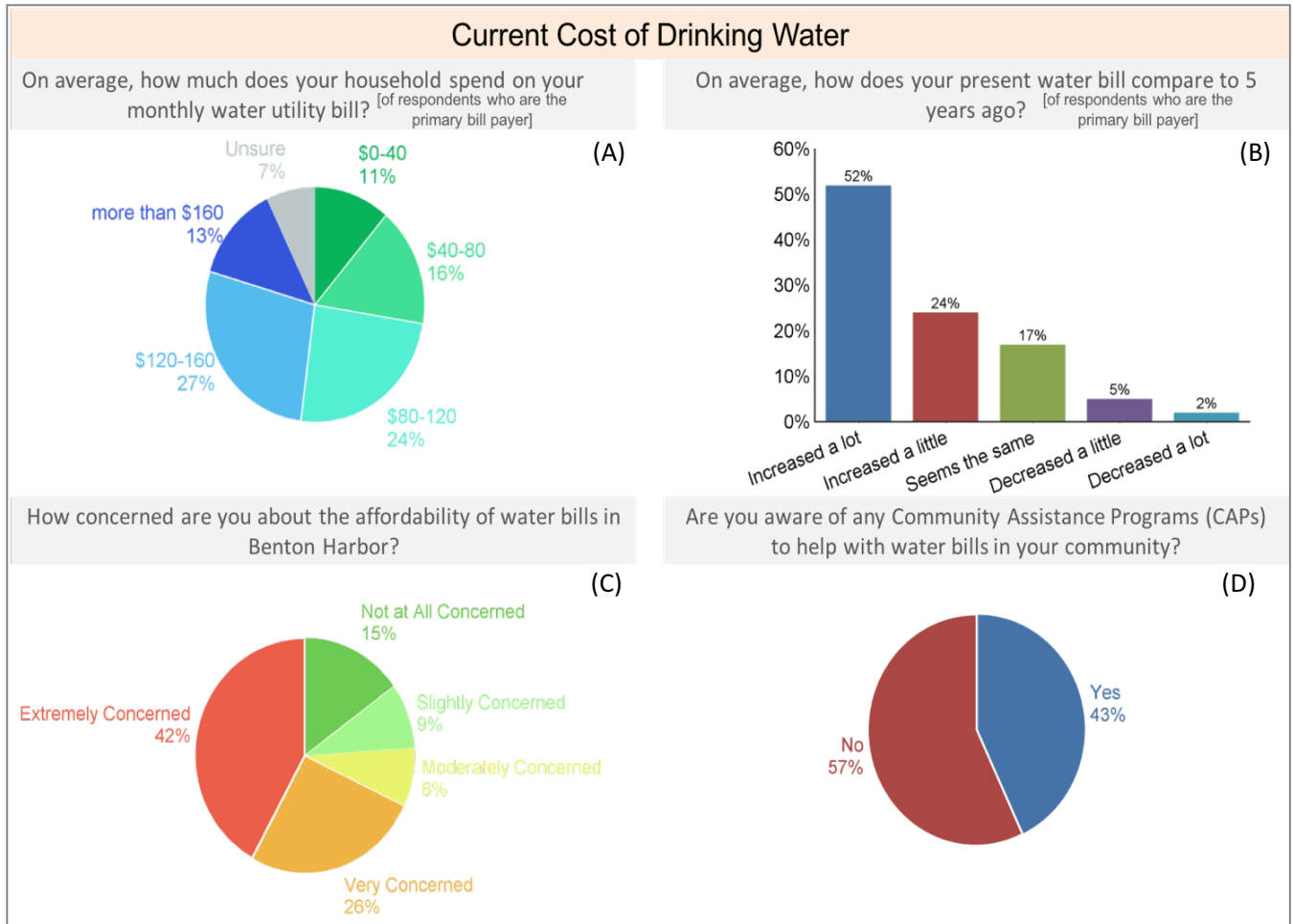


Figure 4. (A) Self-reported monthly water bill of survey respondents [N = 45] (B) Perceived changes in the cost of water [N = 42] (C) Affordability concerns of survey respondents [N = 100] (D) Awareness of Community Assistance Programs in community [N = 100]

THEME 4: MANY RESIDENTS HAVE LIMITED KNOWLEDGE OF THEIR WATER DELIVERY SYSTEM AND MONITORING BUT ARE DEEPLY CONCERNED ABOUT WATER QUALITY AND COST.

Self-reported knowledge of water source, treatment, and distribution was mixed among survey participants with approximately half (54%) reporting they ‘strongly agreed’ or ‘agreed’ that they understood these topics. Interestingly, the level of self-reported knowledge differed between those who drink their tap water every day and those who drink their tap water rarely or never. Participants who drink tap water every day are much more confident about their knowledge of the water system, with 68% reporting they understand the treatment and distribution process and only 12% indicating they do not (Figure 6). Conversely, participants who do not (or rarely) drink their tap water report lower

knowledge of the system, with only 34% reporting they understand the treatment and distribution process and 40% indicating they do not (Figure 6). Due to limits in the survey, it is unclear whether higher knowledge of the drinking water system leads to higher trust of the tap water (and thus higher consumption) or if there is another unseen causative agent influencing these patterns. However, it is reasonable to assume that a minimal knowledge of drinking water treatment combined with frequent water quality concerns would cause some residents to be skeptical of the quality of their tap water, even when the water meets all of the drinking water standards.

The survey population also expressed high interest in communicating with the water utility (with 62% of respondents indicating they have had questions about their drinking water), but limited knowledge

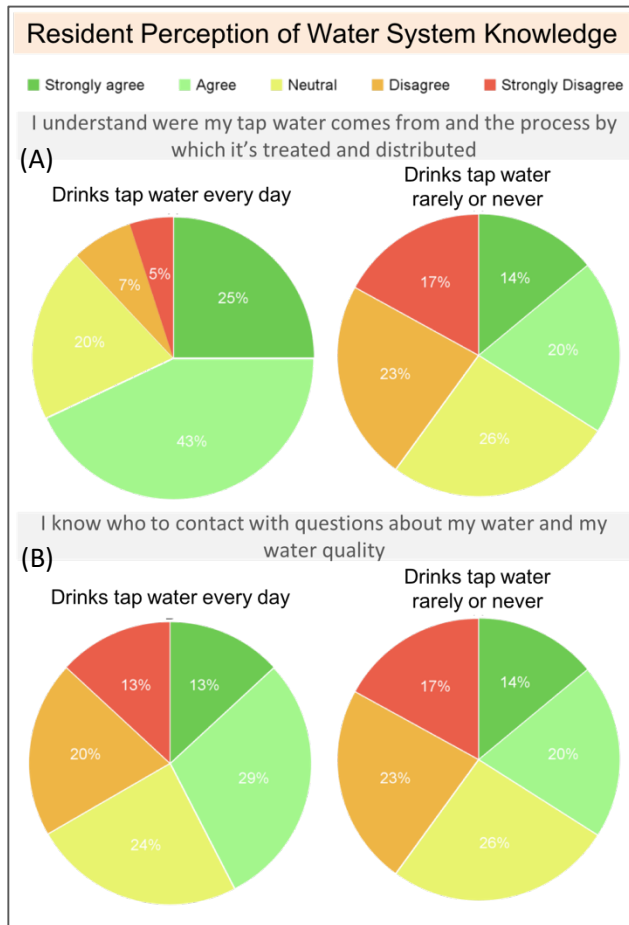


Figure 6. (A) Self-reported knowledge of the drinking water system from respondents who drink tap water every day and rarely or never [N = 44 & 35] (B) Self-reported awareness of contact information from respondents who drink tap every day and water rarely or never [N = 45 & 35]

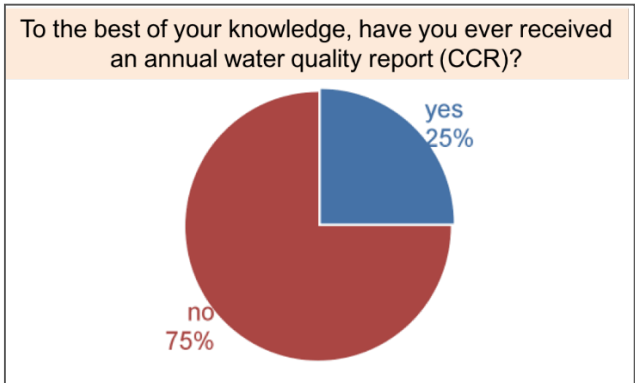


Figure 5. Respondents who have ever received a Consumer Confidence Report [N = 100]

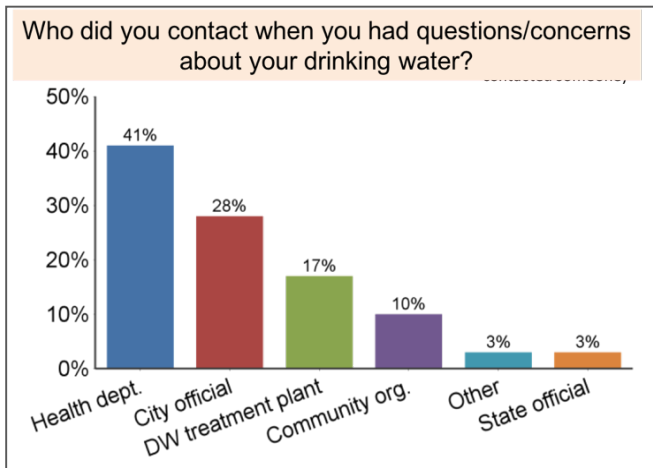


Figure 7. Primary contact when confronted with drinking water concerns [N = 30]

about where to turn for answers. Consumers knowledge of contacts mirrored the water system knowledge in that responders who drink their tap water everyday have a higher confidence in their ability to contact someone about concerns (42%) while respondents who rarely or never their drink tap water report much lower levels of confidence (29%) with over half (52%) indicating that they do not know who to contact (Figure 6). Of residents who have contacted someone with questions or concerns about their drinking water, the local health department and city officials were the most frequently contacted entities (Figure 7).

The Consumer Confidence Report (CCR), a federally mandated annual report of the water quality, is largely absent from residents' experience with the large majority of respondents (75%) never receiving the document. Older residents were more likely to have received a CCR (46% of those 65 or older and 39% of those 55-64), while younger residents (<55) had <20% likely to have seen a CCR in the past (**Error! Reference source not found.**).

THEME 5: COMMUNICATION BETWEEN THE WATER UTILITY AND CONSUMERS IS MINIMAL AND LARGELY CONSISTS OF WATER UTILITY BILLS, WATER ADVISORIES, MEDIA COVERAGE (E.G. FLINT) AND WORD-OF-MOUTH FROM COMMUNITY NETWORKS. RESIDENTS REPORT WIDE VARIATION IN WHOM THEY TRUST FOR WATER INFORMATION.

Residents were asked to rank their levels of trust for a variety of sources of information about their water. News outlets were regarded as most trustworthy with 53% of residents feeling they could completely or somewhat trust, followed by friend or neighbors (51%), and the EPA (50%) (Figure 8). Conversely, residents reported the most distrust in the State of MI (37% distrusted), the City (35%), and the City water plant (34%). For information regarding drinking water, residents strongly preferred television and newspaper to other sources presented such as mailings, meetings, and websites (Figure 9).

“[I trust] the news, the newspaper, local news, [but I do not trust as much] my neighborhood, people on the street, city workers, and the city.”

How much do you trust each group to give you information regarding the quality of your tap water?

	Completely or somewhat trust	Somewhat or completely distrust
State of Michigan	43.75%	36.46%
City of Benton Harbor	44.21%	34.73%
Benton Harbor water plant	45.83%	34.38%
Federal EPA	50.53%	28.42%
Friends or neighbors	51.04%	21.88%
News outlets	53.19%	22.34%

*Percentages for "Neutral" trust in these sources ranged from 19.79%–27.08%

Figure 8. Trusted (and distrusted) sources of information of survey respondents [N = 94 – 96]

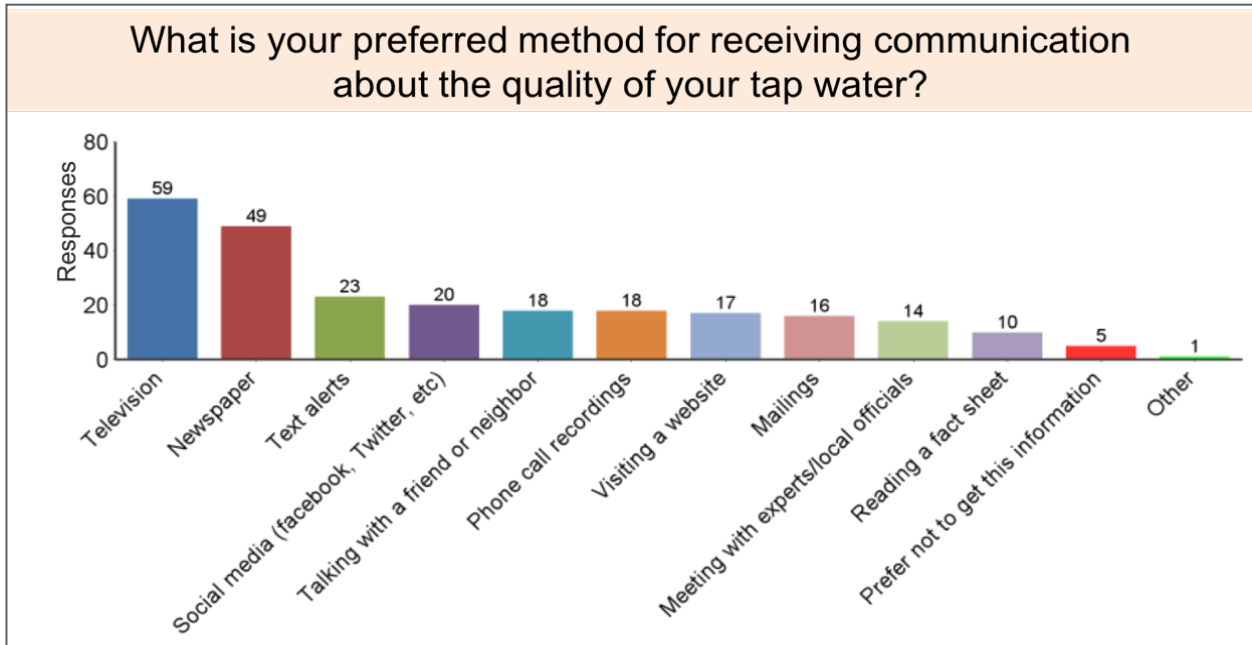


Figure 9. Preferred method for receiving information about tap water quality.

5 | IMPLICATIONS OF FINDINGS

5.1 | PERCEPTION OF DRINKING WATER

Many Benton Harbor residents avoid using tap water for drinking. Instead, a large proportion rely on bottled water for a significant portion of drinking water needs. These water use habits are driven, in part, by residents' concern about tap water characteristics—most notably, odor, taste, and appearance—as well as beliefs about the quality and safety of the water. Despite Benton Harbor's recent history of acceptable water quality based on federally mandated monitoring, public perception is not aligned with the view that city's tap water is free of problems.

The widespread replacement of tap for bottled water has far-reaching impact. In focus groups, residents discussed avoidance of drinking tap water as a normalized behavior. Several residents shared the general belief that water issues have been present for a long period of time, while others relayed the expectation that their community is overdue to have problems. Residents' concerns about their water may be driven by news stories of similar communities with water crises (e.g. Flint) and from conversations with peers, neighbors, and family. The stories of varied health effects attributed to water are a prime example; under a backdrop of mistrust in the city's water supply, residents loosely associated a large array of symptoms and health states with drinking of tap water.

When residents use less water from the tap, the reduction in overall water flow can impact the whole system. Overall residence time of water in the system increases with reduced frequency and volume of water flow. The resulting stagnation provides more opportunity for contamination. Coupled with higher baseline leakage in Benton Harbor's system and aging infrastructure that provides opportunities for intrusion, the system relies upon its consumers to maintain pressure and continuous flow.

From a public health perspective, distrust of drinking water supply may reduce consumption of water which can be associated with a host of downstream health problems. A resident who turns to other more convenient, taste-pleasing, sugary beverage options due to the characteristics or perceived safety of tap water has an additional risk factor that may tip the scale toward obesity and diabetes. Residents who are not drinking tap water may also be at higher risk for dehydration, a particular concern to the elderly. Children who do not see their parents, caregivers, or older community members filling up glasses of water to drink are entrained at an early age to develop preferences and habits for other beverages.

5.2 | AFFORDABILITY

Given the national trend in rising water utility rates in recent decades,[50] it is no surprise that Benton Harbor bills have been on rise. Yet, data gathered by the Dow team indicate Benton Harbor water bills are already much higher than average. In fact, in 2014, Benton Harbor residents paid \$3.80 per 100

cubic feet (ccf) of municipal drinking water, compared to \$1.80 per ccf charged to the residents of St. Joseph, a neighboring city. [59]

Residents are very concerned about the affordability of the water utility, and the rising costs of water. They indicate poor understanding of how bills are determined. Two community members involved in the focus groups voluntarily brought in examples of their utility bills and pointed out the confusing nature of the format of the bill and minimal information provided to explain and educate bill payers.

Since many residents do not regularly use their water for drinking, this may also contribute to negative attitudes toward paying their water utility bill. If a resident believes the water provided is not of sufficient quality to meet their drinking needs, frustration may ensue when high bills arrive in the mail. These attitudes may contribute to delinquency in bill paying, in the setting of many competing socioeconomic pressures.

An additional affordability concern affects those residents who are not water utility bill payers, but instead rely upon a landlord, building manager, family member, or other individual for water service. These factors increase vulnerability as these residents rely upon the bill payer to continue paying, and often also depend on them to advocate to resolve any issues in water service. Contacting the water utility may be more confusing or difficult to navigate when the primary source for this information may be in the bill and consumer confidence reports, which ordinarily only go to the bill payer. One prime example speaks to the insecurity of this position: a building manager of a local 90-unit apartment building had delinquent water bills and water was shut off for three days to the entire complex.[60]

5.3 | COMMUNICATION

The survey and focus groups revealed that many residents of Benton Harbor do not trust information from their city and state government, to a larger degree than the federal government or other sources of information such as the news. These findings suggest an urgent need to consider the communication employed by the city and water utility, as well as from officials at the state level. Since residents who are dissatisfied with their water were more likely to rate their knowledge of the water system as poorer, this points to education as one potentially integral component of any communication effort. However, beyond educating the public, the role for communication should be to communicate relevant water monitoring data within appropriate and understandable context and to consistently keep the door of communication open to facilitate dialogue, transparency, and information-sharing between the utility and consumers.

Unfortunately, water utilities across the nation have not historically prioritized communication with the public as an integral component of their operations. With Benton Harbor's recent emergency management, an understaffed city government, and a water utility that currently only supports a staff of two city officials, there are many challenges unique to Benton Harbor that may make communication with the public challenging. Currently the city receives numerous contacts from residents daily relating to issues such as high bills, leaks, sewers, and pooling of water in the streets. Residents are most likely to get a response to their concerns via the water payment phone line, while the phone line at the plant is

often unstaffed. This raises the possible concern that residents who do not pay a bill or do not believe their issue relates to payment line may not have a clear path to contacting an official. Many residents report that the primary contact they've made in the past with questions or concerns about their water has been the local health department, which may also be understaffed by the city at the present time. Overall, it is clear that communication has been challenging, and it is unknown how satisfactory the past communication has been for residents and the city. Ultimately, it is clear that there is a need for a way to reach a larger group of residents with common answers and tools to address their questions and concerns regarding their water.

Public perception of the city government and water utility is influenced by a multitude of local, regional, and national factors. In addition, there are certainly very few regulations or industry norms to encourage a utility to set a higher expectation and responsibility for improving communication practices.

6 | LIMITATIONS OF FINDINGS

6.1 | SURVEY LIMITATIONS

One of the main limitations of survey data is that they were collected via a convenience sample and therefore have a high vulnerability to bias[61]. Bias introduced through convenience sampling is difficult to quantify and adjust for, which is important to keep in mind when interpreting results. Survey respondents were residents who happened to be present in the Benton Harbor Public Library during survey outings (provided they met the basic criteria of being at least 18 years old, and a customer of the Water Utility) and were self-selected in that they were willing to participate. Additionally, survey outings occurred during weekday afternoons, which might exclude residents who work or perform child or elder care during those times, while over-selecting for residents who are unemployed, disabled, retired, or not working for a myriad of other reasons. Also worth noting, the Benton Harbor Library is located directly across the street from Harbor Towers, a low-income subsidized housing community that is owned and operated by the Benton Harbor Housing Commission, which may have caused the convenience sample to be skewed toward poorer residents.

According to 2015 census data, demographic statistics between Benton Harbor and survey respondents aligned fairly well in terms of race identification, with 89% of Benton Harbor residents identifying as Black versus 85% of survey respondents, and 8% of Benton Harbor residents identifying as White versus 5% of survey respondents. Gender identification aligned similarly well, with 54% Benton Harbor residents identifying as female, and 46% identifying as male, versus 52% of survey respondents identifying as female and 47% identifying as male. Data did not align as well in terms of income, with 25% of Benton Harbor residents making less than \$10,000 per year, and 63% of survey respondents making less than \$10,000 per year (direct comparison to census data was not a possible in this case, as income categories utilized were not the same).

Sampling approach and sample size were researched by the Dow team members, and discussed with the University of Michigan's Consulting for Statistics, Computing and Analytics Research office prior to the start of research. Because the aim of the Dow team's research was not to answer a specific research question, test a hypothesis, or to generate broadly generalizable results, but to capture the perceptions and experiences of residents, and to identify general themes, a convenience sample was deemed appropriate for the team's purposes.

6.2 | FOCUS GROUP LIMITATIONS

To further explore themes identified in surveys, focus groups were conducted with a total of nine Benton Harbor residents. Because focus group participants were a subset of residents who took surveys, data from focus groups would most likely be subject to similar limitations as results from surveys. Additionally, residents willing to participate in a focus group may be those who have the stronger than average opinions or a greater level of knowledge on local water issues because the focus groups

occurred in the evening (and thus required a special trip to the library) and took significantly longer than the survey. Thus, there is a possibility that focus group data is subject to bias.

7 | RECOMMENDATIONS

7.1 | COMMUNITY ENGAGEMENT AND EDUCATION

7.1.1 | ENGAGEMENT—SHORT FORM “POWER” SURVEY

There is a critical need for information about the level of knowledge and sources of concern about drinking water in Michigan’s communities. To provide that information, the team sought to design a streamlined survey that could enable MEC and other organizations to diagnose the particular interests and comprehension in a specific community. Equipped with a rough understanding of what the community knows and cares about, the organization can then tailor their active dialogue and attention with the community to meet the needs raised by the streamlined survey. The goal in refining and testing a streamlined survey was to enable newcomers to the community to gauge the drinking water habits and priorities of residents.

The team created and tested several versions of a streamlined “power” survey (Appendix C) which resulted in a 5-page survey that was administered to 10 Benton Harbor residents after the respondents participated in two narrative focus groups (Appendix B). Its 23 questions took respondents 5–10 minutes to complete. The survey asks targeted, determinative questions about the community water system, sources of information about drinking water, trust in different water sources, as well as the quality and cost of drinking water in the community. We recommend that the power survey be used as a tool for identifying concerns in the community in order to target education at those concerns accordingly.

RECRUITMENT

To get respondents to its longer, long-form community water survey discussed above, the team found that word-of-mouth communication and a public space to administer the survey were effective in garnering a diverse sample of community respondents while investing minimum resources. People were quick to reach out to others they knew and alert them to the survey opportunity. Although a small gift-card was used as an incentive for the long-form survey, a meal was used as an incentive for the short-form power survey and even smaller incentives such as a snack or small compensation would likely be effective. A target sample size of 1% of the community’s total population is a good goal to have in order to produce a useful, representative body of information.

LOCATION

Residents were also able to reach accessible public spaces such as the city library where they could fill out a survey quickly alongside other residents. By using a public facility that is familiar to residents, future administrators of the survey can bring residents to them rather than devoting resources to travelling around in the community to gather survey responses.

TIMING

Administration of the power survey should be mindful of the impact a specific time of day for administration can have on the demographic representation of respondents. A survey taken only during working hours will likely have different respondents than one taken on a weekend or weekday evening. The time and date of administration should be chosen to suit the availability of the community in order to maximize participation from a full spectrum of residents.

FORMAT

The team found that community participants in Benton Harbor strongly preferred to fill out surveys by hand using hard copy paper surveys. The team also found that several participants had literacy challenges and other administrators of the power survey should be aware of literacy and cognitive impairments and prepared to verbally explain the contents of the survey if necessary.

Paper surveys result in additional time required for data entry as each paper survey must be scanned and its contents manually entered into a database for analysis. The team utilized the research and statistical analysis software Qualtrics in order to aggregate and dissect survey results. Although professional software such as Qualtrics may be unavailable to organizations administering the power survey, several lower-cost options exist such as Google Forms, a free tool for survey creation analysis.

7.1.2 | EDUCATION—ONLINE TOOLKIT

FORMAT

MEC has created a beta version toolkit in the form of an online website. Based on survey responses and focus group interviews, other forms of communication include newspaper and radio content as well as YouTube channel content. Additionally, toolkit authors should consider including a way in which users can enter their particular concerns and receive prepared materials to address that category of concern. This dynamic approach will enable the toolkit publisher to provide a primer on specific drinking water subjects without investing the significant resources required to provide individual staff communication responses to residents. Finally, MEC should consider including multiple sections in its toolkit to address different audiences such as resident–consumers and water utility operators. Meaning, the toolkit could provide information to both members of the community that drink the water as well as to members of the municipal water system that distribute drinking water.

CONTENT

Content for residents in a community can include tools to help train local community leaders and organizers to act as informed liaisons between residents in their community, levels of government and the local water utility. A state-wide toolkit should provide educational materials that address the most common concerns among drinking water consumers and adapt those materials to the user’s particular type of community or utility. Authors of the toolkit content should be careful to ensure that the level of

literacy is suited for the audience and may consider tiered information ranging from basic visual explanations of water quality topics to detailed scientific literature. In addition to explanations about water quality issues, the toolkit might include a sample utility bill from that specific local utility explaining the breakdown of costs assessed and a description of how rates are determined in the community.

Content for utilities should emphasize strategies for clear communication and increasing trust with the community served. The toolkit should detail ways in which a utility can open and maintain lines of communication, through open houses for instance, in order to build trust. It should also include ways the utility can educate its customers beyond the mandatory annual Consumer Confidence Report (CCR), perhaps through more frequent periodic reporting since CCRs are only published annually and report monitoring results for the last year. The toolkit should also encourage utilities to format their CCR in a way that is easy to read, perhaps providing examples of exemplar CCRs from across the nation.

7.2 | STAKEHOLDER INVOLVEMENT AND ACCESSIBILITY

7.2.1 | IN-HOME TEST KITS

Based on the team's interaction with Benton Harbor residents and our communication with the water utility and Urban Collaboratory, there is a mutual desire for a stronger, more transparent relationship between the consumer and the utility. On the consumers' side, residents wish for an open dialogue through which they can ask questions about their drinking water and voice their concerns. On the utility's side, the staff wants to better understand residents' drinking water issues and provide useful information but have limited time and manpower.

In order to address both stakeholder requests, the Dow team recommends the Benton Harbor utility provide in-home test water test kits, such as chlorine test kits, to interested consumers. The test kits, which can be low-cost and may be funded through other organizations working in the City, will engage residents by encouraging them to learn about and participate in their drinking water system. In return, the information collected by the residents can be used by the Benton Harbor utility to inform their decisions and to initiate a conversation with resident about water quality and distribution. Since the water quality information is being collected by residents in their home, there will be minimal additional workload for the water utility staff and may provide valuable neighborhood specific information about household water quality. Additionally, residents who opt to test their household's water may feel empowered to voice their opinions and concerns more regularly.

At a larger scale, MEC could encourage a similar testing framework in other Michigan communities by creating an online database of the test kit results that can be utilized by both the consumer and the utility. In addition to the raw data, MEC's toolkit could provide further information that would support the resident's understanding of the testing process and their test results as well as the implications for their drinking water. Because funding for the aforementioned test-kits will vary between communities, the toolkit could also connect the utility and the residents to organizations and government agencies that provide test kits for no- or low-cost.

8 | CONCLUSION

The provision of safe, accessible water is a critical responsibility carried on the shoulders of water utilities, governing bodies at the local, state, and federal level, and a number of other intervening and intermediary stakeholders. MEC has a vested interest in connecting parties invested in improvement the state of water affairs in Michigan. In doing so, they have also turned their attention toward the end users of water, the people of the state themselves. The emerging role of citizens, the consumers at the tap, has become evident with the Flint water crisis and various other recent examples of threats to quality and affordability of water throughout the nation.

This Dow team examined the critical role of the community perspective through surveying and talking with residents in Benton Harbor, Michigan. This was a community that has not recently had any demonstrable crisis in its water supply, yet faces a number of risks and challenges. This team found that residents in Benton Harbor are deeply concerned about the quality and safety of their tap water. Instead of using water from the tap for drinking, many turn to bottled water and express value in the purchase and consumption of this commercialized water supply. Conversely, paying rising water utility bills is burdensome, even impossible, for many residents who see this cost obligation as an unfair bargain. The limited knowledge base of residents regarding water issues combined with the ever-present coverage of the Flint water crisis have led many residents to assume the worst about their water. Furthermore, communication and outreach efforts from the city and utility have met little success in the past.

In order to address the concerns and realities of water issues from the consumer perspective, we have recommended engaging and educating residents in communities throughout Michigan. To engage consumers, this team created a tool for assessment of community perspectives, drawing from the experience of surveying and conducting focus groups in Benton Harbor. Additionally, the team set forth recommendations for continued modification of MEC's online consumer-facing toolkit, a potential future one-stop shop for individual questions and data needs to better understand drinking water. Finally, there emerged a possible role for a way to collect data from the tap. We thus proposed a home testing kit to assist residents in mapping out current water status service throughout all pockets and corners of the city. In-home testing could both empower residents to take ownership of ensuring the quality of water at their tap, while also encouraging two-way communication between consumers and utility that could lead to a true long-term partnership.

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APPENDIX A:

BENTON HARBOR WATER SURVEY AND SURVEY RESULTS

Community Water Survey

Benton Harbor, Michigan

We are graduate students and Dow Sustainability Fellows from the University of Michigan. We are working with the University of Michigan and the Michigan Environmental Council to study drinking water issues in Benton Harbor. The results of this study are intended to inform Benton Harbor residents, community leaders, and the water utility as well as state-level decision makers about community perspectives related to drinking water, affordability, and the local water system in Benton Harbor.

*Your participation in this survey is **completely voluntary**. You may skip any questions that you do not wish to answer. When filling out this survey, please remember there are no right or wrong answers, we are just interested in what you think. We take our promise of confidentiality very seriously. All of your answers will be kept strictly confidential. No personally identifying information will ever appear in any study report.*

We appreciate your time taking this survey. It should take approximately 10 - 15 minutes. Upon completion, you will receive a \$10 gift card to thank you for your participation in this survey.

If you have any questions about the survey, please email us at dow.water@umich.edu. Thank you for participating!

1) Are you a Benton Harbor Water Plant customer?

Yes

No -- If no, end survey

2) Are you 18 years old or older?

Yes

No -- If no, end survey

Community Water System

Please read the following statements regarding **your community's water sources**.

3) For each statement below, please mark whether you are *Not at All Concerned*, *Slightly Concerned*, *Moderately Concerned*, *Very Concerned*, or *Extremely Concerned*.

	Not at All Concerned	Slightly Concerned	Moderately Concerned	Very Concerned	Extremely Concerned
a) Quality of the surface water in and around Benton Harbor (i.e. Lake Michigan, Paw Paw River, and St. Joseph River)					
b) Potential threats to the quality or safety of Benton Harbor's water supply (i.e. farm runoff, oil and gas pipelines)					
c) Inadequate supply of drinking water for Benton Harbor residents					
d) Ability of water utility to follow state and federal water treatment regulations					
e) Presence of lead in in-home plumbing in Benton Harbor neighborhoods					
f) Presence of lead in Benton Harbor's water distribution system (i.e. pipes from treatment plant to house)					
g) The age and/or quality of Benton Harbor's water distribution system (i.e. pipes from treatment plant to house)					
h) Affordability of water bills in Benton Harbor					

4) Overall, do you think the condition of Benton Harbor's drinking water source (Lake Michigan) has become better or worse over the last decade?

- Much better
- Slightly better
- Neutral (neither better nor worse)
- Slightly worse
- Much worse
- Don't know

5) Overall, do you think the condition of drinking water system (water treatment and distribution) has become better or worse over the last decade?

- Much better
- Slightly better
- Neutral (neither better nor worse)
- Slightly worse
- Much worse
- Don't know

Quality and Personal Usage

Please answer the following question about water usage habits, water quality, treatment efficiency, and city infrastructure.

6) How often do you drink water from your home faucet?

- Every day
- Several times a week
- A few times a month
- Rarely
- Never

7) Does your household use an in-home water filter (e.g. filter attached to faucet, Brita filter)?

- Yes
- No

8a) How often do you drink bottled water?

- Every day
- Several times a week
- A few times a month
- Rarely
- Never

8b) If you answered “**Every day**” on **Question 8a**, how many bottles per day?

- 0
- 1-3
- 4-6
- more than 6

8c) If you drink bottled water, what is the main reason you drink bottled water?

(Choose 1)

- Bottled water is **safer** than tap water
- Bottled water **tastes better** than tap water
- Bottled water is **convenient**
- Other _____
- I don't drink bottled water

9) For each of the following statements about the current quality of your home's tap water, tell us if you *Strongly Agree*, *Agree*, are *Neutral*, *Disagree*, or *Strongly Disagree*.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a) I understand where my water comes from and the process by which it is treated and distributed.					
b) I am satisfied with the overall quality of my tap water					
c) I am satisfied with the taste of my tap water					
d) I am satisfied with the odor of my tap water					
e) I am satisfied with the appearance of my tap water					
f) I am satisfied with the presence of chlorine in my tap water					
g) I am satisfied with the presence of fluoride in my tap water					
h) I know who to contact with questions and concerns about my water quality					

10) For each of the following common water concerns, which (if any) have affected your household? Please mark if you have been *Not at All Affected*, *Slightly Affected*, *Somewhat Affected*, *Very Affected* or *Extremely Affected*.

Which (if any) have affected your household?	Not at All Affected	Slightly Affected	Moderately Affected	Very Affected	Extremely Affected
a) City water main breaks					
b) Water shut offs (Denial of service or service line disconnections)					
c) Failing in-home plumbing fixtures					
d) Difficulty paying water bills					
e) Illegal connections (Theft of service)					
f) Little or no information on water quality and water system issues					

11) To the best of your knowledge, how does the quality of the water you drink at a restaurant compare to the water you drink at home?

- _____ Restaurant is **much better quality** than home
- _____ Restaurant is **slightly better quality** than home
- _____ Restaurant is **the same** quality as home
- _____ Restaurant is **slightly worse** than home
- _____ Restaurant is **much worse** than home

Information and Communication

Please answer the following questions regarding the ownership and communication of information in water treatment, testing, and quality.

12) To the best of your knowledge, who is primarily responsible for monitoring the quality of your water? **(Choose 1)**

- Local government
- State government
- Federal government
- Homeowner
- Other (please specify) _____
- Don't know

13) How do you find information regarding the quality of your drinking water?

(Mark all that apply)

- Local news
- Government websites
- Social media (Facebook, Twitter, etc.)
- Annual water quality reports
- Friends and/or neighbors
- Local officials
- Other (please specify) _____
- I do not search for this information

14a) To the best of your knowledge, have you ever received an annual water quality report, known as a CCR (Consumer Confidence Report)?

- Yes
- No

14b) If you answered “**Yes**” to **Question 14a**, how useful was the report in understanding the quality of your drinking water?

- Extremely helpful, I understood almost everything
- Very helpful, I understood most of it
- Somewhat helpful, I understood some of it
- Slightly helpful, I understood only a bit of it
- Not at all, I understood none of it
- I don't know or I don't remember

15) For each of the service below, what portion of your water bill do you think goes towards the service? Please mark one of the following for each: *None of the Bill, A Small Amount of the Bill, A Moderate Amount of the Bill, A Large Amount of the Bill or All of the Bill?* (Rank each service)

	None of the Bill	Small Amount of the Bill	Moderate Amount of the Bill	Large Amount of the Bill	All of the Bill
Access to raw (untreated) water					
Treatment at the water treatment facility					
Distribution to the community					
Sewage collection					
Treatment of sewage					
Maintaining current infrastructure					
Building new water infrastructure, such as treatment plant upgrades and water/sewer pipe installation					
Other (please specify)					

16a) Have you ever had questions or concerns about your drinking water?

- Yes
- No

16b) Have you ever contacted anyone with questions or concerns about your drinking water?

- Yes
- No

16c) If you answered “**Yes**” on **Question 16b**, who did you contact?

- Drinking water treatment plant
- Local health department
- Local community organization
- City official
- State official
- Other _____

17) For each of the following groups, how much you trust the group to give you information regarding the quality of your tap water?

Please mark if you *Completely Trust, Somewhat trust, are Neutral, Somewhat Distrust, or Completely Distrust* each of the following groups.

How much do you trust each group to give you information on the quality of your tap water?	Completely trust	Somewhat trust	Neutral	Somewhat distrust	Completely distrust
Friends and neighbors					
Benton Harbor Water Plant					
City of Benton Harbor					
State of Michigan					
Federal Environmental Protection Agency (EPA)					
News outlets (television, newspapers, etc.)					

18a) Who do you feel should be the most responsible for ensuring the quality of your drinking water?
(Choose 1)

- Local government
- State government
- Federal government
- Drinking water utility
- Homeowner
- Other (please specify) _____

18b) Based on your answer to **Question 18a**, how well are they fulfilling their responsibility?

- Excellent
- Very well
- Well
- Fair
- Poor

19) What is your preferred method for receiving communication about the quality of your tap water?
(Choose all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Television | <input type="checkbox"/> Phone call recordings |
| <input type="checkbox"/> Newspaper | <input type="checkbox"/> Text alerts |
| <input type="checkbox"/> Visiting a website | <input type="checkbox"/> Talking to a friend or neighbor |
| <input type="checkbox"/> Social media (Twitter, Facebook, etc) | <input type="checkbox"/> Meeting with experts/local officials |
| <input type="checkbox"/> Mailings | <input type="checkbox"/> Reading a fact sheet |
| <input type="checkbox"/> Other (specify) _____ | <input type="checkbox"/> I would prefer not to get this information |

20) If you were to receive information about water affordability issues (e.g. water rate structure, payment assistance programs), how would you prefer to get this information? (Choose all that apply)

- Television
- Newspaper
- Visiting a website
- Social media (Twitter, Facebook, etc)
- Mailings
- Other (specify) _____
- _____

- Phone call recordings
- Text alerts
- Talking to a friend or neighbor
- Meeting with experts/local officials
- Reading a fact sheet
- I would prefer not to get this information

Cost of Water

Please answer the following questions regarding the cost of water and water utility service issues in your household or community.

21) On average, how much does your household spend on your water utility bill per month?

- \$0-40
- \$40-80
- \$80-120
- \$120-160
- more than \$160
- Unsure
- It's included in my rent

22) On average, how has your present water bill compare to five years ago?

- It has increased a lot
- It has increased a little
- It seems the same as always (Haven't noticed a change)
- It has decreased a little
- It has decreased a lot
- I don't know

23) For each of the following statements on cost and payment for water services, please mark whether you strongly agree, agree, are neutral, disagree, strongly disagree or don't know.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a) I understand how my water bill is calculated					
b) I believe the amount of money my household spends on tap water is appropriate for the quality and service received					
c) I actively try to conserve water in order to reduce my water bill.					
d) A monthly water bill is easier to budget for than a quarterly water bill (once every 3 months)					
e) In light of the Flint, Michigan water crisis, I am concerned about Benton Harbor public officials making the necessary investments needed to avoid similar issues.					
f) I would support a bill reduction for large families who pay more because they have more people in their house					
g) I support offering a more affordable rate for customers who meet a low-income criteria					

24) Would you be willing to pay a higher water bill to improve and modernize the water systems in Benton Harbor to ensure safe and reliable water service for everyone?

- Yes
- No

25) To ensure each of the following services, please indicate how much more you would be willing to pay.

	0% more	5% more	10% more	15% more	20% more	Over 20% more
To sustain and modernize the water infrastructure systems in my community						
To maintain water quality and public health						
To improve the natural environment						
To assist low-income residents with their water bills						

26) Are you aware of any Community Assistance Programs (CAPs) to help with water bills in your community?

- Yes
- No

27) If there are any other water quality, service, or affordability issues that you, your family, friends or neighbors are concerned about, please explain below:

Demographics

28) In your household, are you the person primarily responsible for paying the water utility bill?

- Yes
- No, I contribute but another person in my household pays.
- No, another person in my household pays the entire bill.
- No, my landlord pays
- No water bill

29) What is your age?

- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+

30) Which gender do you identify as?

- Male
- Female
- Other: _____
- Prefer not to disclose

31) What category describes you? **(Choose 1)**

- Black or African American
- White
- Hispanic, Latino, or Spanish origin
- Asian
- American Indian or Alaska Native
- Middle Eastern or North African
- Native Hawaiian or other Pacific Islander
- Some other race, ethnicity, or origin
- Two or more of the above categories
- Prefer not to disclose

32) How many people live in your household? _____

33) How long have you lived at your current residence?

- Less than 1 year
- 1-5 years
- 6-10 years
- 11-25 years
- More than 25 years

34) Which type of residence do you currently live in?

- Own house
- Own condo/duplex
- Rented house
- Rented condo/duplex
- Apartment
- Community living facility
- Other _____

35) What is your household annual income?

- Less than \$10,000
- \$10,000 - \$20,000
- \$20,000 - \$30,000
- \$30,000 - \$40,000
- \$40,000 - \$50,000
- \$50,000 - \$60,000
- \$60,000 - \$70,000
- \$70,000 - \$80,000
- \$80,000 - \$90,000
- \$90,000 - \$100,000
- More than \$100,000
- Prefer not to disclose

36) What is the highest education achieved you have achieved?

- Less than high school diploma/GED
- High school diploma/GED
- Some college courses
- Professional certification
- Associate degree
- Bachelor degree
- Graduate degree

Geographic and Contact Information

IMPORTANT

If you choose to provide the information below, all identifying information (name, address, email, phone number) will be separated from the survey responses and deleted at the end of the survey completion.

37) In order to better understand water quality concerns, our team would like to map survey responses. If you are willing to provide your home address for this purpose, please write below. (NOT REQUIRED)

38a) Are you interested in potentially being contacted about another University of Michigan survey?

- Yes
 No

38b) If you responded "Yes" to Question 38a, please provide your email or phone number. This will only be used to contact you about another UM survey happening later this summer. (NOT REQUIRED)

NAME _____

EMAIL _____

PHONE NUMBER _____

DRINKING WATER SURVEY RESULTS

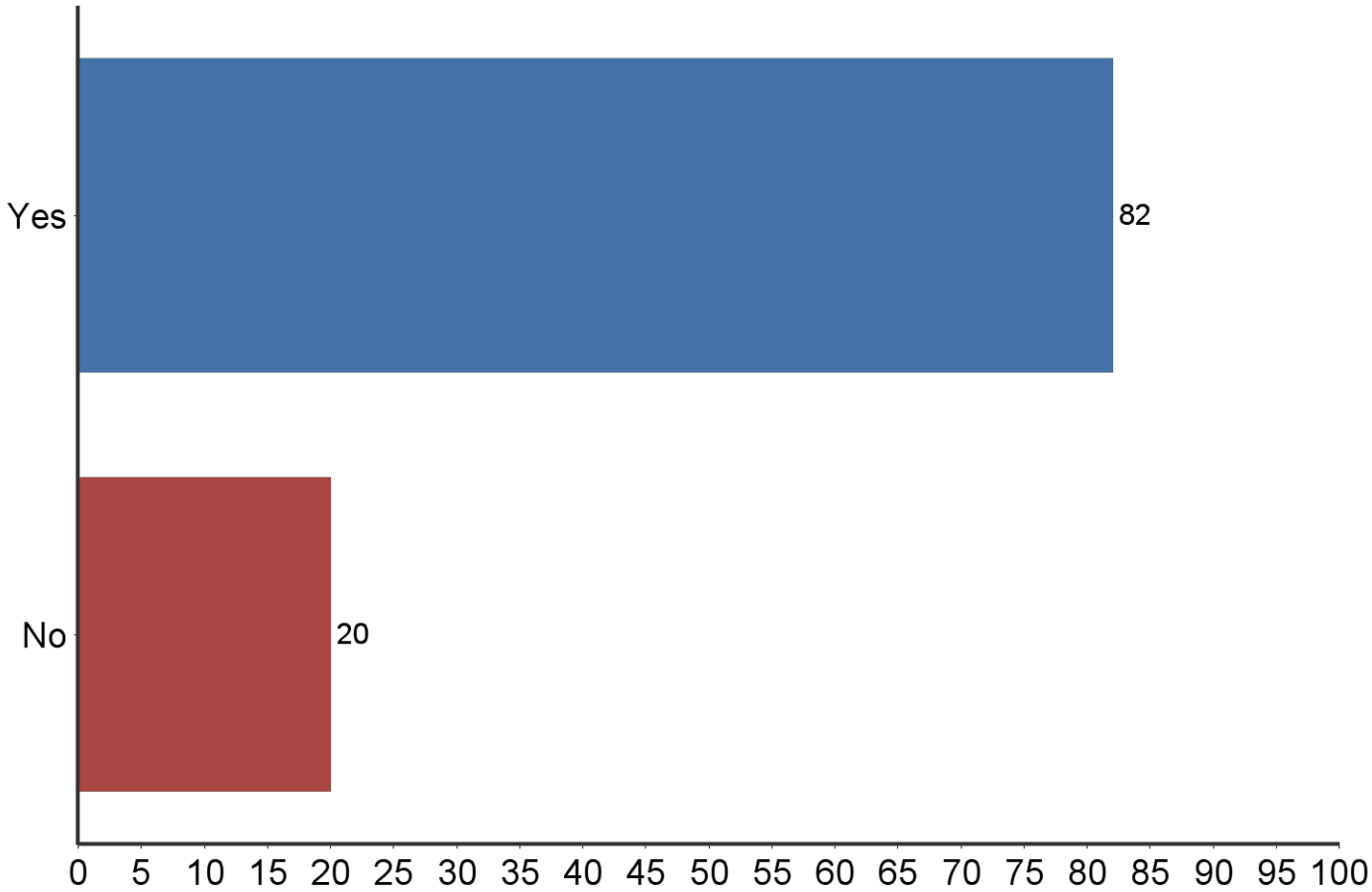
Benton Harbor



DOW Sustainability Fellows

Jonathan Bye, Kate Meixner, Mary Nagy, Grace Rodriguez & Madeleine Wax

Are you a Benton Harbor Water Plant customer?

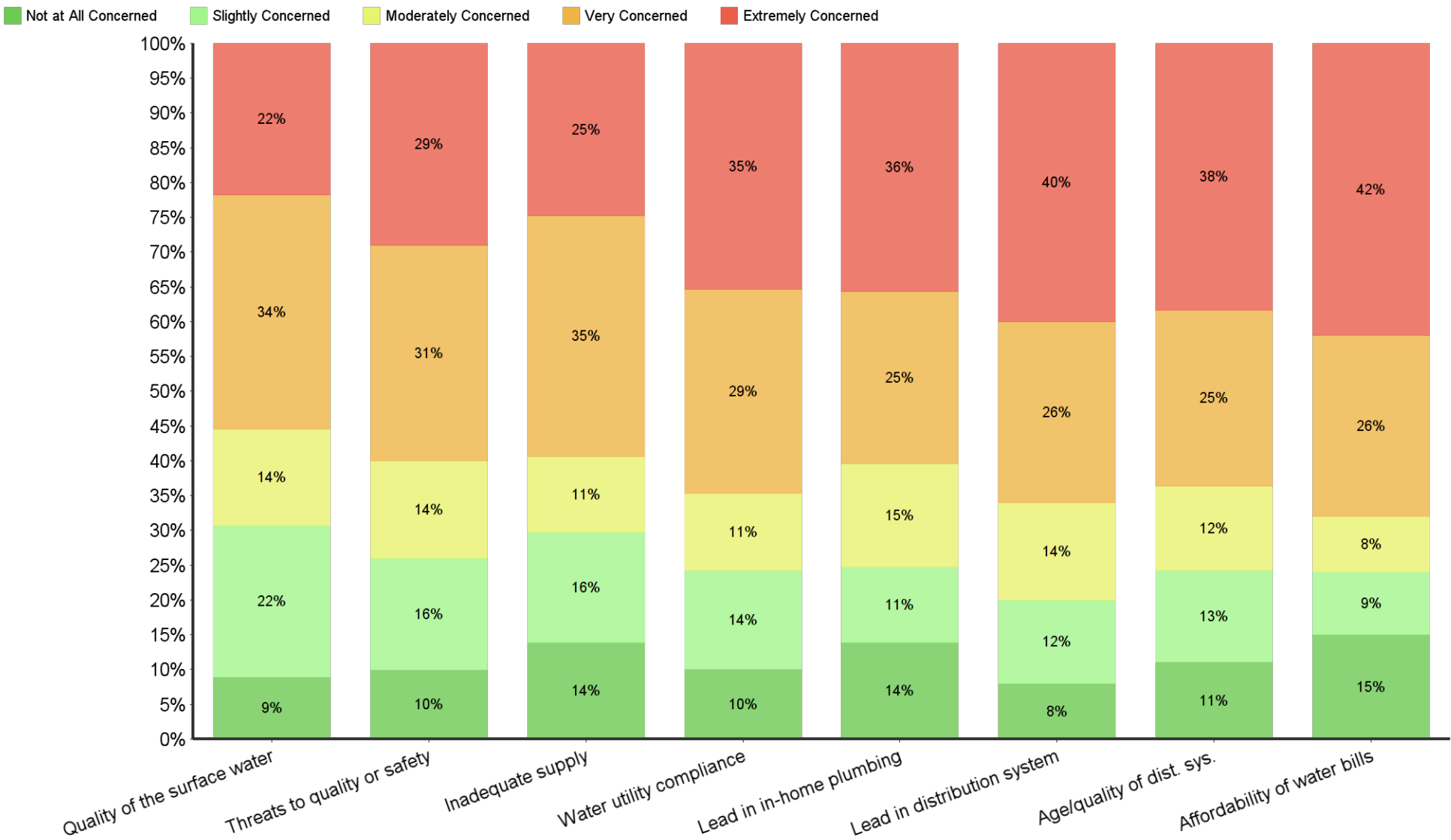


#	Answer	Bar	Response	%
1	Yes		82	80.4%
2	No		20	19.6%
	Total		102	100.0%

Community Water System

- Water Concerns
- Drinking Water Source
- Infrastructure Condition

3 For each statement, please mark whether you are extremely concerned, very concerned, moderately concerned, slightly concerned, or not concerned at all.



4 For each statement, please mark whether you are extremely concerned, very concerned, moderately concerned, slightly concerned, or not concerned at all.

#	Question	Not at All Concerned	Slightly Concerned	Moderately Concerned	Very Concerned	Extremely Concerned	Response	Average Value
1	Quality of the surface water in and around Benton Harbor (such as Lake Michigan, Paw Paw River, and St Joseph River).	9	22	14	35	22	102	3.4
2	Potential threats to the quality or safety of Benton Harbor's water supply (i.e. farm runoff, oil and gas pipelines).	10	16	14	31	29	100	3.5
3	An inadequate supply of drinking water for Benton Harbor residents	14	16	11	35	25	101	3.4
4	Ability of water utility to comply with state and federal water treatment regulations	10	14	11	29	35	99	3.7
5	Presence of lead in in-home plumbing in Benton Harbor neighborhoods	14	11	15	25	36	101	3.6
6	Presence of lead in Benton Harbor's water distribution system (pipes from treatment plant to house)	8	12	14	26	40	100	3.8
7	The age and/or quality of Benton Harbor's water distribution system (pipes from treatment plant to house)	11	13	12	25	38	99	3.7
8	Affordability of water bills in Benton Harbor	15	9	8	26	42	100	3.7

Overall, do you think the condition of Benton Harbor's drinking water source (Lake Michigan) has become better or worse over the last decade?



#	Answer	Bar	Response	%
1	much better	■	14	14.6%
2	slightly better	■	21	21.9%
3	neutral (neither better nor worse)	■	27	28.1%
4	slightly worse	■	8	8.3%
5	much worse	■	15	15.6%
6	don't know	■	11	11.5%
	Total		96	100.0%

Overall, do you think the condition of drinking water system (water treatment and distribution) has become better or worse over the last decade?

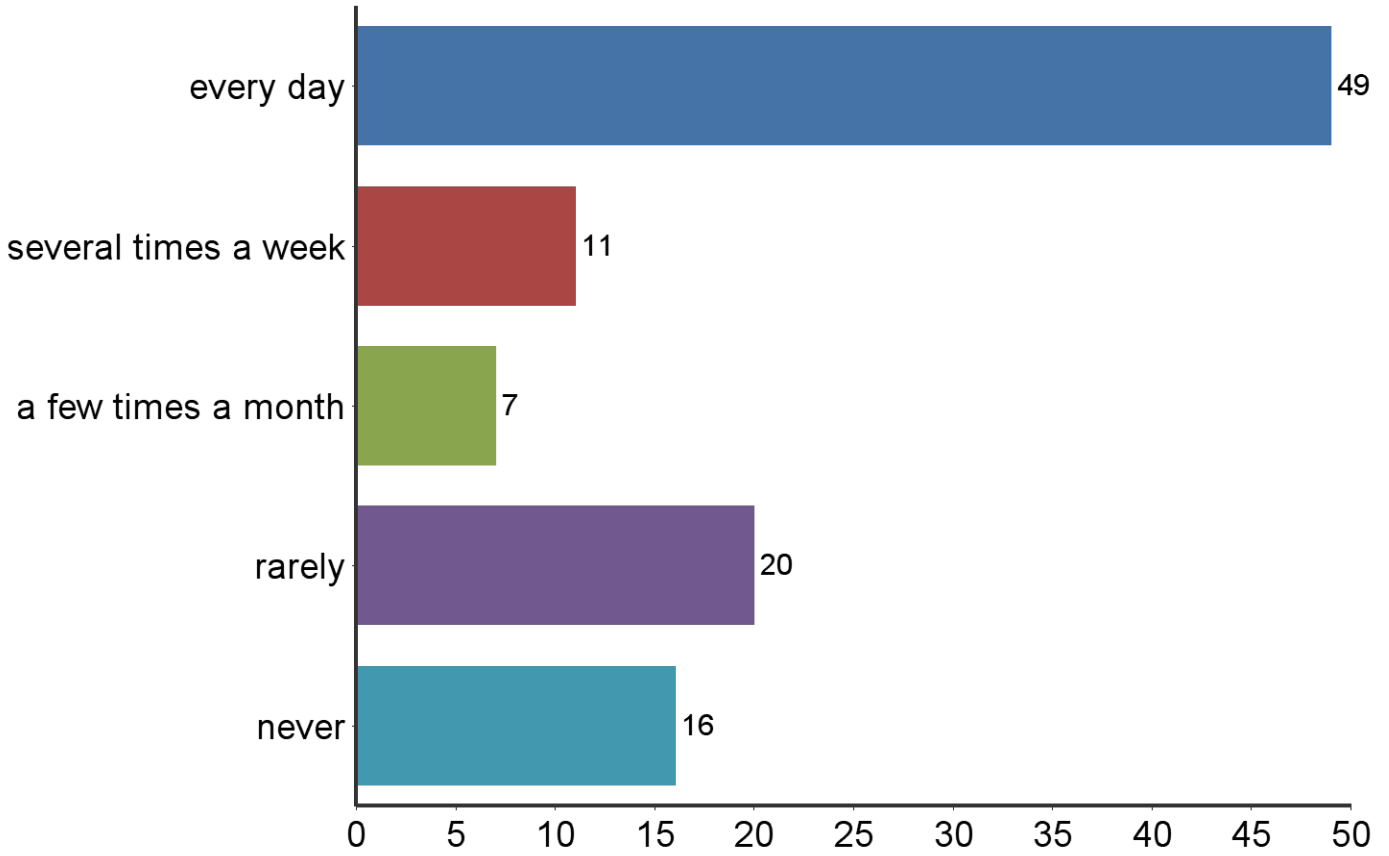


#	Answer	Bar	Response	%
1	much better	<div style="width: 12.6%;"></div>	12	12.6%
2	slightly better	<div style="width: 24.2%;"></div>	23	24.2%
3	neutral (neither better nor worse)	<div style="width: 26.3%;"></div>	25	26.3%
4	slightly worse	<div style="width: 12.6%;"></div>	12	12.6%
5	much worse	<div style="width: 17.9%;"></div>	17	17.9%
6	don't know	<div style="width: 6.3%;"></div>	6	6.3%
	Total		95	100.0%

Quality and Personal Usage

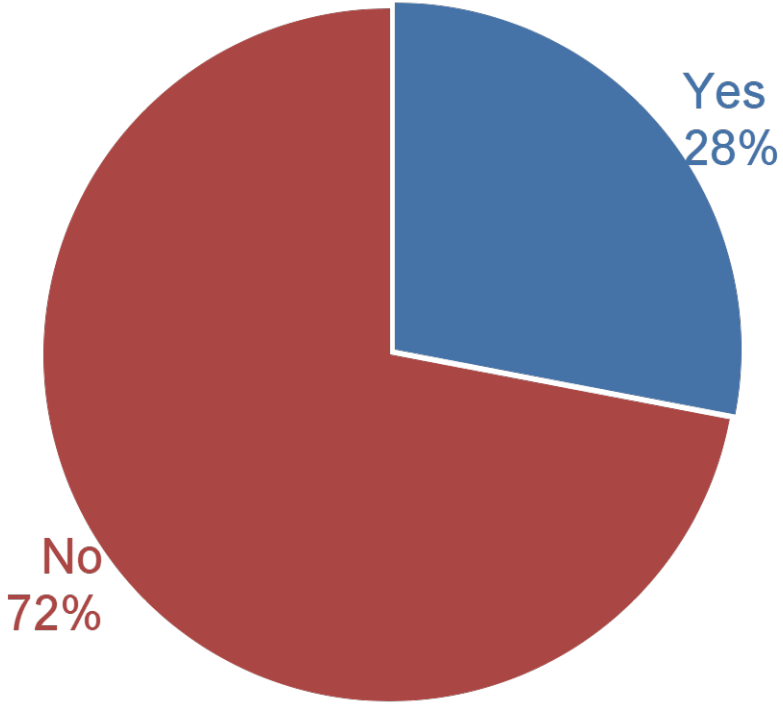
- Drinking Water Habits
- Bottled Water Consumption
- Water Quality Concerns

How often to you drink water from your home faucet?



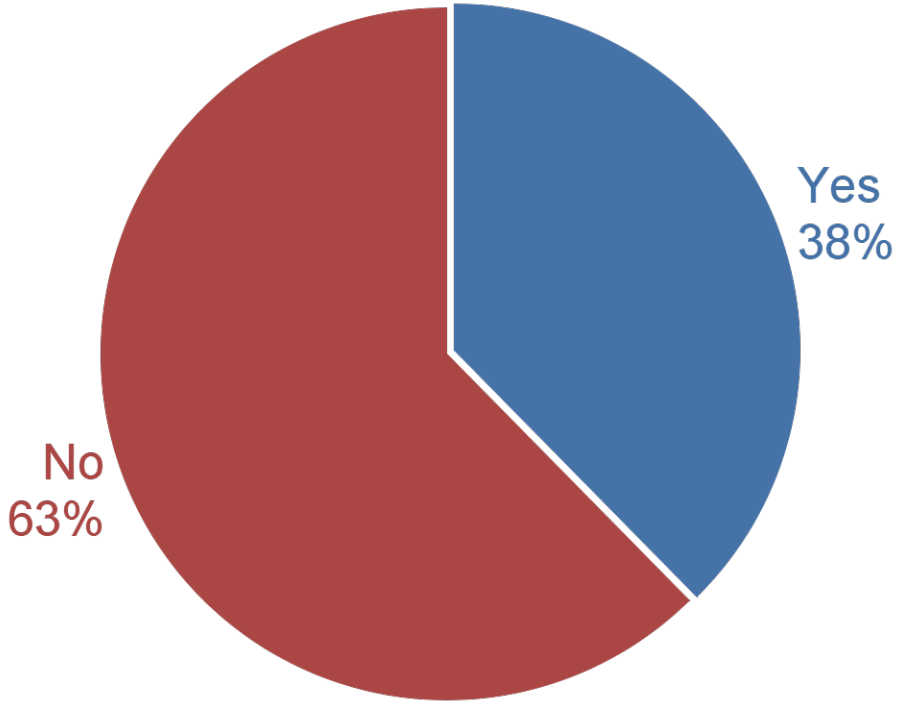
#	Answer	Bar	Response	%
1	every day		49	47.6%
2	several times a week		11	10.7%
3	a few times a month		7	6.8%
4	rarely		20	19.4%
5	never		16	15.5%
	Total		103	100.0%

Does your household use an in-home water filter (e.g. filter attached to faucet, Brita filter)?



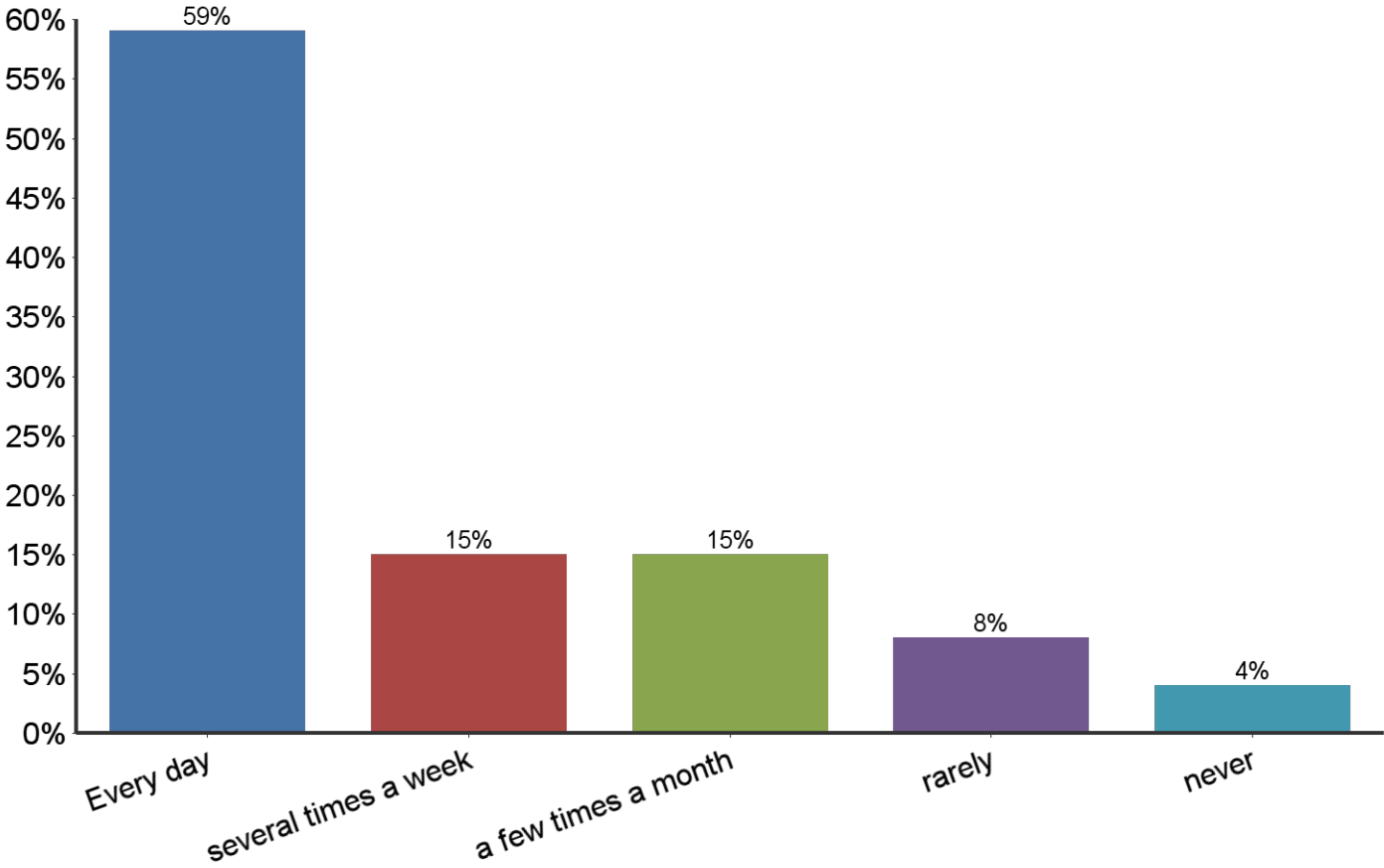
#	Answer	Bar	Response	%
1	Yes	<div style="width: 28%;"></div>	28	27.7%
2	No	<div style="width: 72%;"></div>	73	72.3%
	Total		101	100.0%

10 Does your household use an in-home water filter (e.g. filter attached to faucet, Brita filter)?
(Only counting respondents who indicated they drink tap water everyday.)



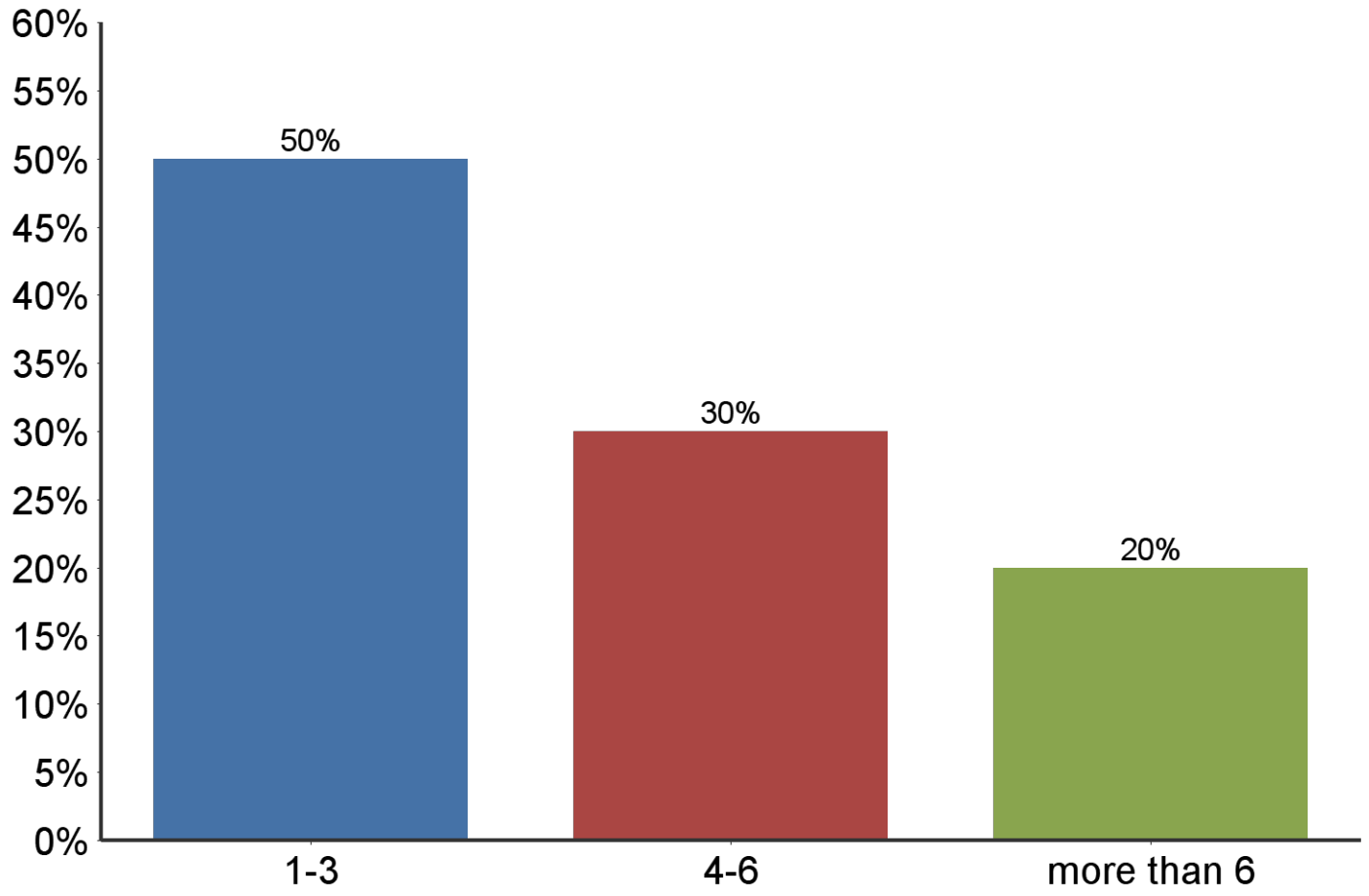
#	Answer	Bar	Response	%
1	Yes	<div style="width: 37.5%; background-color: #4a7ebb;"></div>	18	37.5%
2	No	<div style="width: 62.5%; background-color: #4a7ebb;"></div>	30	62.5%
	Total		48	100.0%

How often do you drink bottled water?



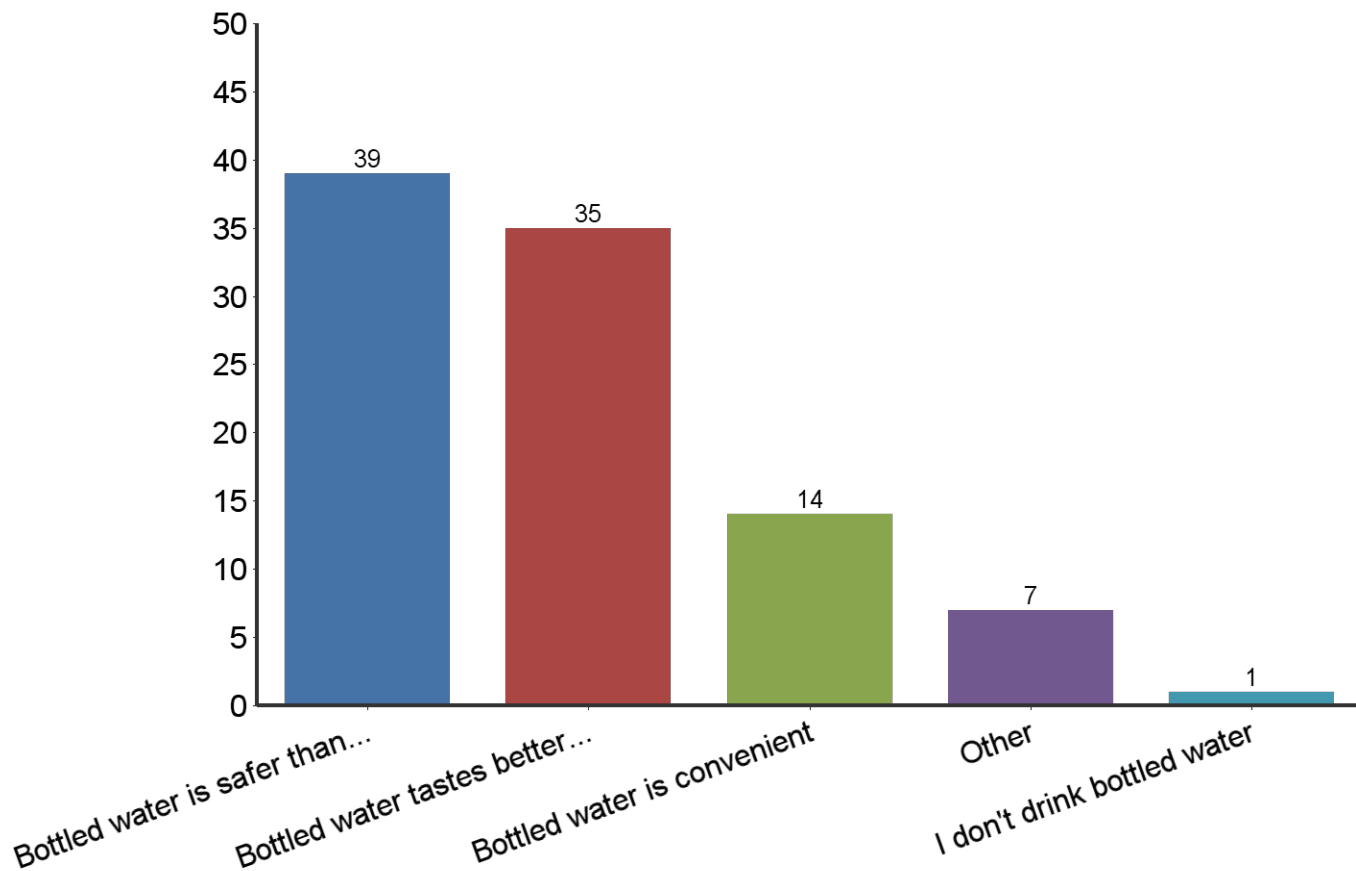
#	Answer	Bar	Response	%
1	Every day		61	59.2%
2	several times a week		15	14.6%
3	a few times a month		15	14.6%
4	rarely		8	7.8%
5	never		4	3.9%
	Total		103	100.0%

How many bottles per day? *(Only counting respondents who indicated they drink bottled water everyday.)*



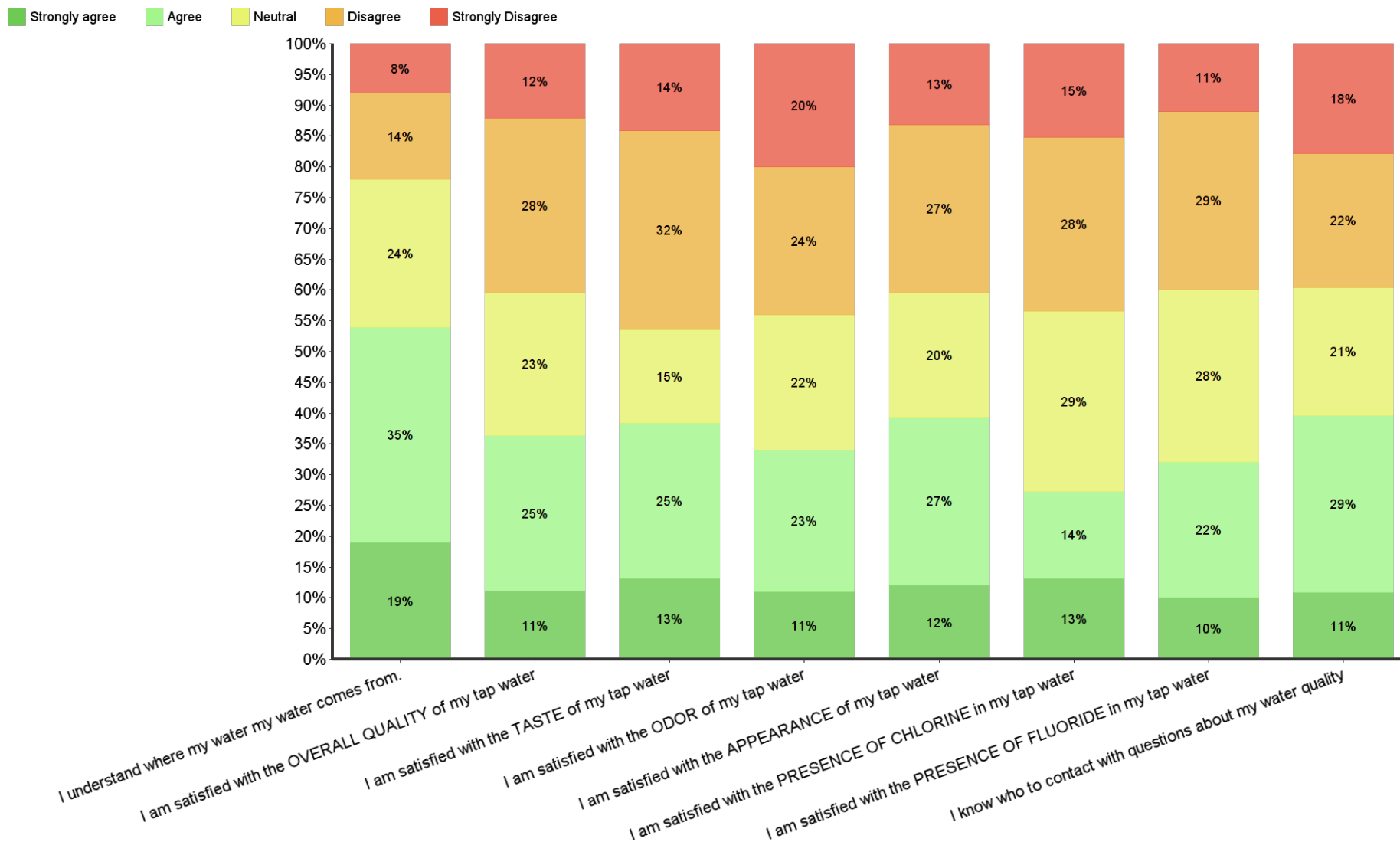
#	Answer	Bar	Response	%
1	0		0	0.0%
2	1-3	<div style="width: 50%; height: 10px; background-color: #336699;"></div>	28	50.0%
3	4-6	<div style="width: 30.4%; height: 10px; background-color: #336699;"></div>	17	30.4%
4	more than 6	<div style="width: 19.6%; height: 10px; background-color: #336699;"></div>	11	19.6%
	Total		56	100.0%

What is the main reason you drink bottled water?



#	Answer	Bar	Response	%
2	Other		7	7.3%
3	Bottled water is convenient		14	14.6%
6	Bottled water is safer than tap water		39	40.6%
7	Bottled water tastes better than tap water		35	36.5%
10	I don't drink bottled water		1	1.0%
	Total		96	100.0%

For each of the following statements about the current quality of your home tap water tell us if you Strongly Agree, Agree, are Neutral, Disagree, or Strongly Disagree.

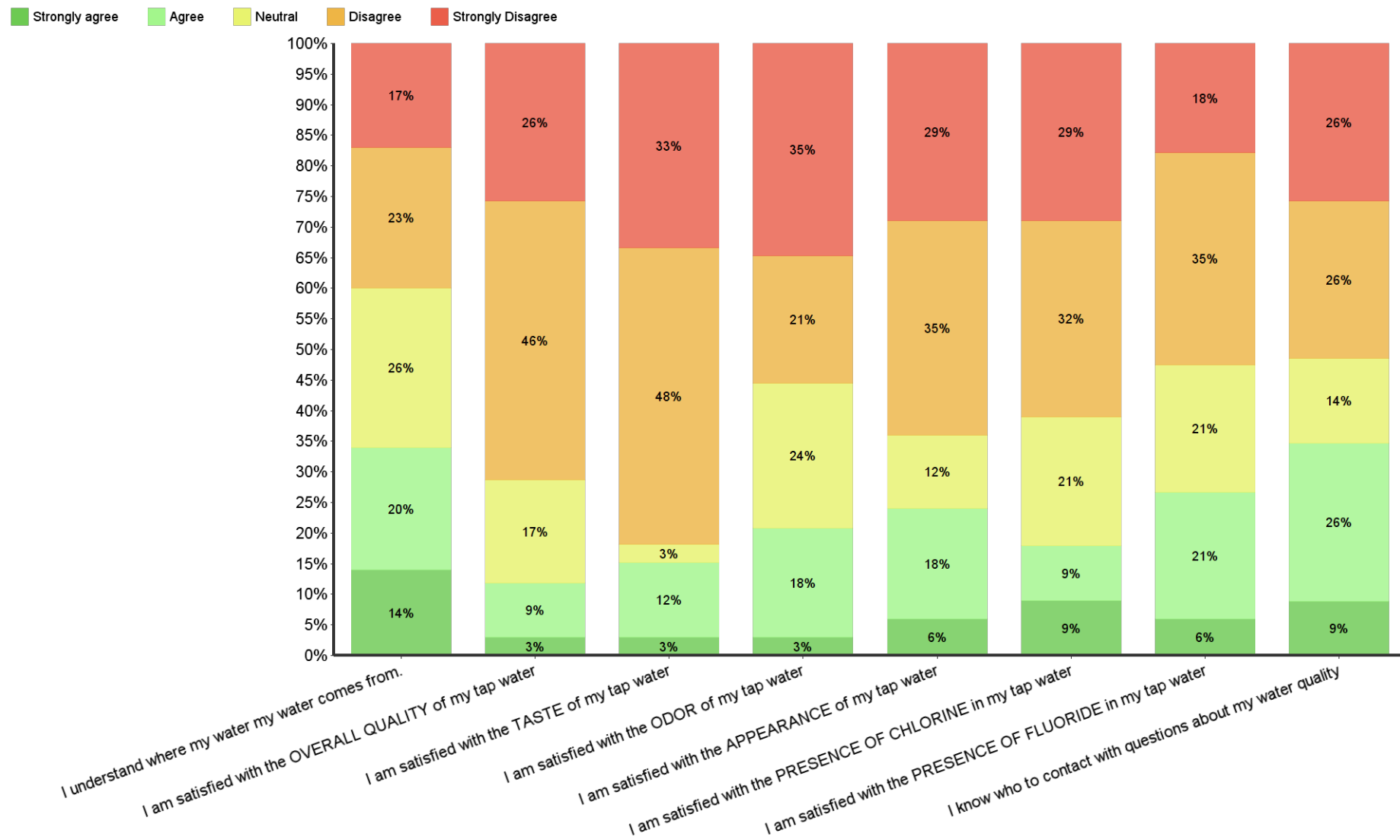


For each of the following statements about the current quality of your home tap water tell us if you Strongly Agree, Agree, are Neutral, Disagree, or Strongly Disagree.

#	Question	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Response	Average Value
1	I understand where my water comes from and the process by which it is treated and distributed	18	34	23	13	8	96	2.6
2	I am satisfied with the OVERALL QUALITY of my tap water	11	25	23	28	12	99	3.1
3	I am satisfied with the TASTE of my tap water	13	25	15	32	14	99	3.1
4	I am satisfied with the ODOR of my tap water	10	22	21	23	19	95	3.2
5	I am satisfied with the APPEARANCE of my tap water	12	27	20	27	13	99	3.0
6	I am satisfied with the PRESENCE OF CHLORINE in my tap water	13	14	28	27	15	97	3.2
8	I am satisfied with the PRESENCE OF FLUORIDE in my tap water	10	21	27	28	11	97	3.1
9	I know who to contact with questions about my water quality	11	28	20	21	17	97	3.1

16 For each of the following statements about the current quality of your home tap water tell us if you Strongly Agree, Agree, are Neutral, Disagree, or Strongly Disagree.

(Only counting respondents who indicated they rarely or never drink their tap water.)

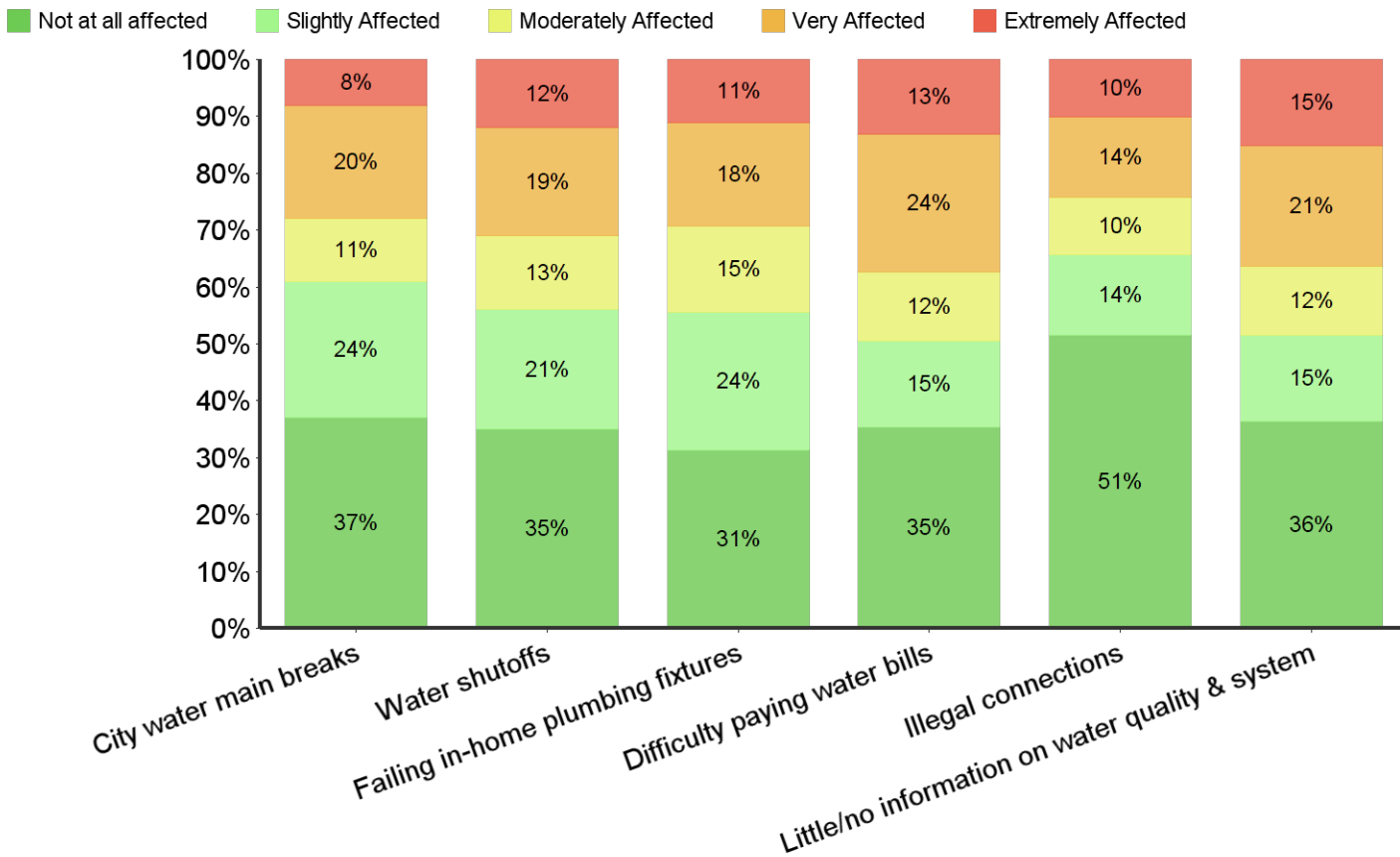


For each of the following statements about the current quality of your home tap water tell us if you Strongly Agree, Agree, are Neutral, Disagree, or Strongly Disagree.

#	Question	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Response	Average Value
1	I understand where my water comes from and the process by which it is treated and distributed	5	7	9	8	6	35	3.1
2	I am satisfied with the OVERALL QUALITY of my tap water	1	3	6	16	9	35	3.8
3	I am satisfied with the TASTE of my tap water	1	4	1	16	11	33	4.0
4	I am satisfied with the ODOR of my tap water	1	6	8	7	12	34	3.7
5	I am satisfied with the APPEARANCE of my tap water	2	6	4	12	10	34	3.6
6	I am satisfied with the PRESENCE OF CHLORINE in my tap water	3	3	7	11	10	34	3.6
8	I am satisfied with the PRESENCE OF FLUORIDE in my tap water	2	7	7	12	6	34	3.4
9	I know who to contact with questions about my water quality	3	9	5	9	9	35	3.3

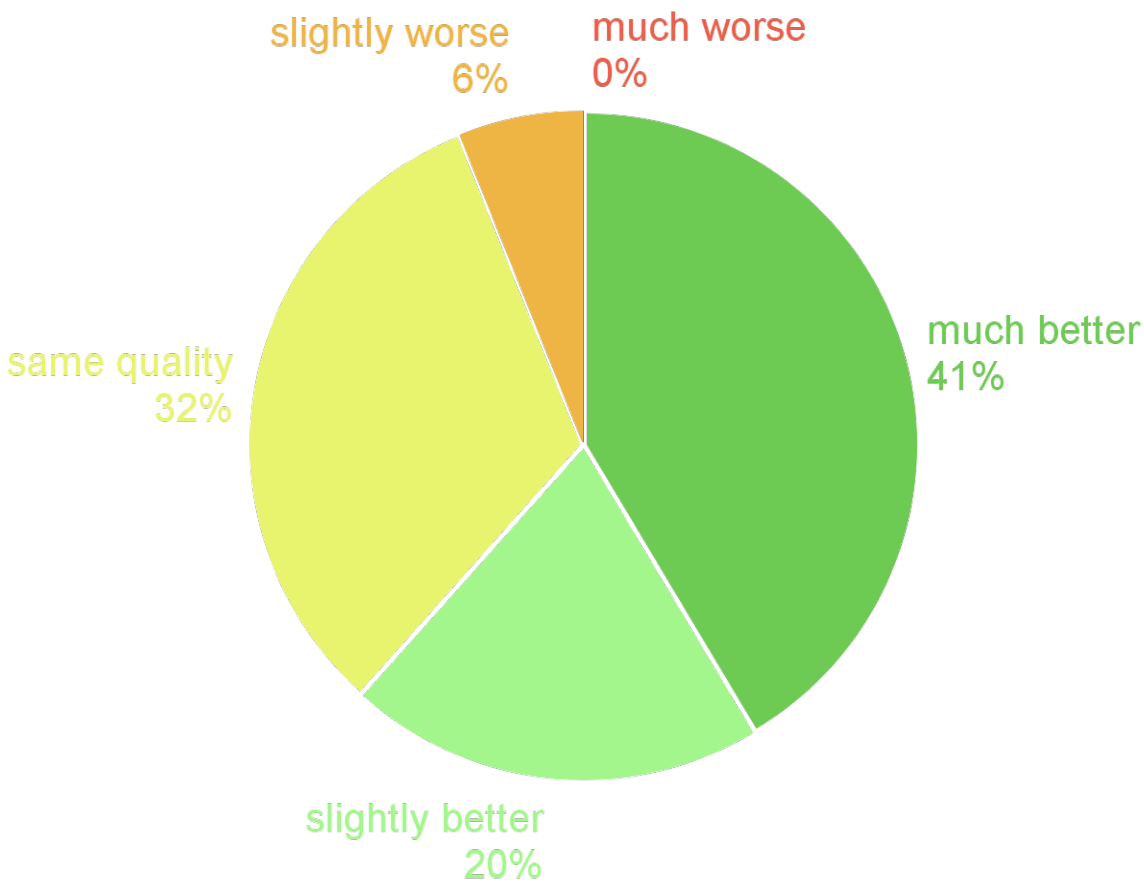
For each of the following common water concerns, which (if any) have affected your household?

Please mark if you have been Not at All Affected, Slightly Affected, Somewhat Affected, Very Affected or Extremely Affected.



#	Question	Not at all affected	Slightly Affected	Moderately Affected	Very Affected	Extremely Affected	Response	Average Value
1	City water main breaks	37	24	11	20	8	100	2.4
2	Water shutoffs (denial of service or service line disconnections)	35	21	13	19	12	100	2.5
3	Failing in-home plumbing fixtures	31	24	15	18	11	99	2.5
4	Difficulty paying water bills	34	15	12	23	13	97	2.6
5	Illegal connections	49	14	10	14	10	97	2.2
6	Little or no information on water quality and water system issues	35	15	12	20	15	97	2.6

To the best of your knowledge, how does the quality of the water you drink at a restaurant compare to the water you drink at home?

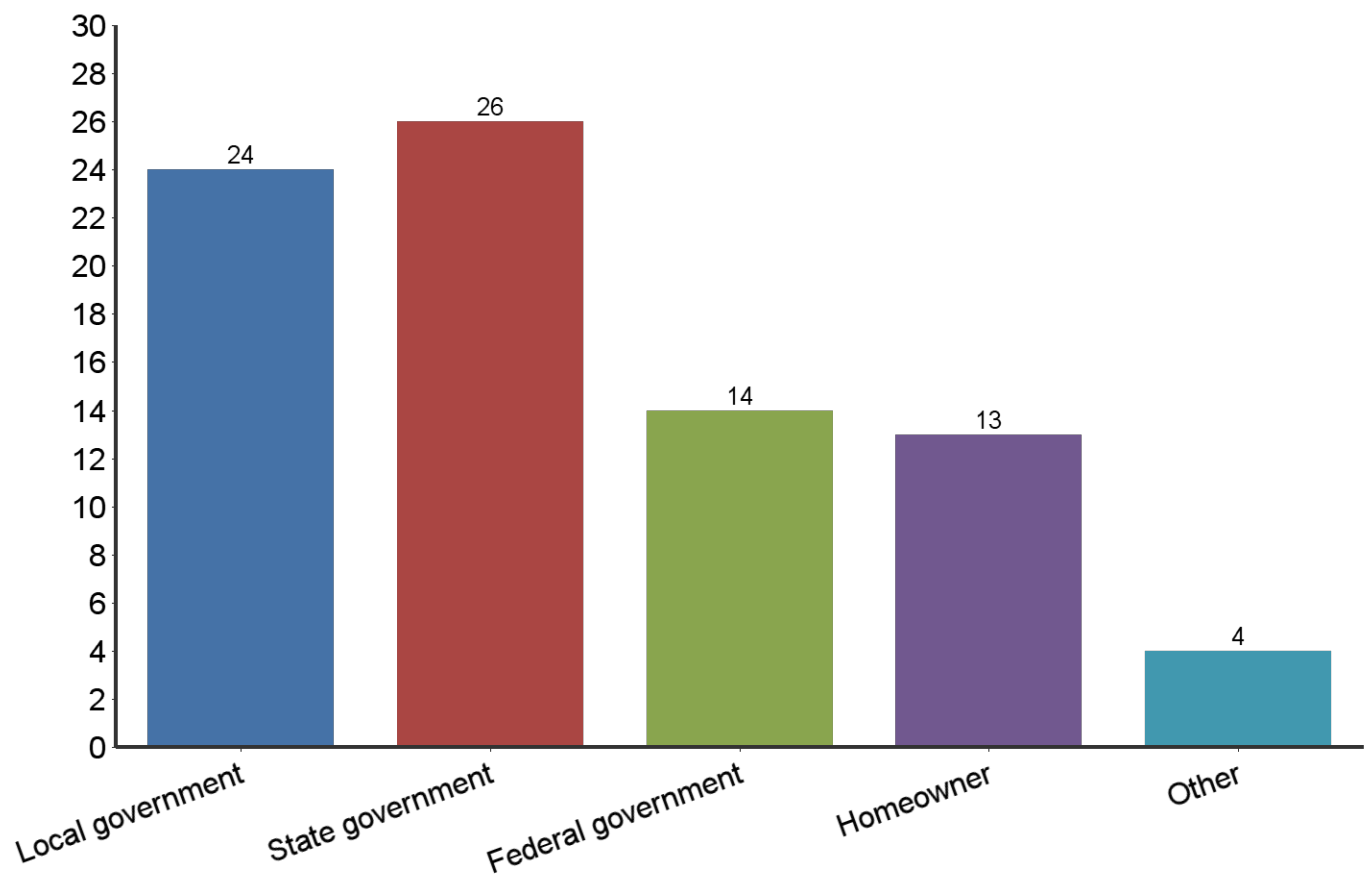


#	Answer	Bar	Response	%
1	restaurant is MUCH BETTER QUALITY than home	<div style="width: 41.5%;"></div>	39	41.5%
2	restaurant is SLIGHTLY BETTER QUALITY than home	<div style="width: 20.2%;"></div>	19	20.2%
3	restaurant is THE SAME QUALITY as home	<div style="width: 31.9%;"></div>	30	31.9%
4	restaurant is SLIGHTLY WORSE QUALITY than home	<div style="width: 6.4%;"></div>	6	6.4%
5	restaurant is MUCH WORSE QUALITY than home	<div style="width: 0%;"></div>	0	0.0%
	Total		94	100.0%

Information and Communication

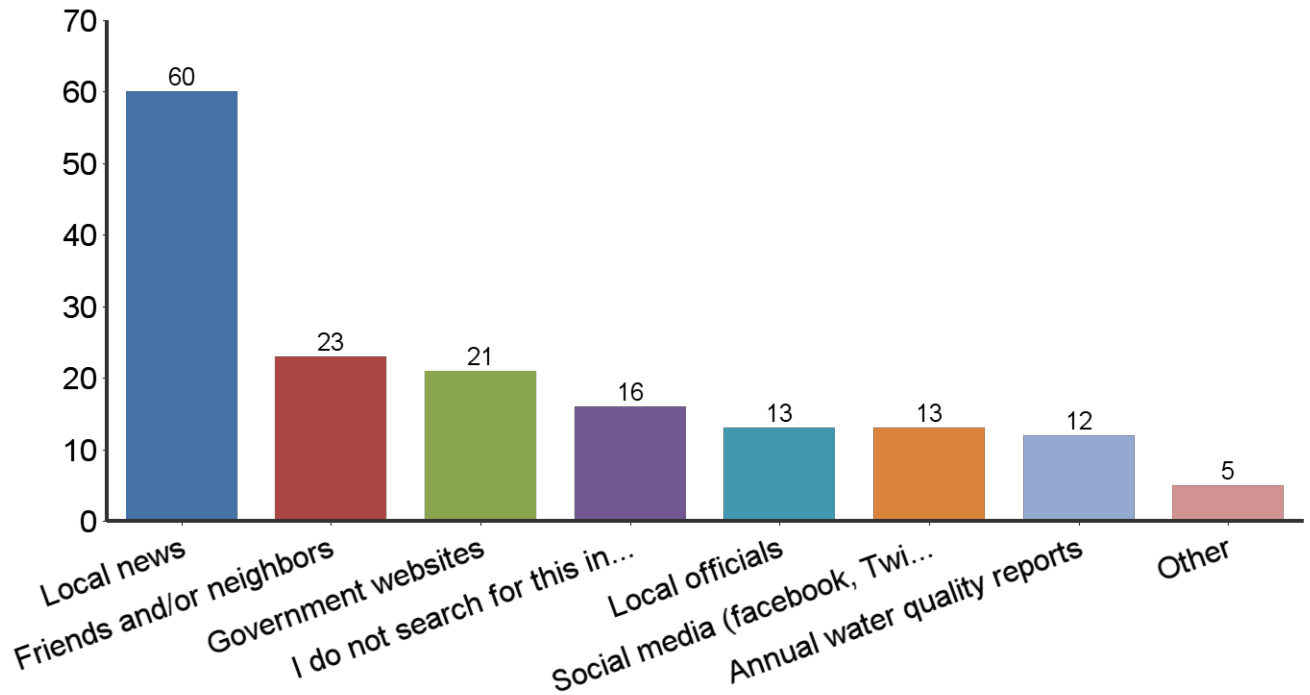
- Responsibilities in the Water System
- Communication of Information
- Consumer Confidence Reports
- Understanding Water Bills
- Preferred Information Sources

21 To the best of your knowledge, who is primarily responsible for monitoring the quality of your water?



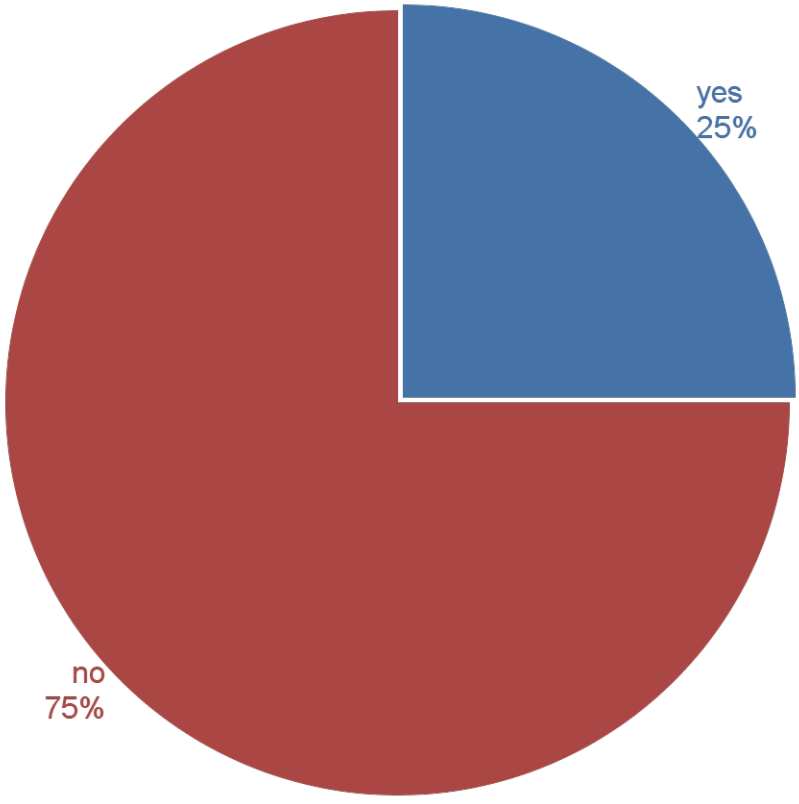
#	Answer	Bar	Response	%
1	Local government		24	29.6%
2	State government		26	32.1%
3	Federal government		14	17.3%
4	Homeowner		13	16.0%
5	Other		4	4.9%
	Total		81	100.0%

How do you find information regarding the quality of your drinking water? (mark all that apply)



#	Answer	Bar	Response	%
1	Local news		60	58.3%
2	Government websites		21	20.4%
3	Social media (facebook, Twitter, etc)		13	12.6%
4	Annual water quality reports		12	11.7%
5	Friends and/or neighbors		23	22.3%
6	Local officials		13	12.6%
7	Other		5	4.9%
8	I do not search for this information		16	15.5%
	Total		163	100.0%

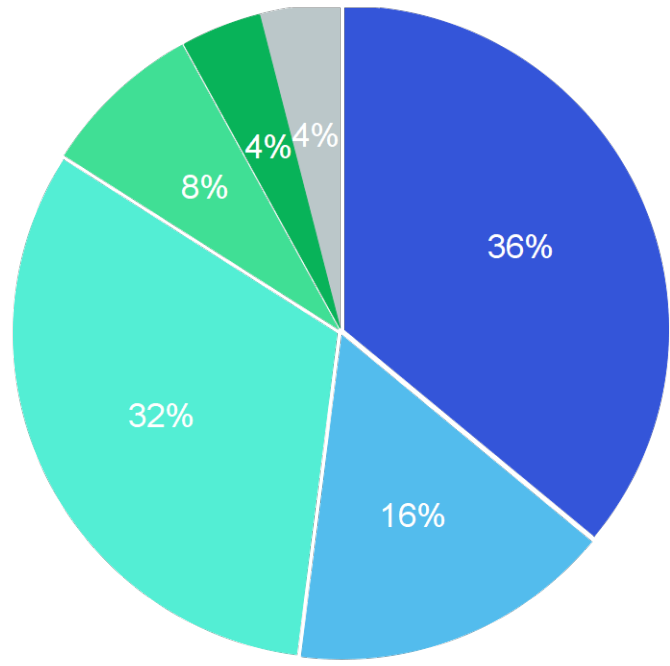
To the best of your knowledge, have you ever received an annual water quality report, known as a CCR (Consumer Confidence Report)?



#	Answer	Bar	Response	%
1	yes	<div style="width: 25%; background-color: #4a7ebb;"></div>	25	25.0%
2	no	<div style="width: 75%; background-color: #4a7ebb;"></div>	75	75.0%
	Total		100	100.0%

How useful was the report in understanding the quality of your drinking water? *(Only counting respondents who indicated they have recieved their CCR.)*

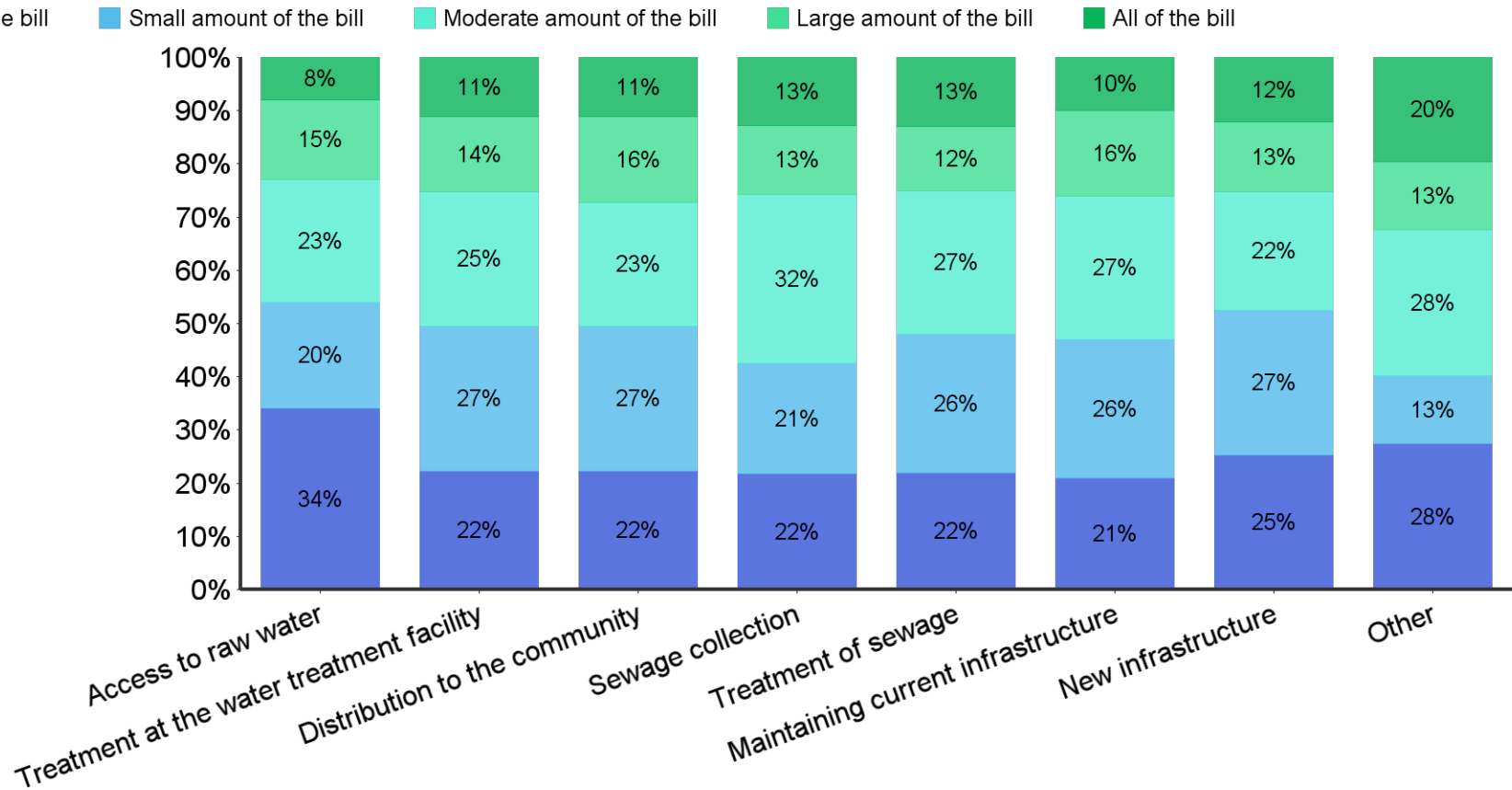
■ Extremely helpful, I unders...
 ■ Very helpful, I understood ...
 ■ Somewhat helpful, I underst...
■ Slightly helpful, I underst...
 ■ Not at all, I understood no...
 ■ I don't know or don't remember



#	Answer	Bar	Response	%
1	Extremely helpful, I understood almost everything	<div style="width: 36%; height: 15px; background-color: blue;"></div>	9	36.0%
2	Very helpful, I understood most of it	<div style="width: 16%; height: 15px; background-color: blue;"></div>	4	16.0%
3	Somewhat helpful, I understood some of it	<div style="width: 32%; height: 15px; background-color: blue;"></div>	8	32.0%
4	Slightly helpful, I understood only a bit of it	<div style="width: 8%; height: 15px; background-color: blue;"></div>	2	8.0%
5	Not at all, I understood none of it	<div style="width: 4%; height: 15px; background-color: blue;"></div>	1	4.0%
6	I don't know or don't remember	<div style="width: 4%; height: 15px; background-color: blue;"></div>	1	4.0%
	Total		25	100.0%

For each of the service below, what portion of your water bill do you think goes towards the service?

Please mark one of the following for each: None of the Bill, A Small Amount of the Bill, A Moderate Amount of the Bill, A Large Amount of the Bill or All of the Bill?

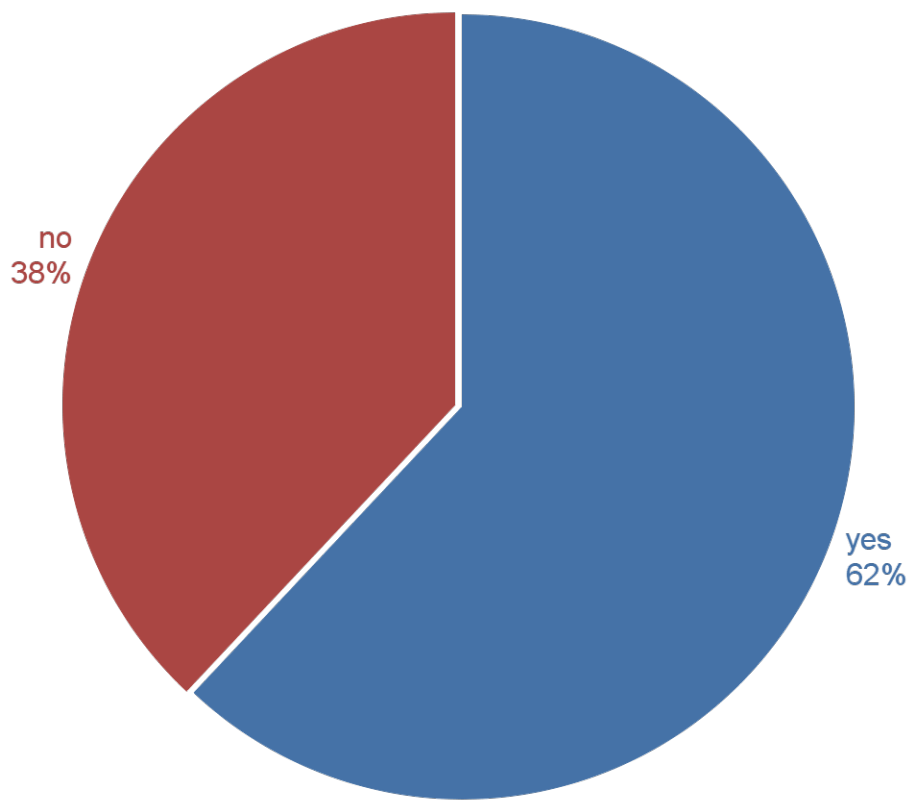


26 For each of the service below, what portion of your water bill do you think goes towards the service?

Please mark one of the following for each: None of the Bill, A Small Amount of the Bill, A Moderate Amount of the Bill, A Large Amount of the Bill or All of the Bill?

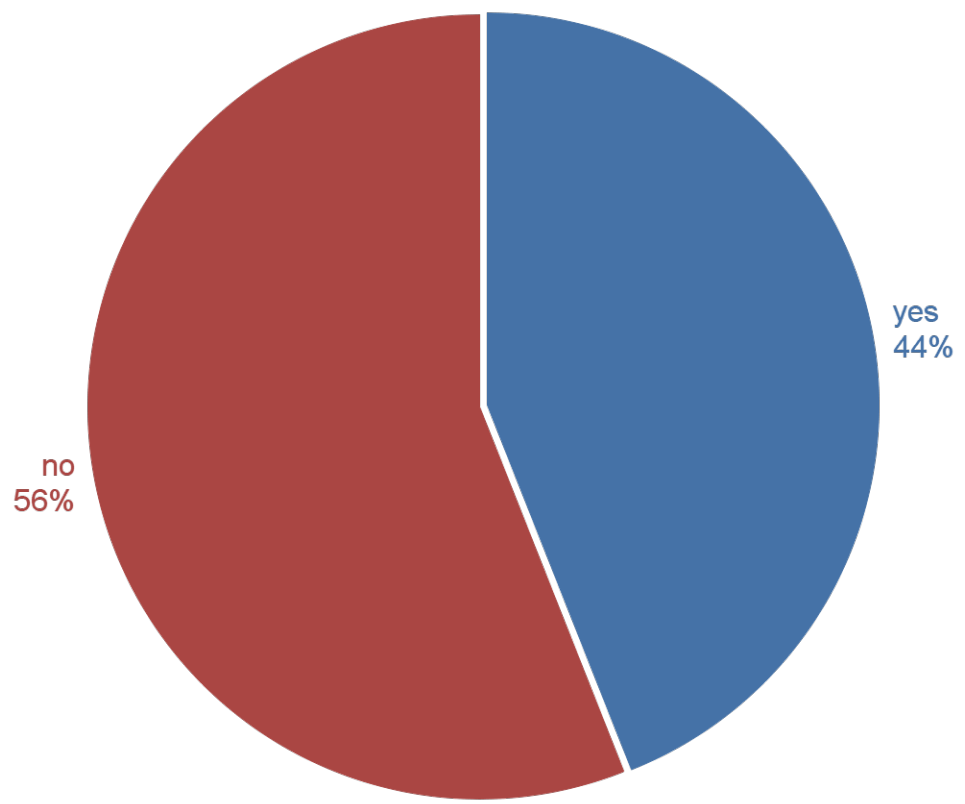
#	Question	None of the bill	Small amount of the bill	Moderate amount of the bill	Large amount of the bill	All of the bill	Response	Average Value
1	Access to raw (untreated) water	32	19	22	14	8	95	2.4
2	Treatment at the water treatment facility	20	25	23	13	10	91	2.6
3	Distribution to the community	20	25	21	15	10	91	2.7
4	Sewage collection	20	19	29	12	12	92	2.8
5	Treatment of sewage	20	23	24	11	12	90	2.7
6	Maintaining current infrastructure	19	24	25	15	9	92	2.7
7	Building new water infrastructure, such as treatment plant upgrades and water/sewer pipe installation	22	24	20	12	11	89	2.6
8	Other	11	5	11	5	8	40	2.9

Have you ever had questions or concerns about your drinking water?



#	Answer	Bar	Response	%
1	yes	<div style="width: 62.4%;"></div>	63	62.4%
2	no	<div style="width: 37.6%;"></div>	38	37.6%
	Total		101	100.0%

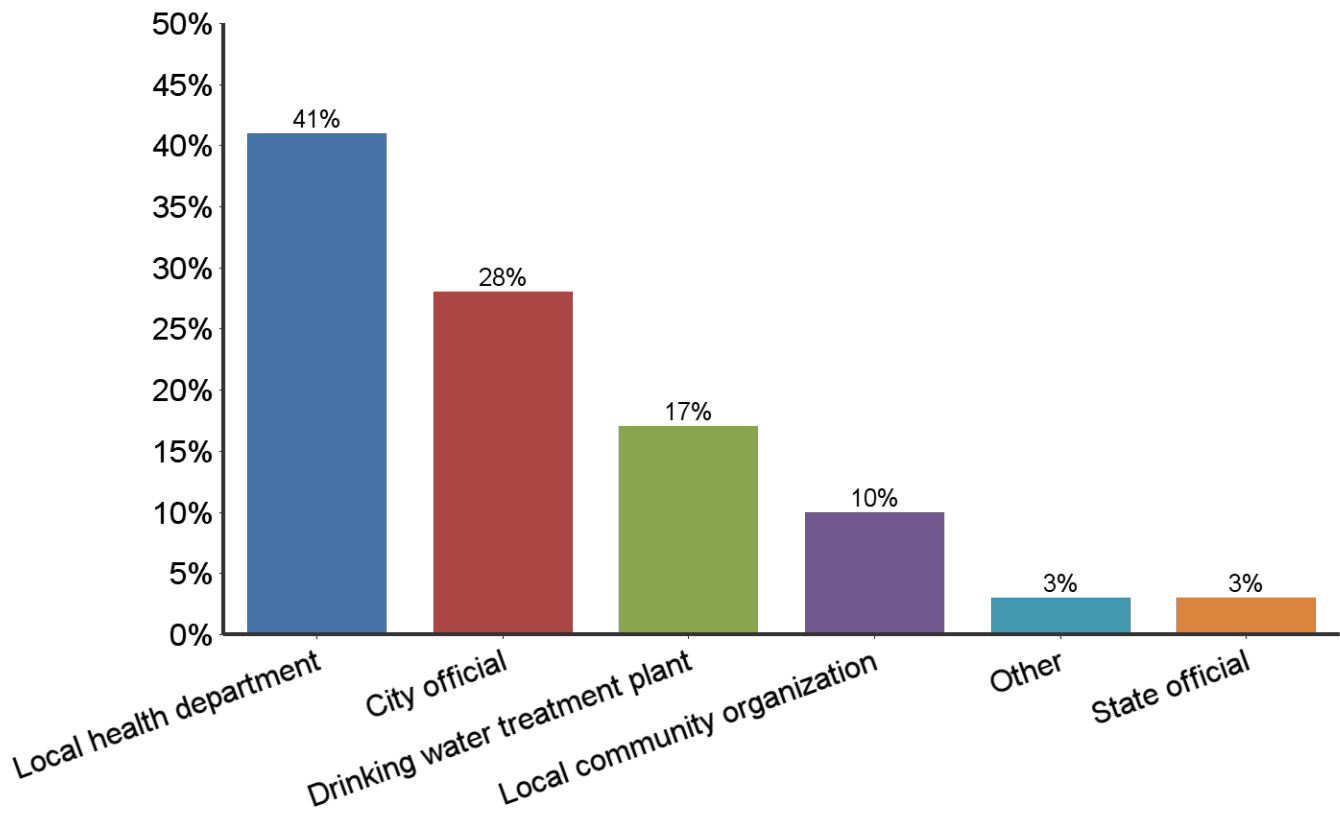
Have you ever contacted anyone with questions or concerns about your drinking water?
(Only counting respondents who indicated they had recieved their CCR.)



#	Answer	Bar	Response	%
1	yes	<div style="width: 44.4%;"></div>	28	44.4%
2	no	<div style="width: 55.6%;"></div>	35	55.6%
	Total		63	100.0%

29 **Who did you contact?**

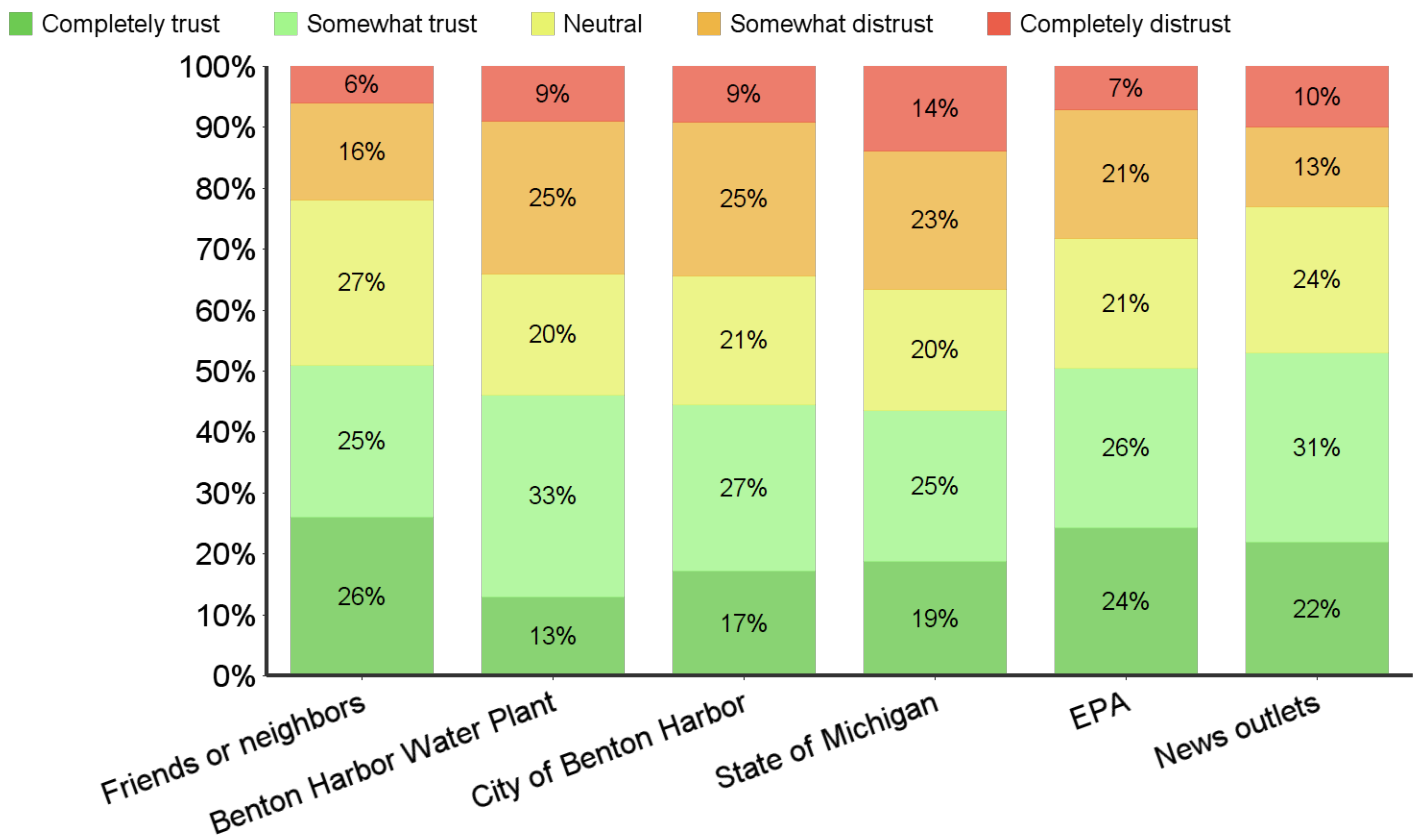
(Only counting respondents who indicated they have contacted someone about a water concern.)



#	Answer	Bar	Response	%
1	Drinking water treatment plant	<div style="width: 17.2%;"></div>	5	17.2%
2	Local health department	<div style="width: 41.4%;"></div>	12	41.4%
3	Local community organization	<div style="width: 10.3%;"></div>	3	10.3%
4	City official	<div style="width: 27.6%;"></div>	8	27.6%
5	State official	<div style="width: 3.4%;"></div>	1	3.4%
6	Other	<div style="width: 3.4%;"></div>	1	3.4%
	Total		30	100.0%

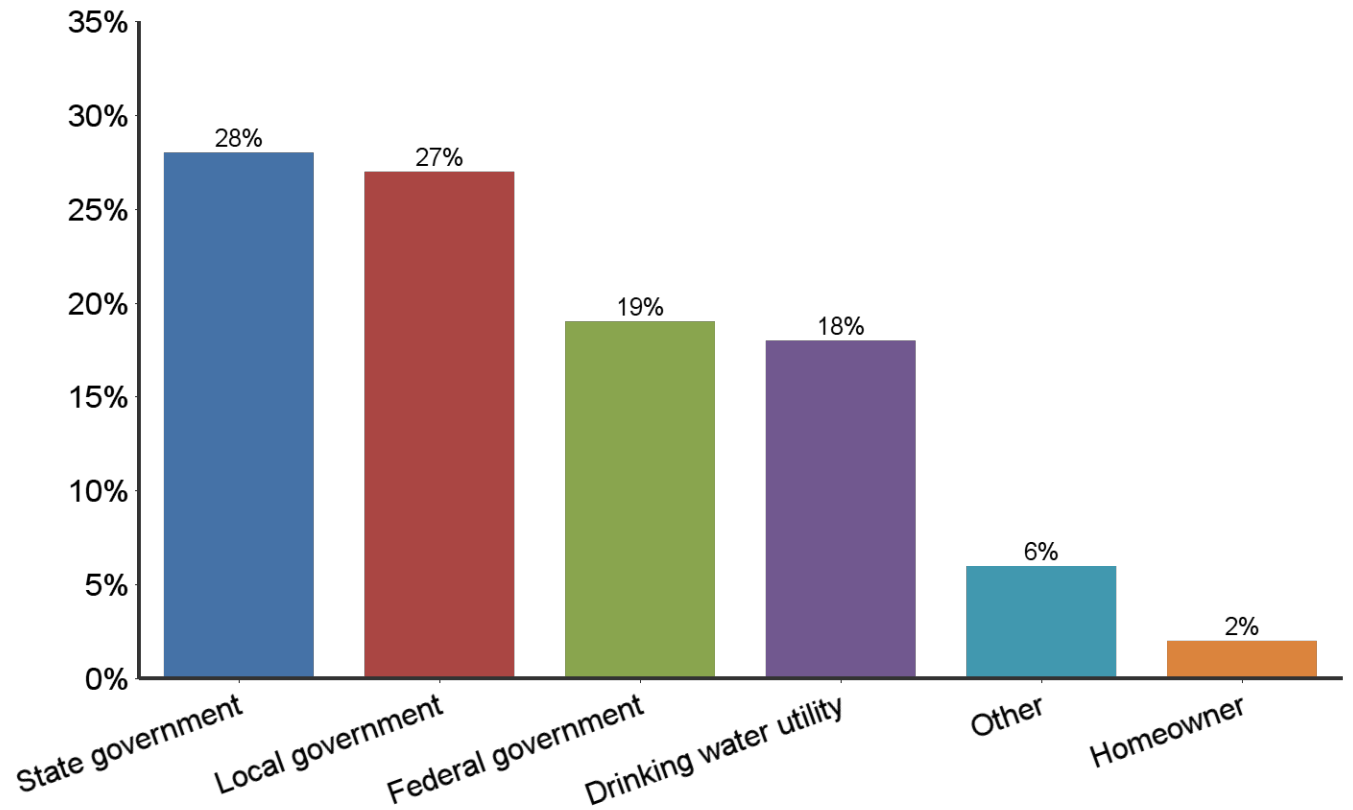
For each of the following groups, how much you trust the group to give you information regarding the quality of your tap water?

Please mark if you "Completely Trust", "Somewhat Trust", are "Neutral", "Somewhat Distrust", or "Completely Distrust" each of the following groups.



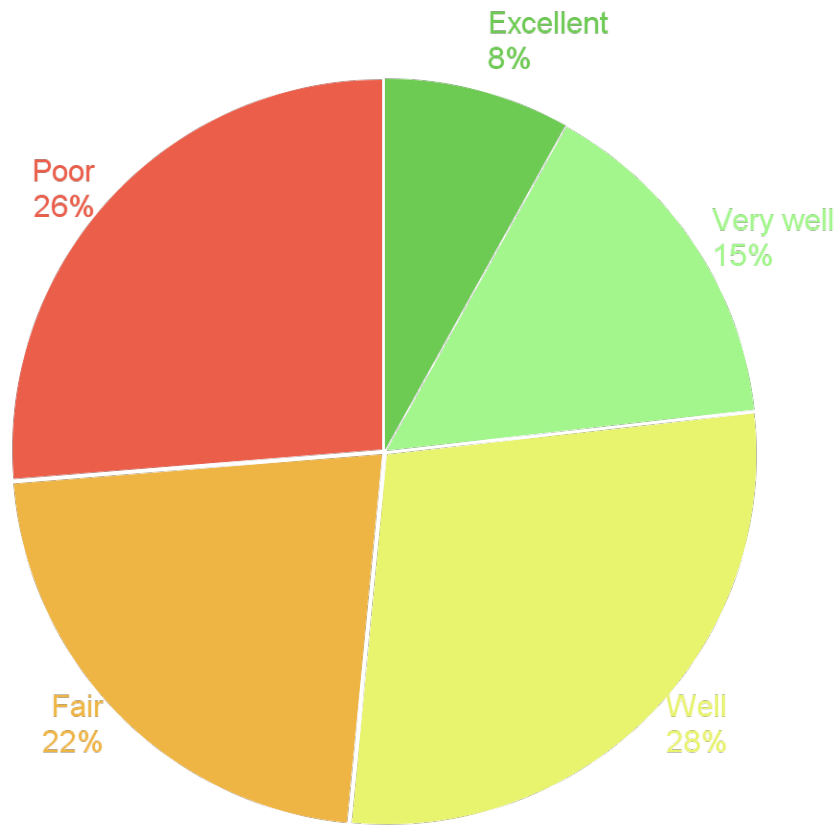
#	Question	Completely trust	Somewhat trust	Neutral	Somewhat distrust	Completely distrust	Response	Average Value
1	Friends or neighbors	25	24	26	15	6	96	2.5
2	Benton Harbor Water Plant	12	32	19	24	9	96	2.9
3	City of Benton Harbor	16	26	20	24	9	95	2.8
4	State of Michigan	18	24	19	22	13	96	2.9
5	Federal Environmental Protection Agency (EPA)	23	25	20	20	7	95	2.6
6	News outlets (television, newspapers, etc)	21	29	23	12	9	94	2.6

Who do you feel should be the most responsible for ensuring the quality of your drinking water?



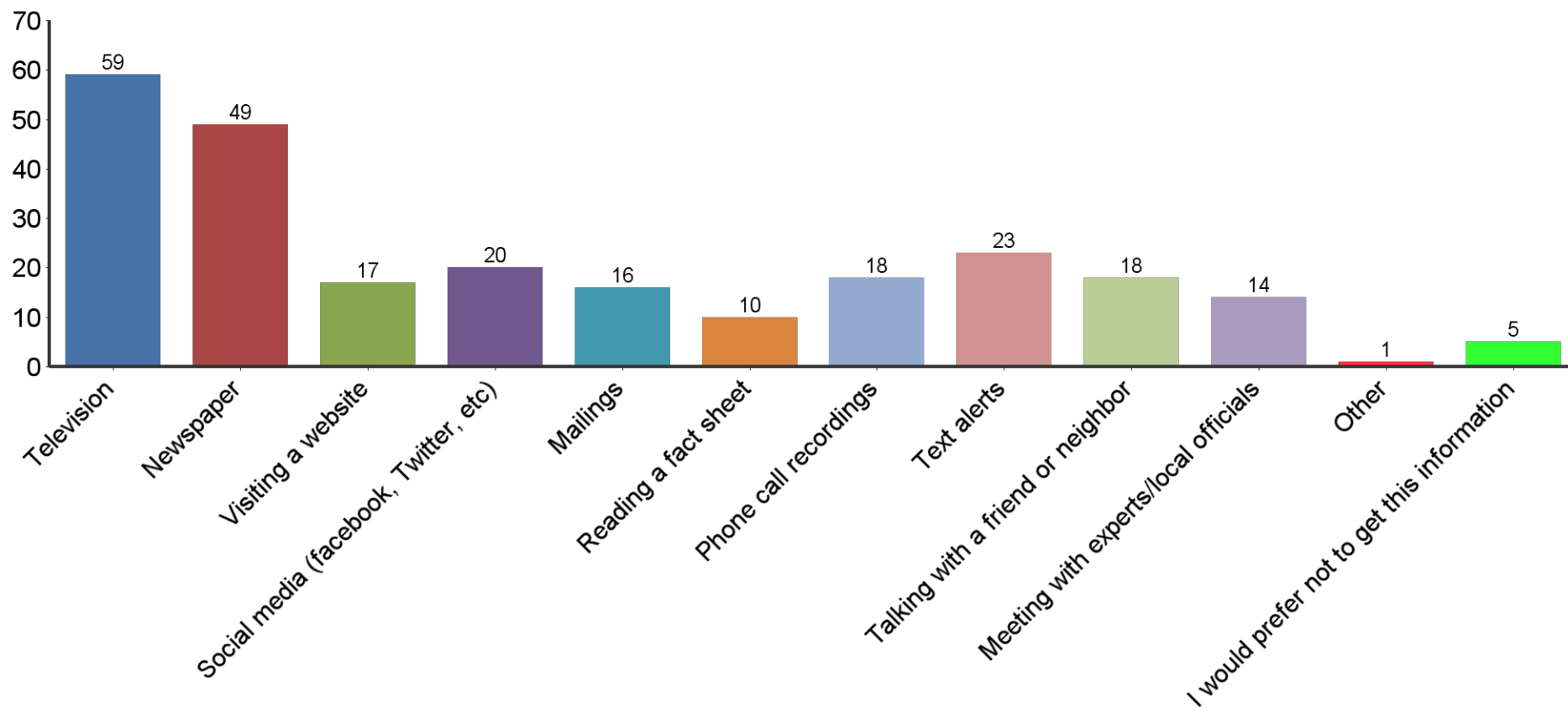
#	Answer	Bar	Response	%
1	Local government	<div style="width: 26.6%; height: 10px; background-color: #4a7ebb;"></div>	25	26.6%
2	State government	<div style="width: 27.7%; height: 10px; background-color: #4a7ebb;"></div>	26	27.7%
3	Federal government	<div style="width: 19.1%; height: 10px; background-color: #4a7ebb;"></div>	18	19.1%
4	Drinking water utility	<div style="width: 18.1%; height: 10px; background-color: #4a7ebb;"></div>	17	18.1%
5	Homeowner	<div style="width: 2.1%; height: 10px; background-color: #4a7ebb;"></div>	2	2.1%
6	Other	<div style="width: 6.4%; height: 10px; background-color: #4a7ebb;"></div>	6	6.4%
	Total		94	100.0%

Based on your answer to the previous question, how well are they fulfilling their responsibility?















#	Answer	Bar	Response	%
1	Excellent	<div style="width: 8.4%;"></div>	8	8.4%
2	Very well	<div style="width: 14.7%;"></div>	14	14.7%
3	Well	<div style="width: 28.4%;"></div>	27	28.4%
4	Fair	<div style="width: 22.1%;"></div>	21	22.1%
5	Poor	<div style="width: 26.3%;"></div>	25	26.3%
	Total		95	100.0%

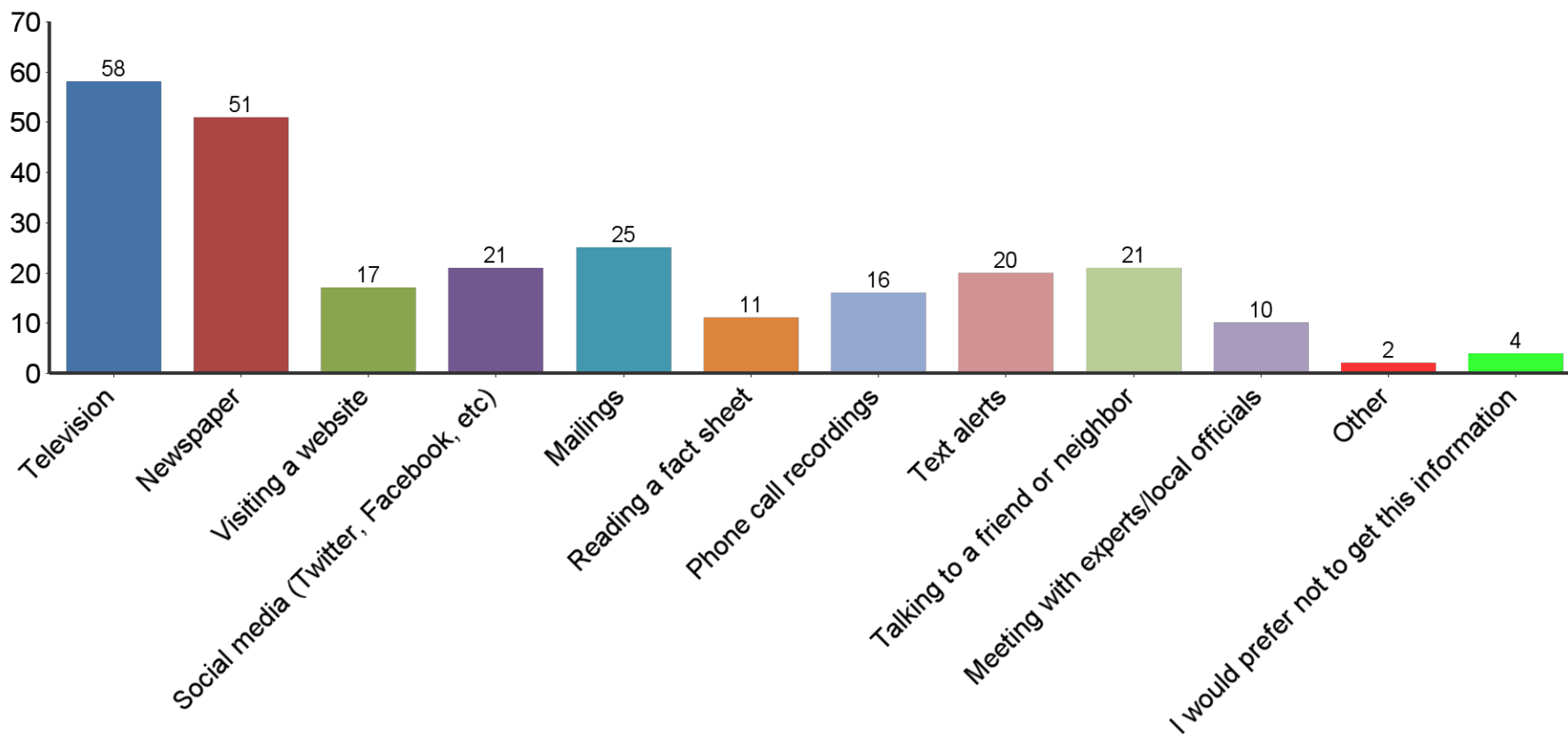
What is your preferred method for receiving communication about the quality of your tap water? (Choose all that apply)















34 **What is your preferred method for receiving communication about the quality of your tap water?**
 (Choose all that apply)

#	Answer	Bar	Response	%
1	Television		59	57.8%
2	Newspaper		49	48.0%
3	Visiting a website		17	16.7%
4	Social media (facebook, Twitter, etc)		20	19.6%
5	Mailings		16	15.7%
6	Reading a fact sheet		10	9.8%
7	Phone call recordings		18	17.6%
8	Text alerts		23	22.5%
9	Talking with a friend or neighbor		18	17.6%
10	Meeting with experts/local officials		14	13.7%
11	Other		1	1.0%
12	I would prefer not to get this information		5	4.9%
	Total		250	100.0%

If you were to receive information about water affordability issues (e.g. water rate structure, payment assistance programs), how would you prefer to get this information? (Choose all that apply)



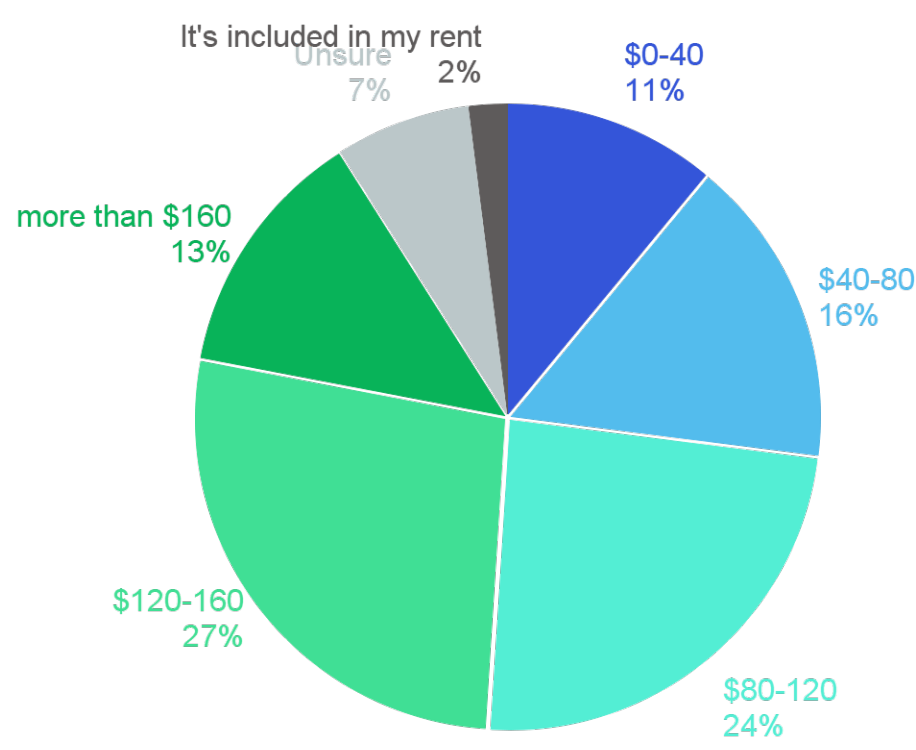
If you were to receive information about water affordability issues (e.g. water rate structure, payment assistance programs), how would you prefer to get this information? (Choose all that apply)

#	Answer	Bar	Response	%
1	Television		58	56.9%
2	Newspaper		51	50.0%
3	Visiting a website		17	16.7%
4	Social media (Twitter, Facebook, etc)		21	20.6%
5	Mailings		25	24.5%
6	Reading a fact sheet		11	10.8%
7	Phone call recordings		16	15.7%
8	Text alerts		20	19.6%
9	Talking to a friend or neighbor		21	20.6%
10	Meeting with experts/local officials		10	9.8%
11	Other		2	2.0%
12	I would prefer not to get this information		4	3.9%
	Total		256	100.0%

Cost of Water

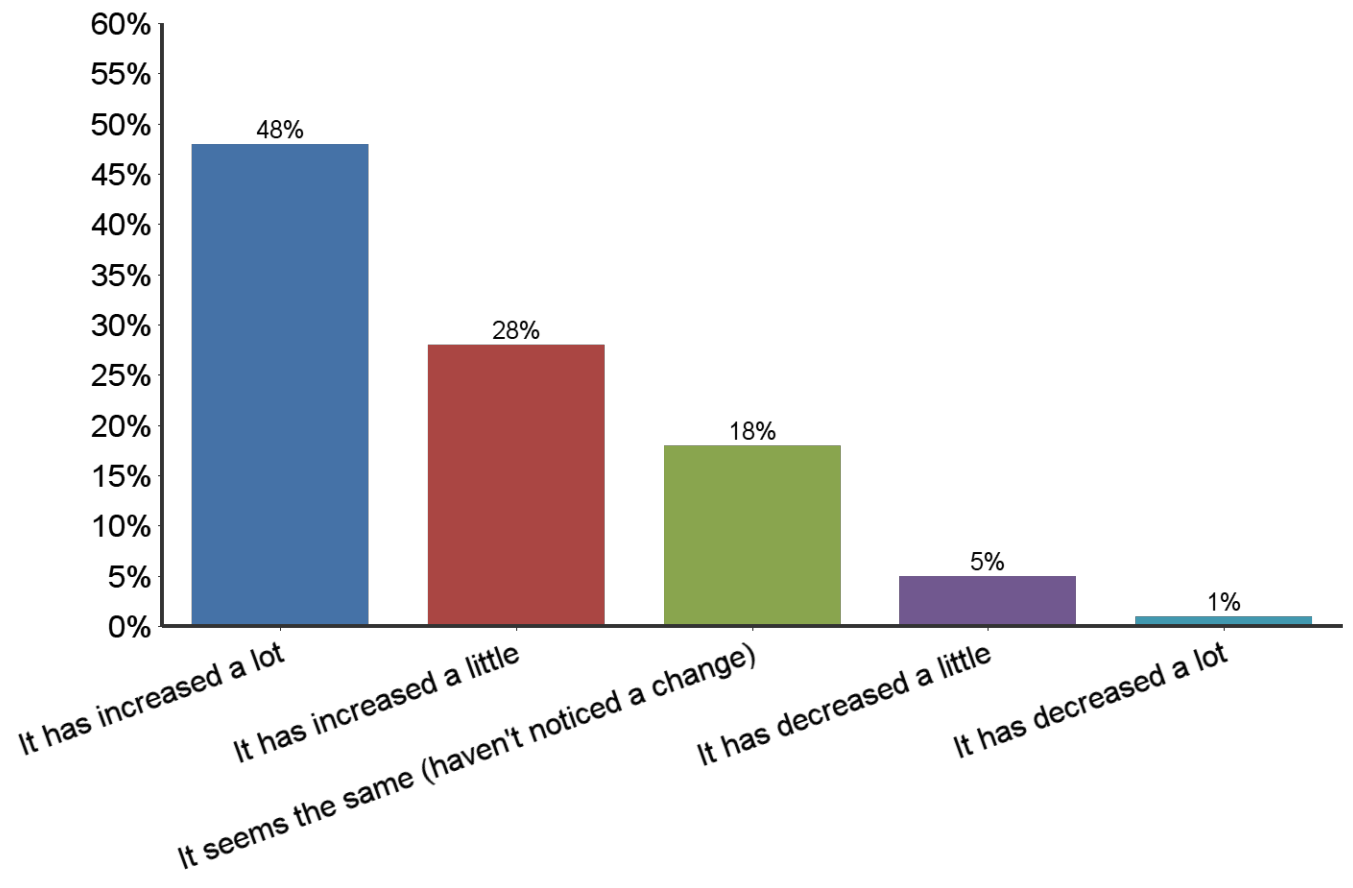
- Average Household Bill
- Trends in Water Bills
- Cost and Quality
- Community Assistance Programs

38 On average, how much does your household spend on your water utility bill per month?
(Only counting respondents who indicated they are responsible for paying the water bill.)



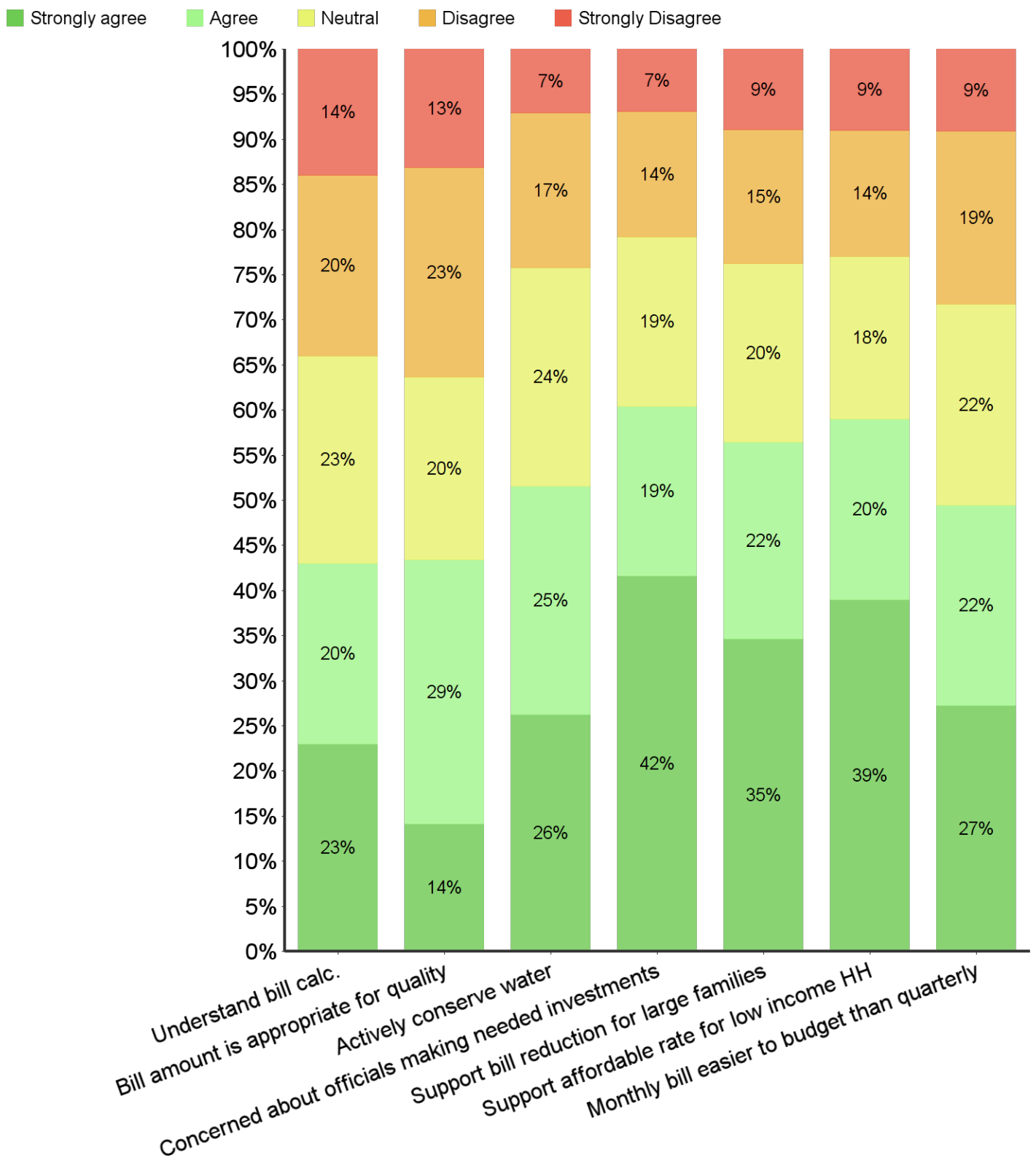
#	Answer	Bar	Response	%
1	\$0-40	■	5	11.1%
2	\$40-80	■	7	15.6%
3	\$80-120	■	11	24.4%
4	\$120-160	■	12	26.7%
5	more than \$160	■	6	13.3%
6	Unsure	■	3	6.7%
7	It's included in my rent	■	1	2.2%
	Total		45	100.0%

On average, how does your present water bill compare to five years ago?



#	Answer	Bar	Response	%
1	It has increased a lot		38	48.1%
2	It has increased a little		22	27.8%
3	It seems the same (haven't noticed a change)		14	17.7%
4	It has decreased a little		4	5.1%
5	It has decreased a lot		1	1.3%
	Total		79	100.0%

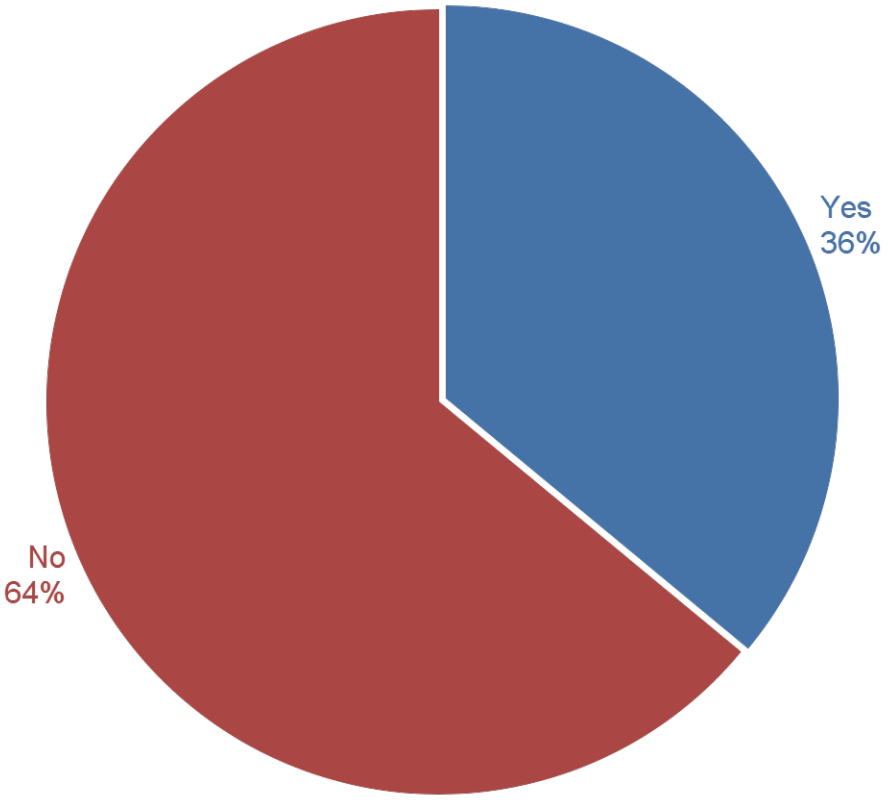
For each of the following statements on cost and payment for water services, please mark whether you strongly agree, agree, are neutral, disagree, strongly disagree or don't know.



For each of the following statements on cost and payment for water services, please mark whether you strongly agree, agree, are neutral, disagree, strongly disagree or don't know.

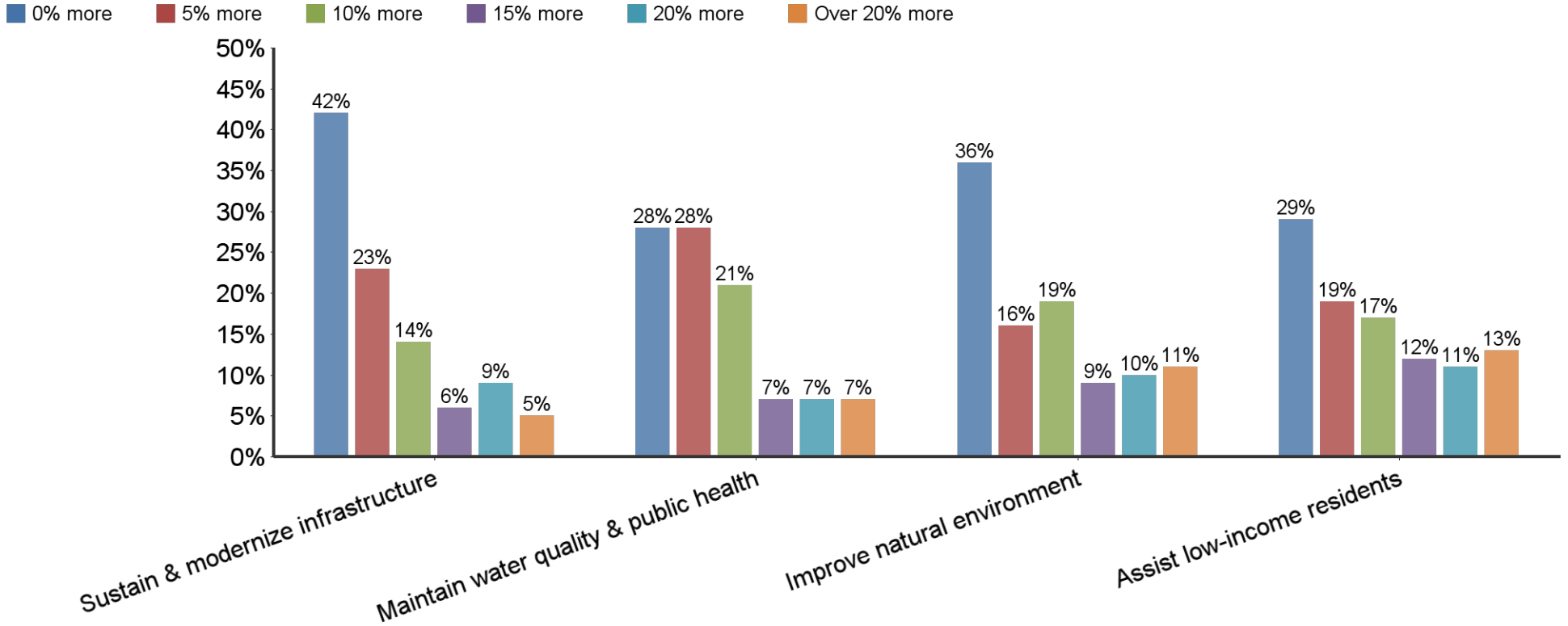
#	Question	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Response	Average Value
1	I understand how my water bill is calculated	22	19	22	19	13	95	2.8
2	I believe the amount of money my household spends on tap water is appropriate for the quality of service recieved	14	28	20	23	13	98	2.9
3	I actively try to conserve water in order to reduce my water bill	25	24	23	16	7	95	2.5
4	In light of the Flint, Michigan water crisis, I am concerned about Benton Harbor public officials making the necessary investments needed to avoid similar issues	42	19	19	14	7	101	2.3
5	I would support a bill reduction for large families who pay more because they have more people in their house	35	22	20	15	9	101	2.4
6	I support offering a more affordable rate for customers who meet low-income criteria	39	20	18	14	9	100	2.3
7	A monthly water bill is easier to budget for than a quarterly water bill (once every 3 months)	26	21	21	18	9	95	2.6

Would you be would be willing to pay a higher water bill to improve and modernize the water systems in Benton Harbor to ensure safe and reliable water service for everyone?



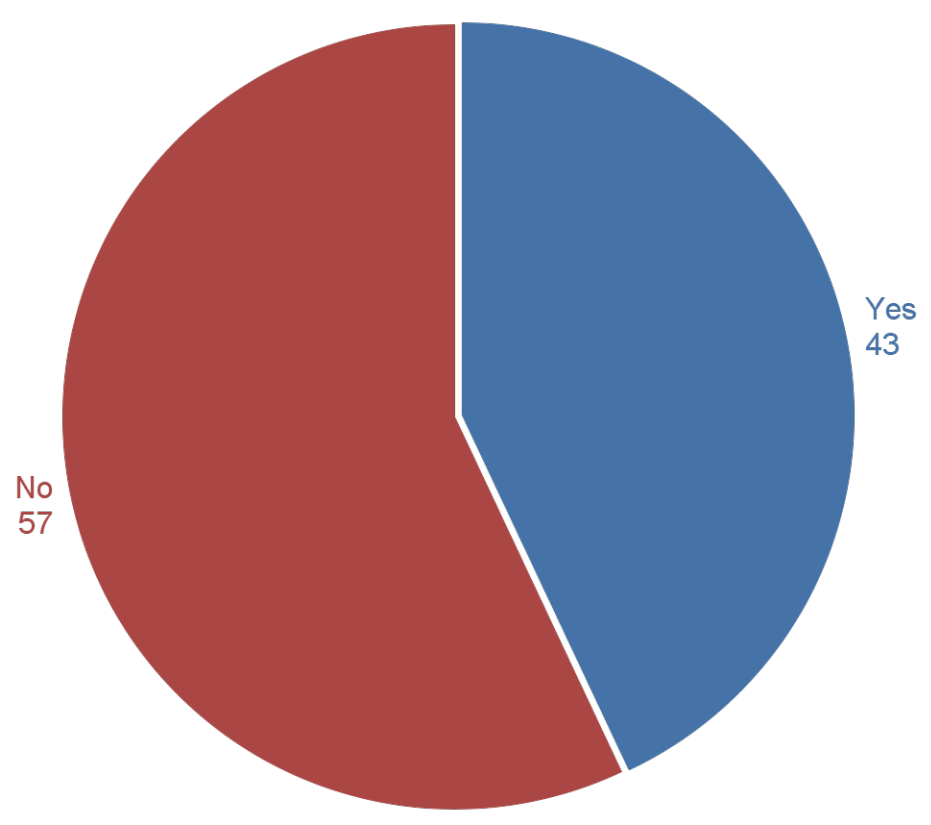
#	Answer	Bar	Response	%
1	Yes	<div style="width: 36.5%; background-color: #4a7ebb;"></div>	35	36.5%
2	No	<div style="width: 63.5%; background-color: #a52a2a;"></div>	61	63.5%
	Total		96	100.0%

To ensure each of the following services, please indicate how much more you would be willing to pay.



#	Question	0% more	5% more	10% more	15% more	20% more	Over 20% more	Response	Average Value
1	To sustain and modernize the water infrastructure systems in my community	41	23	14	6	9	5	98	2.3
2	To maintain water quality and public health	27	27	20	7	7	7	95	2.6
3	To improve the natural environment	34	15	18	8	9	10	94	2.7
4	To assist low-income residents with their water bills	28	18	16	11	10	12	95	2.9

44 Are you aware of any Community Assistance Programs (CAPs) to help with water bills in your community?



#	Answer	Bar	Response	%
1	Yes	<div style="width: 43%; height: 15px; background-color: #336699;"></div>	43	43.0%
2	No	<div style="width: 57%; height: 15px; background-color: #336699;"></div>	57	57.0%
	Total		100	100.0%

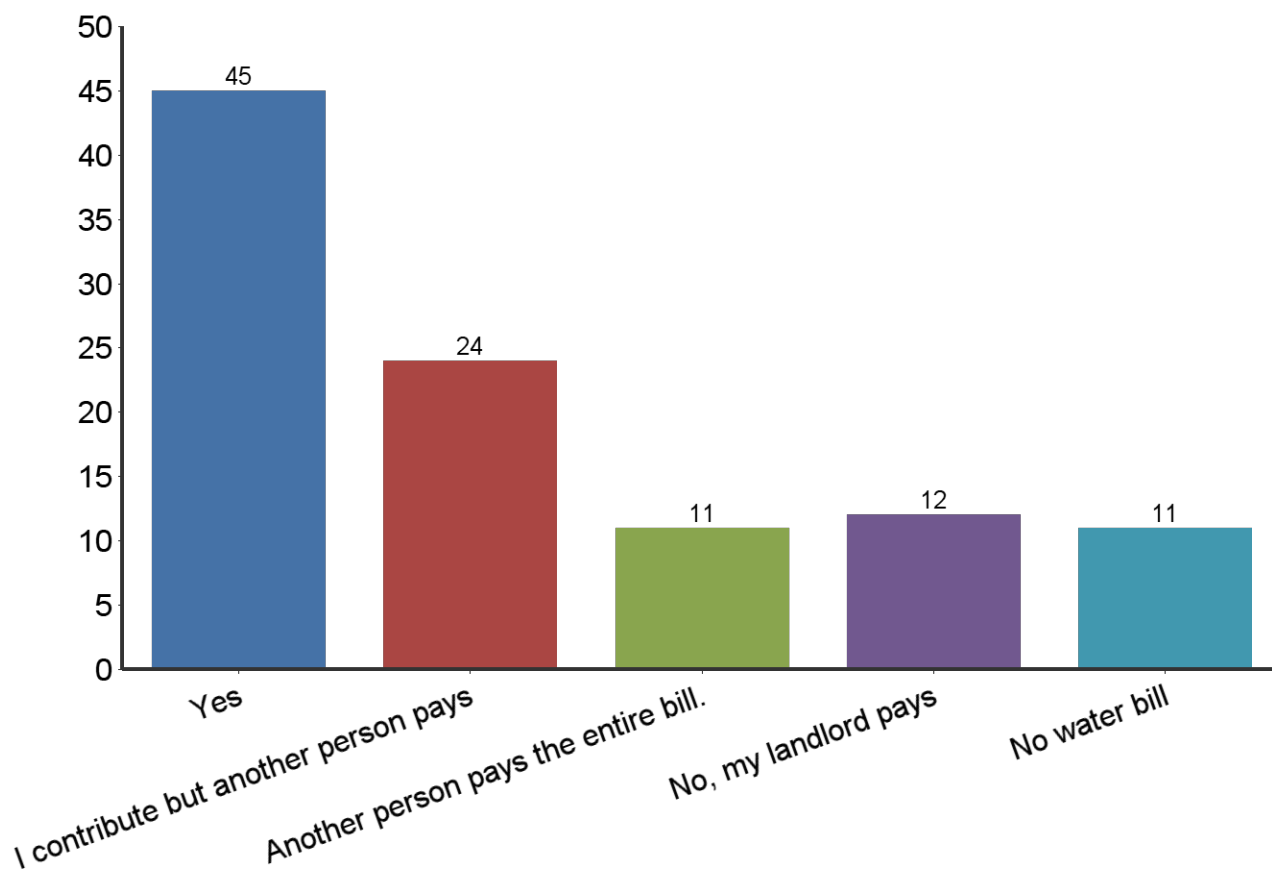
If there are any other water quality, service, or affordability issues that you, your family, friends or neighbors are concerned about, please explain below:






Text Entry
water suppose be free
water is suppose to be free why do we have to pay for it.
dont know of any
No.
None
the water good an cell (?)
Keep the streets clean in the winter.
I am concern with our water system
Never
It's only two in my family water running 145.00.
My family is concern
None
None cause it won't get better
N/A
God Bless Us
None
I lived in Flint, and I am very concerned about our water because of the increase of bodies found in the St. Joe River.
My concern is paying the water bill quarterly. It is too high. Monthly would be a lot better.
Cooke Nuklair plant and its pollution into lk mich!
I my water good to drink
N/A
The water quality in my home has change to worst, it's hard on our skin, especially mine I broken out in rashes and it makes my hair extremely dry and hard. I have to use bottle distilled or purify water to wash my hair and daughter's hair. This is NOT ACCEPTABLE!!!
I so made at the water go up ever year
water and sewer rate is much too high!
my family cancer
My problem is that the water bill is too high
Not Know
The tap water is not good for us grown ups or kids. Its not good to drink u don't want to get sick off it
Group of people are paying for others who do not pay. That's why the utility bill is so high and that's why people get so upset.

Demographics

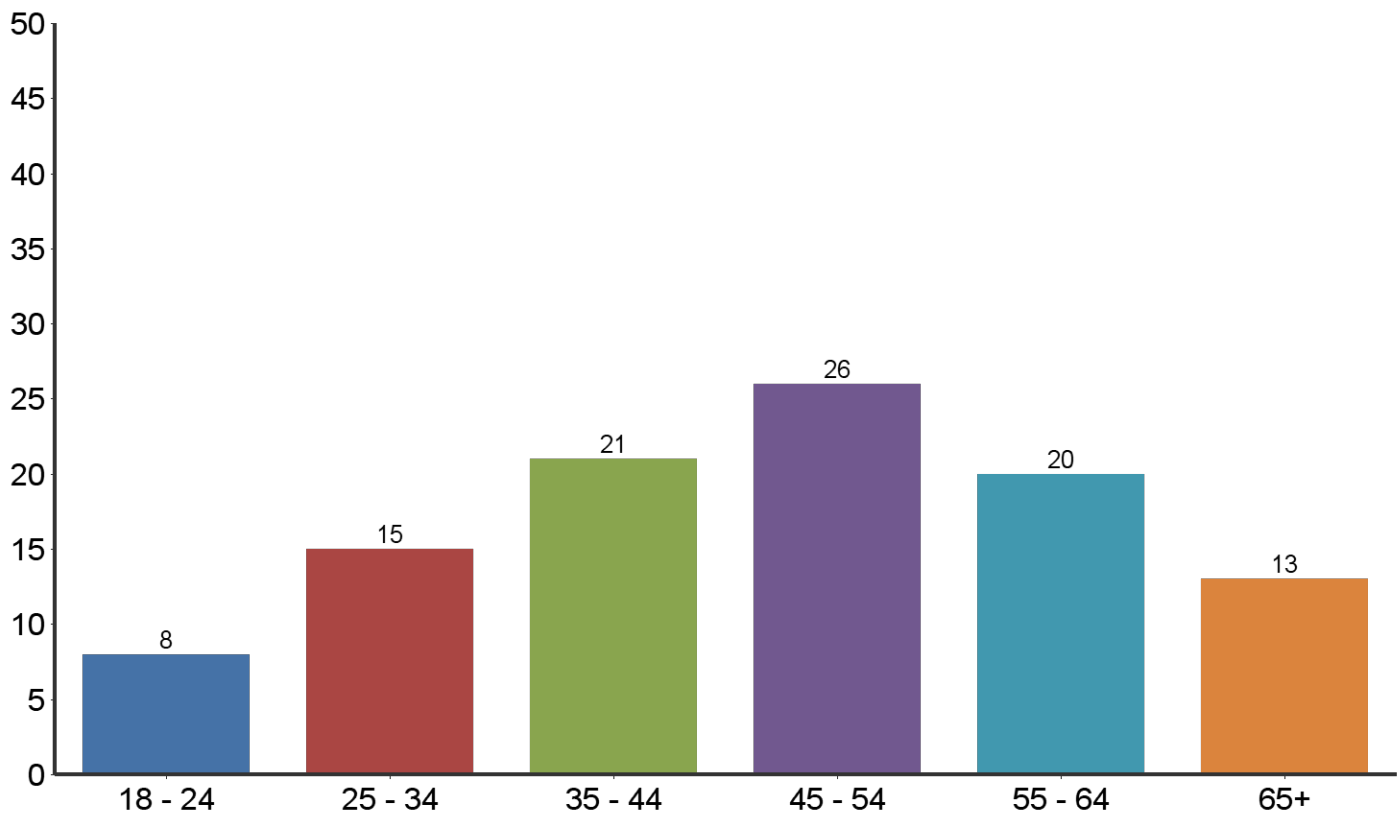
- Bill Payment
- Age
- Gender Identity
- Race/Ethnicity
- Length of Current Residence
- Residence Type
- Household Annual Income
- Highest Education Achieved

In your household, are you the person primarily responsible for paying the water utility bill?



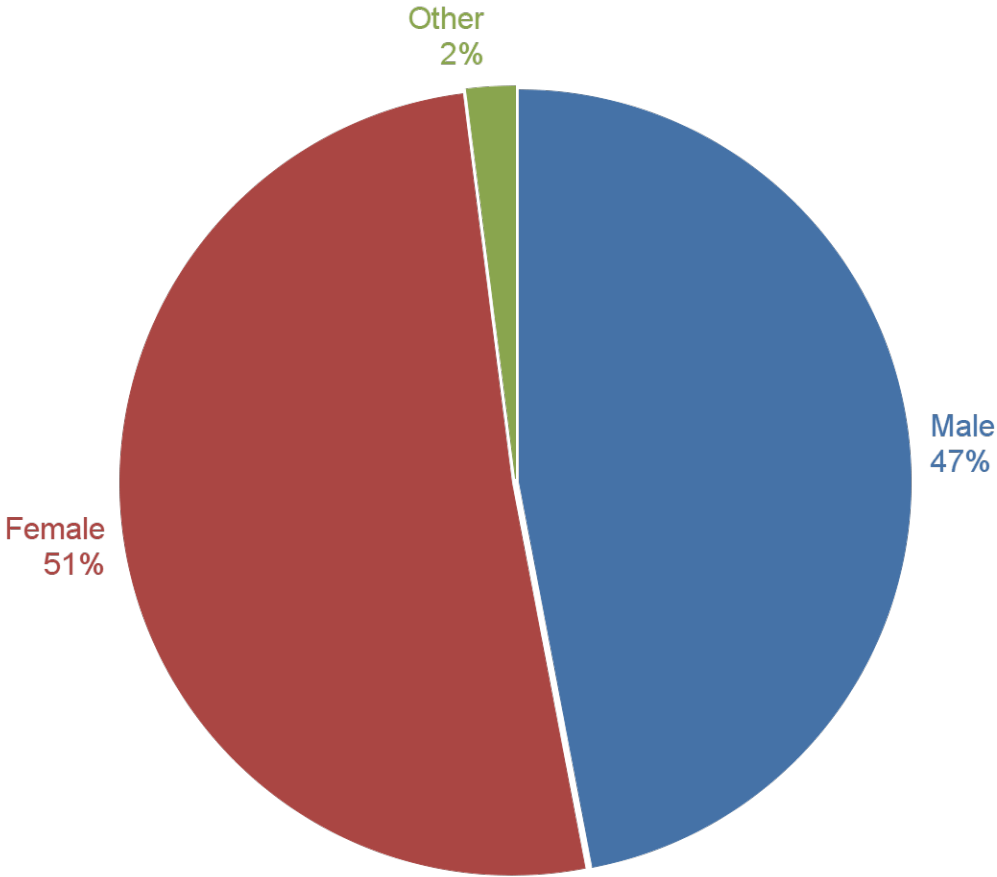
#	Answer	Bar	Response	%
1	Yes		45	43.7%
2	No, I contribute but another person in my household pays.		24	23.3%
3	No, another person in my household pays the entire bill.		11	10.7%
4	No, my landlord pays		12	11.7%
5	No water bill		11	10.7%
	Total		103	100.0%

What is your age?



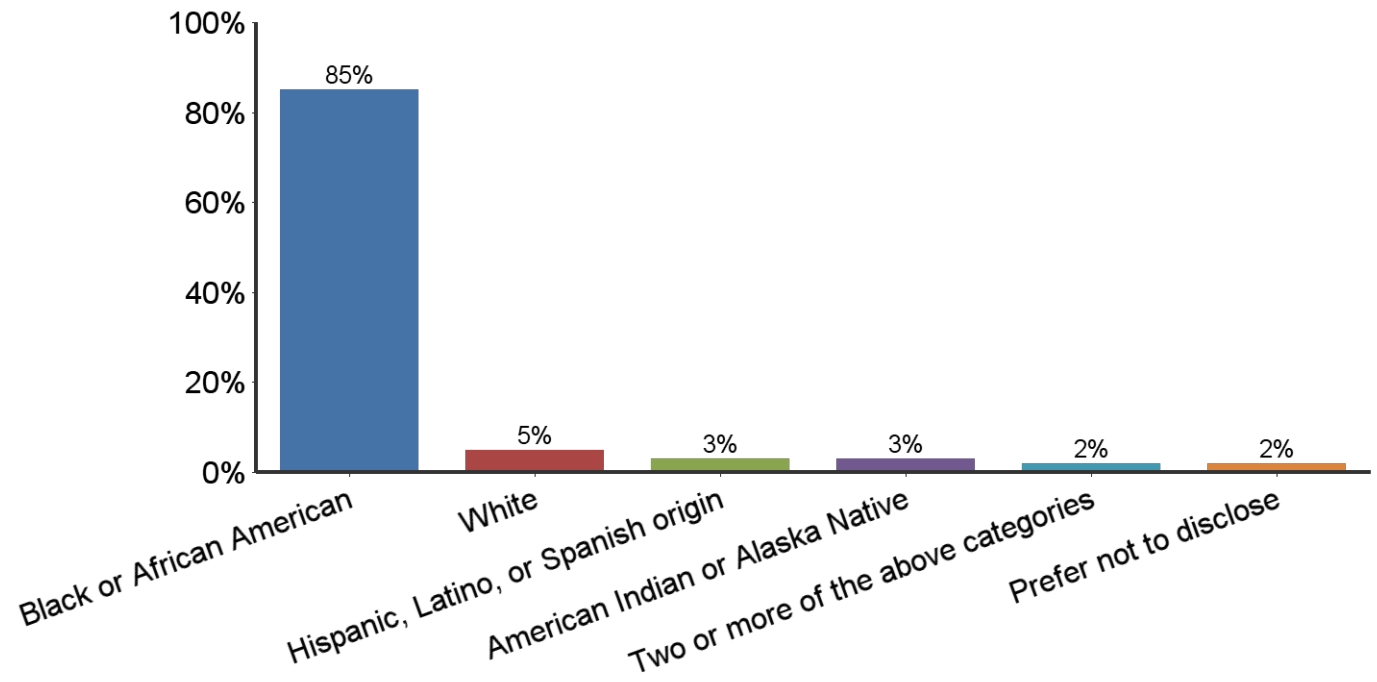
#	Answer	Bar	Response	%
1	18 - 24		8	7.8%
2	25 - 34		15	14.6%
3	35 - 44		21	20.4%
4	45 - 54		26	25.2%
5	55 - 64		20	19.4%
6	65+		13	12.6%
	Total		103	100.0%

Which gender do you identify as?



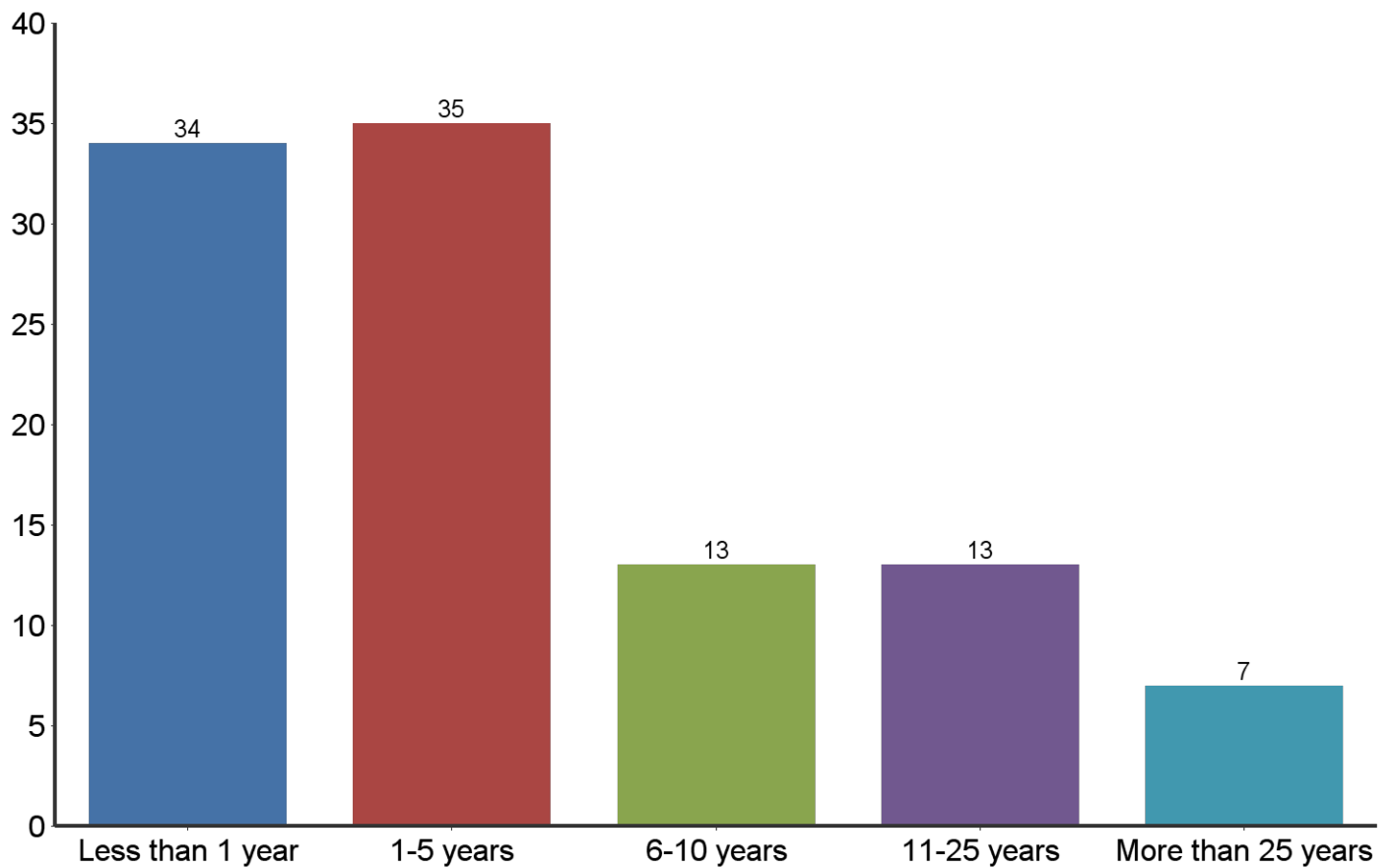
#	Answer	Bar	Response	%
1	Male	<div style="width: 46.6%;"></div>	48	46.6%
2	Female	<div style="width: 51.5%;"></div>	53	51.5%
3	Other	<div style="width: 1.9%;"></div>	2	1.9%
4	Prefer not to disclose		0	0.0%
	Total		103	100.0%






Which category describes you?



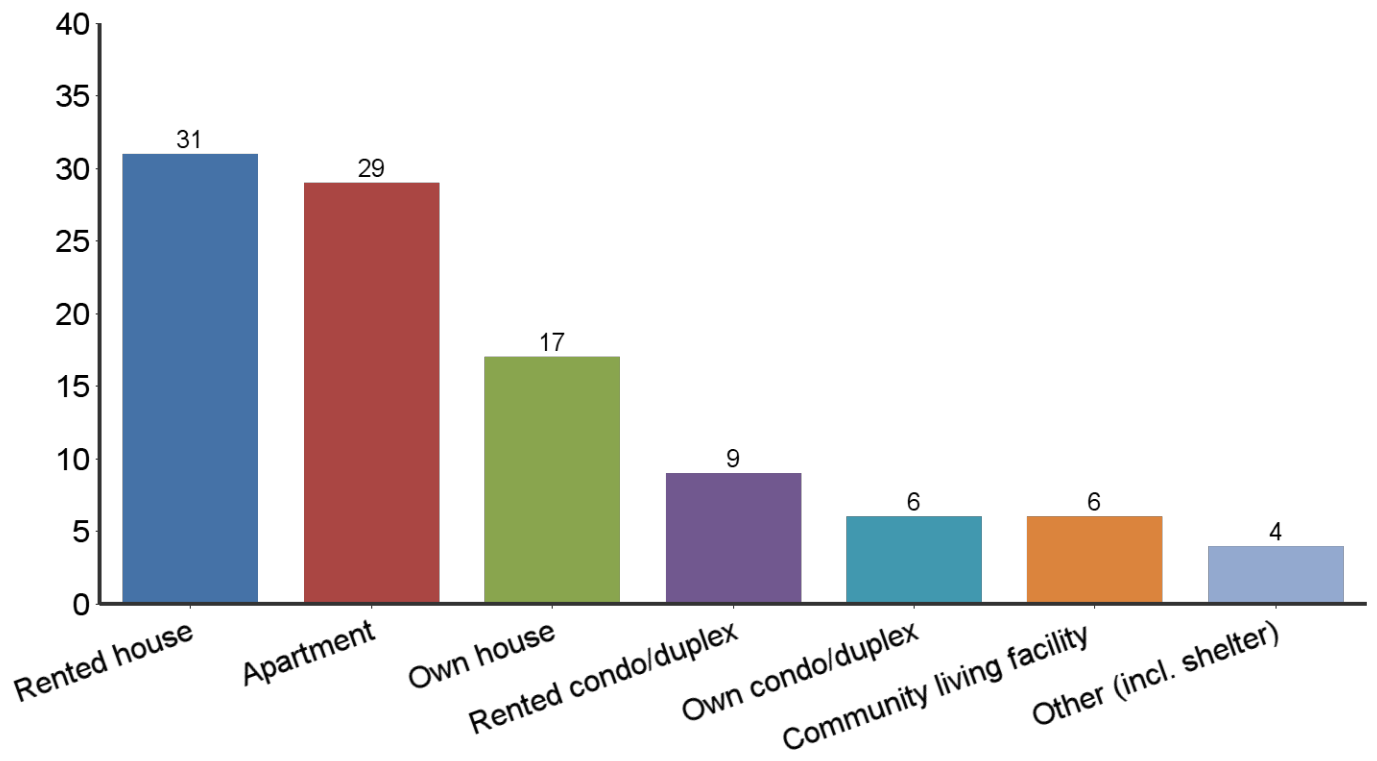
#	Answer	Bar	Response	%
1	Black or African American		88	85.4%
2	White		5	4.9%
3	Hispanic, Latino, or Spanish origin		3	2.9%
4	Asian		0	0.0%
5	American Indian or Alaska Native		3	2.9%
6	Middle Eastern or North African		0	0.0%
7	Native Hawaiian or other Pacific Islander		0	0.0%
8	Some other race, ethnicity, or origin		0	0.0%
9	Two or more of the above categories		2	1.9%
10	Prefer not to disclose		2	1.9%
	Total		103	100.0%

How long have you lived at your current residence?



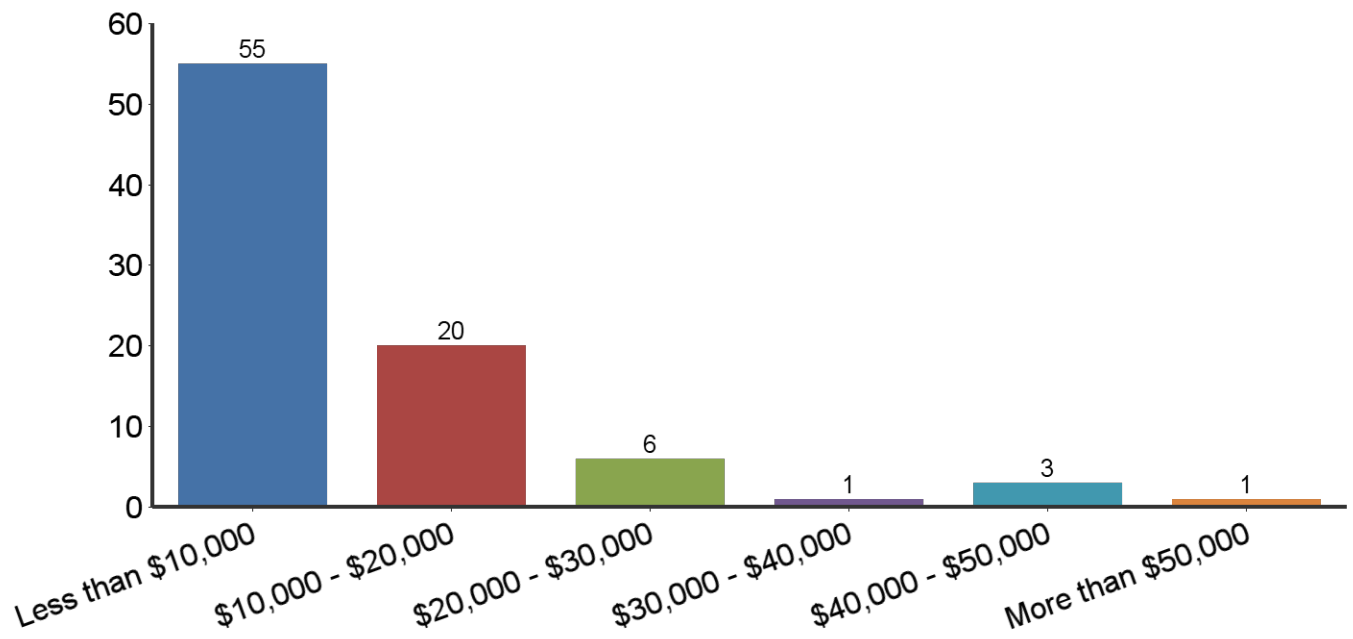
#	Answer	Bar	Response	%
1	Less than 1 year		34	33.3%
2	1-5 years		35	34.3%
3	6-10 years		13	12.7%
4	11-25 years		13	12.7%
5	More than 25 years		7	6.9%
	Total		102	100.0%


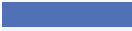




Which type of residence do you currently live in?



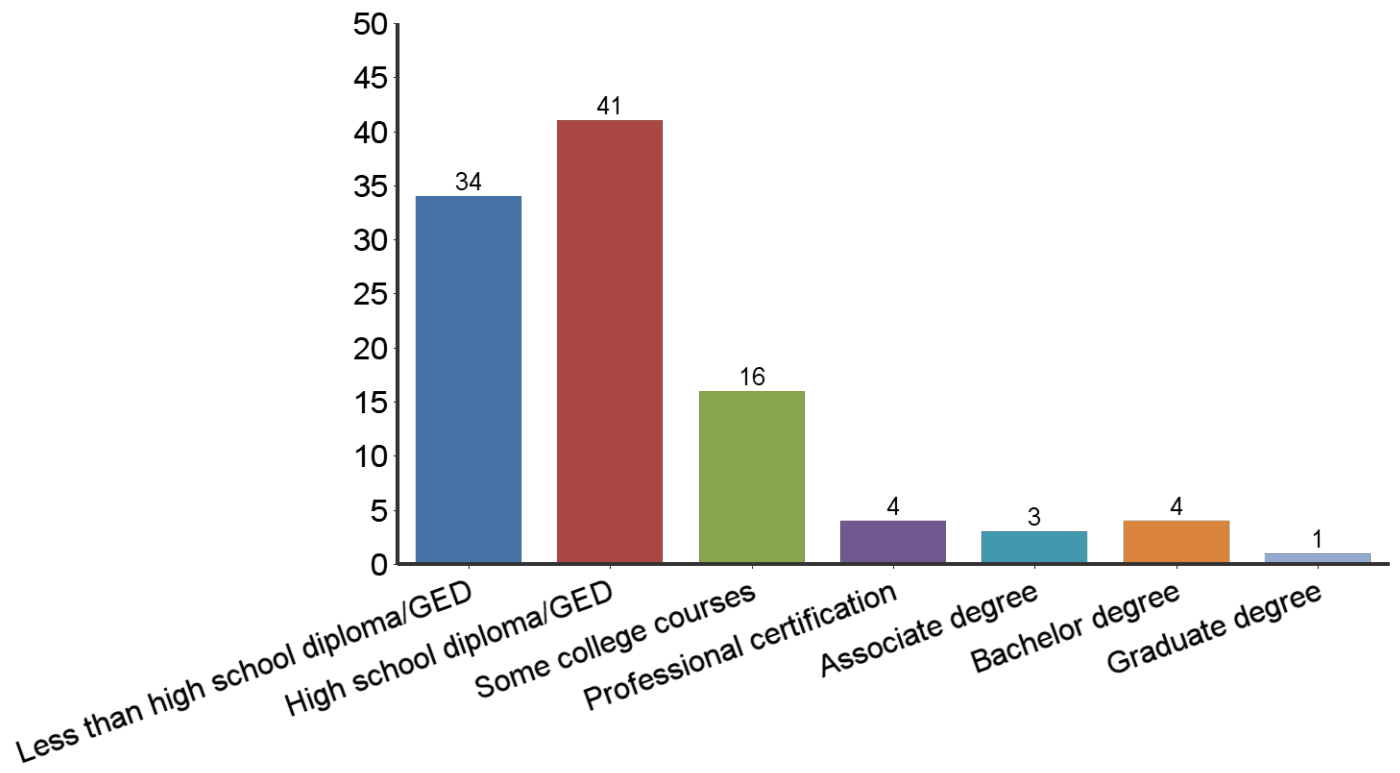
#	Answer	Bar	Response	%
1	Own house		17	16.7%
2	Own condo/duplex		6	5.9%
3	Rented house		31	30.4%
4	Rented condo/duplex		9	8.8%
5	Apartment		29	28.4%
6	Community living facility		6	5.9%
7	Other		4	3.9%
	Total		102	100.0%

What is your household annual income?



#	Answer	Bar	Response	%
1	Less than \$10,000		55	64.0%
2	\$10,000 - \$20,000		20	23.3%
3	\$20,000 - \$30,000		6	7.0%
4	\$30,000 - \$40,000		1	1.2%
5	\$40,000 - \$50,000		3	3.5%
6	\$50,000 - \$60,000		0	0.0%
7	\$60,000 - \$70,000		0	0.0%
8	\$70,000 - \$80,000		0	0.0%
9	\$80,000 - \$90,000		0	0.0%
10	\$90,000 - \$100,000		1	1.2%
11	More than \$100,000		0	0.0%
	Total		86	100.0%

What is the highest education achieved you have achieved?



#	Answer	Bar	Response	%
1	Less than high school diploma/GED		34	33.0%
2	High school diploma/GED		41	39.8%
3	Some college courses		16	15.5%
4	Professional certification		4	3.9%
5	Associate degree		3	2.9%
6	Bachelor degree		4	3.9%
7	Graduate degree		1	1.0%
	Total		103	100.0%

APPENDIX B:

FOCUS GROUP TRANSCRIPTS

Focus group moderator A: *
Focus group moderator B: ~
Focus group participant 1: #
Focus group participant 2: &
Focus group participant 3: ^
Focus group participant 4: @

**So I'm going to read from a script and that just helps us to make sure that both groups are doing the exact same thing so bear with me if I seem a little bit robotic when I read but we're going to get started. And so yeah, let's just jump in. My name is Kate, I think I met all of you at the doorway. This is Grace and Maddy so they're going to kind of assist with the moderating. So we're students at the University of Michigan, I know some of you were confused about where we were coming from, we're working on a project interested in learning about the drinking water throughout the state of Michigan facing Michigan communities, in particular here in Benton Harbor. And today's conversation is going to be used to inform a report on drinking water issues in Michigan and it will be published by a non-profit group "Michigan Environmental Council", MEC, as well as the University of Michigan Graham Institute, so we appreciate..thank you for taking the time to talk with us today. The purpose of the group is to learn about the water issues that Benton Harbor residents are most concerned about and the ways in which these issues have been dealt with in the community. There's no right or wrong answers at all, only differing opinions, and we really hope you're comfortable enough to say what you really think and how you really feel. If you are all agreeing and consented on your forms, we will be tape recording recordings, not video, there's no video, since we're not able to write down comments quickly enough to keep up with the conversation, we don't want to miss any of your comments. While we might use segments of the discussion in our report, your identity will be kept totally confidential. Your name will not be associated with any of the quotes, and that's not something we'll keep after this is done. Okay? If this is a discussion is something you are interested in being a part of and you agree to being tape recorded, you already filled out your form and signed it, so we're all good to go! So the Focus Group will last about an hour. Over the course of the group, we'll be learning from you and would like everyone to participate as they feel comfortable, there's no right or wrong answers, feel free to share your point of view, even if it's different from what everyone else says in the group. Everyone's thoughts are useful and important and since we're tape recording, it would just be helpful if one person talks at a time, that way we don't have to figure out what was said later. I will be a moderator just to facilitate the discussion. The assistants will take notes and kind of make sure the recordings are working. If you need to use the bathroom or anything, feel free to just get up, you don't have to wait or ask, and feel free to get more food, please get more food, and at the end we'll have some cookies for dessert, and I think that's the main points I'm supposed to say! So before we get started, let's just go around and introduce ourselves. Just say your first name and why you decided to come today, or anything like that. So do you mind if we start on this side?*

[#\[Name\]. I've just come to find out more about the water.](#)

[&I'm \[Name\]. Um, if you notice, with the water though, if you run the water from your faucet or if you put it in the cup, you can see the parasites in there. And you know that one minute it's there and the next minute it's not there and then the water is not clear. The water is like a smoke...](#)

[#grey.](#)

&Grey-ish cloudy. You know, to me, to me it's unhealthy water and we're supposed to have some the best water there is, so.

**Thanks for sharing.*

^My name is [Chester]. So basically the reason I came here is to give an opinion on the water and stuff. Like basically what she said, but even though if the water is clean, it can still be parasites in there. So that come from all the old pipes and stuff. They need to take them out and put new ones in.

**Yeah, and we'll get into some of these issues. Thanks for already getting us warmed up.*

@My name is [Name] and I'm..repeat what they said but what my opinion is is, if they get down nitty gritty and stop, uh, Benton Harbor is going down, so there ain't no hope for it, I don't think there's not hope it'll come back, but soon as they take this out of [unclear], they going to clean that up for people to drink and take baths. But, other than that, you still see, like they got a sewer pipe, one going into the ocean and one coming back up. You know? I don't drink it. I buy that..that thingy that you, you know

^The little faucet little thing

@That. And I notice a difference when I take it off. When I just take it off and let the water

^The purifier thing

@Yeah. It helps clean that out. But the water do look like it's salty sometimes. Like you see little spot or something in them.

**Well, thanks everybody, for sharing a little opening statement on what's on your mind or what your issues are as we get started here. So those were just introductions, so I think everybody, we got names and kind of what's on their minds at least to get going. So, I'm looking forward hearing what else there is to say on these topics, so it's time to get started! I think we're going to start with just kind of an open ended question and that is: to tell us a little about how and when you actually use your tap water from your faucet.*

#Everyday.

Yeah, so tell us more.

#Use it every day. Uh. I notice that uh, it'll be in the kitchen, the faucet I got, a nice one like the old kind that you go to with the twist, and it's funny because I get confused! Cold water's this way and hot water's this way and I go back in the middle part, and I be getting a better look at this water, and I be saying "Oh! I think I've got hot water!" and my grandbaby's told me "No that's cold water!" and I said "No! Look at that water, and look at that other water. Is the difference in it...you know what I'm saying? And I put the..it's more cleaner than this. But. That water. I don't drink it because sometimes...I go buy my water. I buy it at the store.

**Bottled water?*

#Yeah. They ain't said it not good but I buy my water

**Okay, we'll talk about that in a second. Can you tell us how you use your tap water? What do you use it for?*

#Take baths. Wash my clothes. It make like..it has a smell to it.

**Yeah, we'll talk about that, too. So, what else..any other ways you use your tap water from your faucet?*

^I be washing my shoes often and stuff. But also what I notice is sometimes the same water I've been using comes right back out. That's how I know that the pipe's not connected right. They're only connected to one pipe to lead back up to the sink or whatever you use it for.

**Are you saying that you think the water is not coming fresh like new water, like it's recirculating?*

^Yeah, like it's not fresh water. It's like old, dirty water.

**Okay, so what else do you use the water for from the faucet?*

^Sometimes I boil it and put it in the refrigerator afterwards so it be clean.

**Oh! And then do you drink it from there?*

^Mhm.

**Okay, cool. So any other ways you use it?*

^Besides putting it in a water gun

**Awesome. Anything other thoughts over here?*

&I wash, well I use it to wash my truck, um, I spray my house down, do my driveway. You know, I use it for normal things, but it's best using it than drinking it.

**Okay, so do you drink it at all?*

&Uh uh.

**Okay, same with you?*

#I don't, I don't drink it.

**So it sounds like a table full of people that don't drink their water often from the faucet, or if they do, maybe boil it.*

&You see people more around here buying bottled water than you would see a person that's drinking it, unless it's a person that just don't care. But. Other than that, you'd see most people buy water. Like if people have events here, you know, they buy water, they buy cases of water, you know what I'm saying? Or, you know, yeah, most of the community buy mostly their own water, you know, unless they boiling it. But me, I just use it for, like, cleaning up my house, washing my clothes. I don't drink it.

**Can you tell us about what influences your decisions to use or not use filters, a water filter, on your faucet or in a jug?*

&Well me, personally, I just feel like it ain't gonna make no difference because of how nasty the water is, you know what I'm saying? You look at water and tell when water is good for you and when it's just not, when it's just bad for you. When I'm gonna put my mouth up to something, I already got enough of that problem, I don't need just a cup of water that's supposed to be healthy for me to make it even worse. You can look, you can run the water from the faucet, and tell that that water is not good for you and I feel like, personally, using the filter is not going to get everything it needs to get up out of there anyway. So that's why I don't use no filter. Like they make the filter, um, pitchers, where you put the water in there and pour it in there, but what's the sense? To me, that, the water is too filthy for that. I can see if there's just a little bit going on, but there's a whole lot going on in that water. I stick with bottled water.

**Any other reasons why people use or don't use filters?*

^The reason I don't like filters is because most of the filters that you go buy or you get from like your landlord and stuff don't really work. They're already used filters, so that's why I just. What I was thinking, it kinda doesn't work yet, I'm still testing it, but I made a filter and like I'm still testing it out on my own sink now. It's progressing but it's not fully how I want it to be. But like, the filter thing, I don't think it really works.

**Is there anything else you can tell us about the filter you're talking about or how you're making it or how you know whether it's working or not?*

^Um, because me and my brother, we like, so we have this filter, and it tells us, like, if it took all the dirt out and stuff.

**So you said that the other filters that you're getting are already used filters. What, I guess, how...What is telling you that? Is it that the water just isn't cleaned? Or is it...*

^The filter is dirty and the water. It just makes the water more dirty.

**Any other thoughts on filters before we move on to the next question?*

I had my.....I had them every two or three months. And they last!

**What influences your decision in buying them? 12:22 mark*

@They cheap! They fast and they cheap!

**Do you know what kind they are?*

@I get that, uh, that...pure. Pure something

~Oh? Is it the Pur? P-U-R?

Yeah, yeah.

**Okay, and how do those work for you?*

@Good. They just add a little _____. This error's like township. Benton harbor township. I just don't trust the water period. I see what's going on in Flint, I don't even drink it. I just buy my water.

**So um, so I think we'll come back to another issue, but I'm going to jump to the question about bottled water since a lot of you brought that up. So can you raise your hand if you buy bottled water sometimes?*

@I buy cases.

&Yeah, I buy it all the time.

**And can you tell us about, like, what influences your decision to drink or not drink bottled water?*

&Well, I'm going to be honest with you. I don't drink all bottled water. I have my specific kind of water that I like. And um, if it's not those then I don't buy them, you know, but...bottled water is the best, because, you know those people who drink the water from the fountain? They be sicker. They always end up in the hospital, they always have a form of bacteria going on in their body, you know, so bottled water is one of the best solutions. But, you know, that's why I buy bottled water. There's the particular bottled water I use, so...

**It sounds like health, like staying healthy, is a big factor? Is there anything else that influences, you said you only buy the same kind?*

&Yes, because I like the way it tastes! You know, these bottled water, they have their own different tastes! You know what I'm saying? You know, it's a particular kind of taste that I like. Aquafina is one of my favorites. So.

**Is there anything else, does anyone else?*

@I buy little things like this. And I buy the case. I don't drink too much water, my bladder won't let me! So, I buy the little thing, freeze it, and I get it out that morning, let it sit, and I sip it up and crush the ice up real good. I take two of them out. I find that two water, I don't buy it all that nice...it's another name. Some of that bottled water, they do have a nasty taste to them. I just get the one kind. And I just say...no, no, it's the same that I have that thing! The thing! I got some in my room! I got cases! So when I want it, I go get it, and I drink it. That don't leave no nasty taste in my mouth, the other ones do!

**So you don't drink your tap water with the filter?*

@Yeah, because the bottled water I buy is made by that.

**Oh, I see, do you have a separate filter that you use on your sink or in a jug?*

@No. On the sink.

**Oh you do, okay.*

@Just put it on there.

**Yep. Okay. So, do you have any thoughts on bottled water?*

^So, the only bottled water that I drink is Gatorade. And I drink this one bottled water called Core.

**And what influences what you're drinking or why you're not drinking water?*

^I really just like taste of gatorade.

**That's fine! Um, okay, anything else on using tap water or bottled water? Okay, so the next one is just kind of a general question. Can you tell me some things about Benton Harbor water that you heard brought up in your household or community?*

@I can. They bring up the sky-high water bill. I'm trying to save money, and I'm broke!

**So they went sky-high on the water bill?*

@Right! Now, we gotta pay 16 more dollars!

^I was just gonna get there!

@Gotta pay 16 dollars on the water bill and they came and took our trash cans! We gotta go to the store and get our own cans! They can't afford to pay, pay uh, the garbage people, whatever people use, they want you to be. Like uh, my water bill, I got it all the way down to 20-some dollars, and I got a disconnection bill. I'm a dollar short, a dollar short! Well, which one would you like to keep on, the lights or the water?! Well, I gotta have both! I'm disabled! I gotta have my lights for my breathing machine, and I gotta have my water.

**Did anybody contact you, or was it just the bills you were receiving in the mail?*

@Oh, person to person I contacted them, across the street! And I said, well I'm a dollar short. "Well, ain't nothing I can do!" and I said another dollar, well, we have to pay 16 dollar extra on water we can't even drink! And y'all come and take our trash. People have to set their trash bag out like in the old days. Like in the old days, you know, in the old days when the garbage men just came and picked up trash and threw it in there. That's what we got now.

**Um, I'd like to stay focused. It sounds like there's a lot of issues that you're frustrated with, I understand. Let's try to stay focused on water, if that's okay.*

@It's water!

**So is there anything else that others have heard?*

&I paid Benton Harbor...water is just dirty. Period. It is. I'm gonna be honest with you. I feel like this. If they get the right people in seats to do what they gotta do as far as this water, whatever situation this is, you know what I'm saying, it'd be a whole lot better. If they got professional people who know what to do. Because it's not only us who don't drink this water, or have to deal with this water. It's our children too!

@And elder people!

&And personally, this water is. My daughter took a bath in this water, and she ended up getting a rash on her. And you know, and I understand the issue is just water, and I feel like, as a human being, this ain't just in Benton Harbor, it's anywhere, you know what I'm saying? If they get in the ground, change these pipes, do what they need to do, then we wouldn't have this problem with water like we do. You know? And sometimes, I feel like, you know, I'm surprised it wasn't us who got the water instead of Flint. Because that's just how long this water has been a mess. It didn't just get like this! It's been like this!

20:04

**How long do you think the water has been a problem from your point of view.*

&Since I was little. When I was little, you could see those little black things coming out of the water, it was all cloudy, you know, but I mean, it's a whole list of problem you writing. But I feel like if they just put the right people in office, then it would be better. Because if you do the research, we've got some of the best water! But as long as we ain't got the right people, we ain't never gonna receive the water! This ain't just me. It's older people. Our senior citizens. Some of them drink this water because they feel like it's okay to drink it. And this stuff with this filter, to me, personally, I just feel like the filter don't help! With all the stuff that's going in. There ain't no way water is supposed to be smoke-grey. You supposed to be able to lift your cup up, see how I see through this cup? That's how I'm supposed to be able to see through my water. And people, would, yeah, right, if they do what they need to do, they we'll get the water that we're supposed to have.

^If they take all the lazy people out and put the real workers in. All you gotta do.

**Any other thoughts on issues that you've heard about? Let's talk about, we sort of brought this up to talk about it, but I want you to think back to the last time you paid for drinking water, whether it was tap water or buying a pack of bottled water, what sticks out to you about the amount that you paid?*

&Okay, Not with that insurance. I'm going to say that. I can see if y'all charge a certain amount for this water. What I'm going to say is it's just corrupted. That's all I'm going to say. Pass it on to her. Cuz it is the ugly-sided truth. The way this community is, you know, and this is how I feel, instead of this community sticking together...I remember when I was a kid, and I know this ain't got nothing to do with this, we had a community that was stuck together. We had people who fought for our community. And nowadays, everybody just let go, instead of standing up for

what's right. The way they do with these water bills is ridiculous. It's ridiculous. You'd have to live here to know. And it ain't just occurred. It's been going on for years.

@I believe it. They paying their bills, my bills, everybody's bills.

&It's just a lot of issues that's here, you know, that need to be addressed. And I feel like, we get funding. So, if yall would take this funding and dig up these old pipes that's been here for years and put up some new pipes up in here, then we'll get better water! That's why I just said, it's corrupted. It's just so much that go on, and you'd have to live in this community to know, you know? That's all I can say about it. It's ridiculous what they're charging us for water. I can stand it if they're selling it at the store but I mean.

@Well, when you buy water at the store, you buy, \$5, 2 for \$7, and it's the good water.

**So how do you feel about the value of that water for what you pay?*

&I feel better.

**So when you buy bottled water, you might feel that it's cost effective, but as far as the water bill, for the water you're getting?*

&Right, cuz my ___ get running water and then they gonna bill you

@And then what make it so bad, those trash cans she was talking about, we pay for them on our water bill. Your trash is considered in your water. So we basically pay, when they added them, we basically pay for them trash cans. That's why I say it's corrupted. It takes it to live in this community just to know, you know, what goes on, you know. So. It takes more than one person to fight, I know that, and then in this community, and I've been in this community all my life and they just don't care no more. So addressing the issue about water, some people don't come out and address it because they feel like why address is when nothing is going to come of it

&Back in my day when I was coming up, we had a lot of people fighting for that water. And now, one time, they was putting pipe down but it was only certain areas they were putting new pipe now. And a lot of people were asking why you putting pipe down on third street when all the pipe needs ___

^Just like they went and done that down at the high school

**So when you're talking about the pipes being replaced, was that recently or years ago?*

&Years ago. I'm fifty five. I'm getting what the old lord's going to give me. I was about, seven or eight, when that happened. Now you guess how long that's been.

^They just redid the pipes up there at the high school.

&That's the high school. That's for kids.

^I know. I'm just saying, for like

&This is for the community.

^I'm just saying they could do that but they can't do it for everybody, though.

&They take the money and ran with it

@But not to cut you all off, and then, it was money taken from us for this stuff to be done so you gotta understand ___ because I say about seven years ago, they took, the people who work, they took their stimulus checks to pay for stuff like that, do you understand, and it never got done.

&Cuz they pocket the...

@That's why I said, when I said to you, when I said they corrupted. I didn't say it to be rude. You've gotta be here in this community to know what goes on in this community. You know, and a lot people don't address stuff cuz they say, why address, why go down here and fuss about this water when nothing is going to be done about it. And, you know,

**Those are all great thoughts, thanks for sharing. I'm going to ask a little bit more about the cost of water. I wanted to find out about the water bill, because you mentioned a few things that were added on the bill. My question is: how easy or hard is it to understand your water bill.*

&Oh, like this, I'll tell you. I got one today. I just got it. This, I read. Can't talk right now. Uh.

@There's some pink on the back.

&Three-seven...Right here, private balance.

**Is that your water bill?*

&Yep.

**What's sticking out to you right now? The amount that it is?*

&The amount that it is, that I got it down to two-something. It's still got three-seven-four!

**Okay, so it shows how much you still have left on your bill?*

&Yeah!

**Does anybody have thoughts on how easy or hard they are to understand?*

&To use the water is worth 13-95-A Denied. \$43. Okay. What's C-A?

**So I see you looking at the back, what that means?*

&They got a thing on the back of it that tells us what it means. But to me, I stay in an apartment complex, and I'm not trying to cut off. And when you stay in an apartment complex, your water

run together. But, how do you pay one sum for one unit and one sum for the other unit when it's the same pipe!

**So there's different charges for different units?*

&How, I mean, it's just based on the water. But how could you charge. This is what I'm saying. How can you charge me for a unit for the water for the upstairs when this runs through the same pipe? There's not separate. If the water gets cut off, it gets cut off period. The whole building. So how do you charge separate for two different units.

**So you don't get a bill but you're charged by the building landlord?*

&Yeah.

**Okay. So does anybody else get a water bill or have other thoughts on the water bills?*

#I don't pay a water bill.

^I do pay water bills. Like I help my mama when I'm able to but like today it took out my check. And my check was a number like 200.

**Okay, any other thoughts.*

&It's just that garbage, sewer...

@Sewer. Your sewer is combined.

**Sometimes sewage is combined with the water.*

&They ain't got sewage.

@Yeah it is

&S-R. Oh there it is.

**Any other thoughts?*

&33-35. They don't have the..

@You have a sewer! Yes it should!

&Cuz they came in here last..this summer, and was changing them things for the water in houses.

@Meter.

&Right! But they can't change mine! Mine's installed, molded to the ground. It's in there! They can't get to it. My water bill should be lower. They said they gotta pay me back \$110 a month!

@Yeah, mine too! I tell you, they charge me for two different...

&See? My bill ain't.

**Does anybody have thoughts on whether the water bill is increasing or decreasing recently?*

&Going up!

**Going up, that's what I thought I heard you say before.*

&It's going up. Water going up. Yep.

**Any other thoughts on the water bills? No? Okay, the next question is, um, about trust and communication. We touched on some of these topics already a little bit, but trust and communication might be important in solving water systems in communities. So, my question is, who do you trust to provide accurate and up to date information on water in your community?*

@No one!

&Nobody!

@I'll say it just like that. You can't even trust the mayor, and that's just how I feel, because they have a lot of corrupted people sitting in that seat, so when it's all said and done, nobody!

&I don't trust nobody.

**Is there anywhere anybody's getting information currently, anything come to mind?*

@How we find out what goes on in this community is a class that we take. We did it already but we still meet up as a group. It's a group to help fight a lot of issues, like we go to the board meetings, um, school board meetings, and like, you know what I'm saying? So that's how we find out, you know, a lot of stuff that goes on in the community. So, that's how I find out my information.

^I just take a wild guess.

**Okay, so a group that just helps kind of organize and educate?*

@It's like a class that's built for people to come together and fight for the community. If we ain't working, you know, we meet, you know, cuz we usually meet in our class around this time. So, if we ain't that, we go out and work, and there's only so much you can do, but I find out a lot of information today and you know, it just take a wild guess. Just sit back and look.

**Do you know the name of the group by any chance?*

&It's through St. Vincent de Paul. It's called...um...we shouldn't read the newspaper. If you ever get the ___ Benton Harbor. St. Paul de Vincent is doing.

@ It's a program actually to show you how to save money. It's a budgeting program. It's also, when you're in that for this budgeting program, you come together as a group and talk about things that goes on in the community to change the community, and then we make this pledge to stick together and be the voice for the community. So basically, that's what it is. It starts off as a budgeting program and then we all get together and discuss the situation that's going on in the community and we think of situations to get us out, you know, to come out of them. It's something that got to do with poverty. It's a name like that. It's basically showing you how to save, budget. Like, what house to rent when you got a certain income and stuff like that. But it's also a group that comes together for the community.

& Okay. And has anybody heard about any other things like that, especially related to water in the community? Any groups or any discussions or anything?

**I heard...*

@ If you don't get out and look for stuff, you'll never know, you know? And

& If you don't get the newspaper or get on the news, or like, someone is, I get something by 5:30, 6:00, and I catch the news. And that's how I know. The water, that's how I knew that there's water in Flint. And I said "What?" And they said "My mother drink that water and she's dead" and I said "Well, no more water for me!" I ain't trying to be funny, but I ain't drinking that water, my daughter said. That water, UGH. Mama, take that water back. And no, I ain't taking that water. And I don't drink it. I go with bottled water!

**I heard from other folks, as well as what you're saying, that the Flint situation really changed things. Is there any other thoughts that anybody has about the, thoughts were around water before Flint versus afterwards?*

@ What you're always saying, do not drink your water because it's parasites in there!

& They said boil your water, let it sit a couple days, then you drink it. I go and boil it and I wouldn't drink it.

They can't catch those fishes down in the creek. That's really _____. Who gonna eat something that's caught

@ The water is contaminated

**The river?*

& I mean that's..

^ I mean that's messed up. I really gotta boil water for real because I got surgery done on my shoulder, so I really gotta boil my water now

**And where have you heard the messages about boiling water from? From the city?*

^ My grandma always taught me to...

&The city.

**Do they put it in the news?*

&You heard it on the news!

^My grandma always say "I'ma kill you"

@Boil your water before you use it.

**Does anybody else have, I heard somebody mention the parasite issue again. Can anybody elaborate on that?*

^a couple of my friends told me that because one of them actually went blind off of drinking the water.

&They found, what you call them little metals? They found those metals in it. You know what happen was, the news got onto it. I heard, and I said "What?" I don't want that. I don't want that.

@Yeah, with the parasites. They said that on the news, that that's contaminated. But anybody in their right mind, if they've got common sense, you can look at that water and say that it's contaminated!

&They told me, why have the smell to it

**Is it something anybody wants to discuss? The smell?*

&It's funky. Why you smelling the water? Girl, smell that water. I ain't smelling that! I wouldn't drink it. No, not that water.

**I was going to ask, well. Is this an issue that is always present?*

@Yeah!

@The thing with this water is, this water ain't just occur, it didn't come out when Flint water got as bad as it did. The water here been bad. And I'm not talking about for a couple years. This water has been bad since I was a child, I was born in '88. This water has been bad. This ain't just occur. When I was little! My grandma didn't like for us to drink the water. So.

&Let it set.

^All I know

&Let it sit out, let it cool down, then put it in the refrigerator, let it get long chilled. That's the only way I'll drink it. Make sure it look good.

@Yeah, they did. Once upon a time they said it was contaminated. It had metal in it, parasites, you know, a lot of stuff. Just this water.

&I don't drink it. I bottle my water.

**Before we move on, can anybody describe the smell that you smell?*

&A funky smell! Like an old, like something died. Like it has an odor. Who going to drink that?

@It smells like...like you know how if you go by the river, you know how you can smell the river water? Well, if you go run that water out of your faucet, it's similar. But the only thing different is that it just comes, it just coming out of a faucet. You know. And I always thought water ain't not supposed to have a smell.

&There's a fish smell to it sometimes. You know, sometimes it's got _____. You know, people washing their hair, people skin getting breaking out. I seen my friend, and I said "Girl, what's wrong with your body?" and her hair was missing on the sides. And she said "Girl, I washed my hair and I woke up like that" And I took a bath. And I said, I can't. I take showers. But I won't wash my hair. I would never wash my hair unless I was getting something. Time to go buy me a hair. I'd have to go buy a wig

^That's actually what happened with my sides, the reason they look like that. Ever since I had washed my hair.

@My daughter got a rash from that water. And she came to me and said "Mama, look, Mama, you see this?"

&She was scratchin itching. I say. Granny, wash that off. And I said no baby, you might be contagious. And she got back! And turned my table. I said I ain't gonna tell your mom, scratching.

@I mean, it's bad, that water. I promise you. It's bad on your skin.

**So, um, I'll let my assistant moderators ask any questions I forgot, but before I do, of all the things we talked about today, what do you think is the most important issue.*

^Water.

&Yeah, the water.

**Specifically, what about the water?*

@Like, changing them pipes and getting us some clean water. That's the most important issue cuz there about to be some Flint water.

^I'll stock up on water bottles at home.

@Yeah, but still, you're paying them for that water.

&You pay a month

@I feel like if I pay you for something, it should be the way it's supposed to be.

^True.

@So that's the most important issue. Getting some clean water.

&They ain't gonna do anything. They ain't gonna do it. I'm just wasting my time speaking. I'm serious.

**That's how it feels?*

&Yeah! They care? No. They don't care. As long as they don't.

^The only way we can probably get it done is make them start caring. It's something so perfect in my head.

**Anything else from your end?*

#No.

^I care.

**Um, and do any follow up questions?*

~Yeah I have a couple questions. Um. Yeah, so I think , [Name], you had mentioned that you're part of this group that looks, learns about the community and issues going on in the community.

@Us three.

~Oh? All three of you? Okay, great. I'll make a note of that. Um, so, do you actively in any way research the water? Do you look online? Do you look, particularly read the newspaper to look at water issues, is it just what you hear people talking about?

@No, we pull up certain things. Like, whatever's going on in the city, in the community, or whatever hits the news, that, you know, and that's how we discuss our, what we want to discuss for the day. But. With the water, you know, you don't have to, it's just common sense. But we have looked up issues before. That's how I knew it was contaminated. They got parasites, a lot of stuff, but you know, a lot of people feel like in the community, like, why address it when nothing is going to be done about it. And so, but, that's how I find, how we look up the conditions of the water, or when we go there, we have a lady who do a lot of looking up, too. She'll just say "Um, don't drink the water, you know. You can use it to clean your house and stuff, but you know..."

**So that's another member?*

@Yeah, she's in the group. She's one of the teachers. One of the head teachers.

^How I found out there's parasites in the water is I drunk some and I actually see one floating in my eye. Like and I didn't know what it was and I freaked out.

**That sounds scary*

^And like, it's still there. I can actually see it now.

**And you connected that with water because you had it right after you drank the water?*

^Yeah, and I never told my mom because I thought she would freak out and she would end up having seizures and I never told her. Cuz the doctor told her she's having seizures and she might not live this time so I don't want to tell her and then have that happen.

**Um. Any other questions?*

~I don't think so. Um. I don't think I have anything. I guess, I'd like to, I guess, finish this portion. We have a survey we'll ask you guys to fill out after this, but I just wanted to make sure that I have a good idea of what some of the major issues are. Um, so a couple things that we talked about: You all buy bottled water, primarily because it tastes better, and because even though you're paying for the bottled water, it's worth it for the quality that you're getting, and you don't feel that you can say the same thing about the water coming from your tap.

@Right.

~Great. Um. So in general, the water from the city, the water coming from the tap is pretty cloudy, dirty, there's a bad smell associated with it almost like similar to river water.

~Right.

~Okay. You believe that a good way to fix this is the pipes in the city need to be replaced and they've done that in some areas but they're not doing it all over.

@Right

~And part of this is because. You know that you're giving money to the city, but you don't really trust that the city is using this to improve the pipes. You think it might be going elsewhere

@It is!

~Okay

&They pocket it!

~And then a couple last points. city water is very expensive, and the cost just keeps increasing as they're adding other things like the garbage cans and that sort of thing to it. Um. Okay. And then also, you all are very involved in the city, so you're very, you understand what's going on, you're actively...it's very important to you to understand what's happening in your community.

@Right.

~Right? Perfect.

**Anything else that somewhere we missed or didn't capture correctly?*

^They need to take that money to go and change the pipe.

&Yeah, that too.

~Thank you so much, this is very, very helpful.

**Yeah! Thanks for caring so much and being very open.*

FOCUS GROUP 2 OF 2

* = Focus moderator

& = Participant 1

= Participant 2

% = Participant 3

@ = Participant 4

\$ = Participant 5

^ = Participant 6

00:00:00

*I'll be going through a couple different topics with you guys, but if there are topics that you think we are missing, that you think are important, we'd really like to hear about those too. So, if you think of anything—

@Like water?

*Yeah, yeah, kind of like related to water. If you've got other stuff that—because we might not think of anything or we might not think of every single thing that should be discussed or that would be important or that would ... that you guys would think is important, so. I wanted to do a little introduction just so I know your name, so I was thinking we could go around and say names and like why you came tonight?

&My name is [name] and # invited me.

*Awww, cool.

#And I'm [name] and I invited & and these men's maybe I don't, I don't know name is ...

[laughter]

^My name [name] and I'm just here with my mom, I don't know what I be getting into sometimes ...

@My name [name] and I was invited here.

*Well welcome, we're really happy you're here. Thanks for your time. So I'll just kind of start I guess, are you guys ready?

[agreement]

*Ok, so the first thing is tell us a little bit about how and when you use your tap water?

&Cooking

*Ok

&Showering

*Do you use it for drinking?

& and ^Yeah

\$Uh-huh

&Animals too.

*What kinds of things do you think about if you think about if you're going to drink your tap water or not?

@Well I got one of them water dispensers. I keep it full.

*Ok, is it like a filter thing?

@Yeah.

*Ok, cool.

[\$ enters]

\$Hello, hello.

*So we're just talking a little bit about how, how people use their tap water if it's cooking, showering, if you drink it, if you don't ...

@For the toilet too.

&I hadn't thought about that.

[laughter]

&My toilet flowing!

*So you use the filter with your water?

@Yeah, I got a water disposal, it's a bottle of water take it and put it in the big old thing ...

\$Then it come out the disposal.

*Oh! Got ya, so it's like that thing [gestures—

@Yeah, I don't drink the water out of the sink.

*Oh you don't, ok.

\$One minute it's safe and one minute it's not, but if you going to call it safe then just all of a sudden "Don't drink the water, something wrong with the water". We already infected so what you going to tell us "Don't drink the water" we just had some three minutes ago!

*Ah, so have you had a call before where someone called you and said don't drink the water?

#They puts it on the tv.

\$Then they send you ummm letters to your mail.

&Letters to your mail.

\$Flyers and stuff.

*Ok

\$And it be to late so, to me, by us drinking it and childrens drinking it to me I think it should be tested about four or five times out of the year. Before they just up and say don't drink the water.

#Do you remember when that water had been infected for 20 years and they didn't say nothing about it to nobody.

*So I'm curious when if you can remember a specific time when you saw something on TV or you remember getting something in the mail and what that was. And like how you felt about it.

#Well see, I don't drink that water. When I was drinking that water I had all kind of health problems. And at one time I was on 25 different pills and now I take eight or

*Ok. Do you think, is that something that you've heard other people say too? It sounds like a lot of you don't drink the water, is that common would you say?

#Mmm, mmm [negative]

*Ok, do you [to \$]?

\$Bottled, baby.

*You do bottled, ah ok.

\$Bottled baby!

&I get me some water, I been sick.

*Bottled or out of your tap?

&Yeah, out of the tap. It's good to let it sit though.

*Ok.

&Get all that stuff out.

#You don't smell that, that chlorine in that water?

&Yes I do.

*Chlorine, ok.

#I like the well water because it's the very best water.

&You can put that in the refrigerator too and let it sit a minute, it won't taste like well no more.

*So did you have a specific experience or what made you decide that you were going to stop drinking and start using the dispenser thing [to @]?

@Well like they say, sometimes they call you and say it's contaminated and ... different stuff.

*Ah, ok, ok. Do you remember when that was, the last time that that happened?

#They haven't sent anything out in a while.

@No ...

*Not in a while? Ok, ok.

#But there's something wrong with it, when you drink it, something wrong with the water. As soon as you start to drink it, soon as you cut the water on you can tell something wrong with it.

@Yeah.

*What—how can you tell, you said you can smell the chlorine, is there other ...?

#You can smell the chlorine it's like if you run, if you don't use your water in the [face bowl?] when you cut it on you can see black stuff coming out out out the water. I don't know what that stuff is.

*Ok, ok. Do you ever use a water filter?

#Mmmm, mmmm [negative]

*To filter it? You just do bottled and then—

#I do bottled water and that's it.

*Ok, ok. So I guess my next question is I'm curious to know some things that you in your household or in your community or just around, what people, what you've heard brought up about tap water in Benton Harbor? Like what are you hearing?

#Everybody that I, when I see them they got a bottle of water with them.

@Yeah.

*Everybody?

#Almost everybody I know have a bottle of water with them.

*Ok, I'm wondering—

%Well I drink it all, unless it's well water—I don't want it [the well water].

*So no well water?

%Nah-ah.

*You don't do the well water?

%It smell like eggs.

@Ah ha [agreeing]

%I'm going to tell you something else that it do—like if you got a perm in your hair, wash it in the well water and it take it out. Like if you've got it natural though it won't take it out.

&Well you've got to boil that water too, so ...

%I don't care if you do boil it, it still smell. [unintelligible] always city water.

*Which water do you boil?

%Well.

*The well water, ok.

&You boil it all.

%If there's something wrong with it they tell you to boil it.

&Yeah.

*Do you remember that happening in Benton Harbor?

& and %Hmmm, hmmm.

*Like often or ...?

%No, but it do happen.

*So is, if one of those notifications went out would that be enough, it sounds like it is, enough to make you stop drinking the water like forever?

%Till they say it good again.

*Ok, ok. So is buying bottled water, how is the price, do you feel like it adds up like is it too expensive or it's ok?

%Sometimes you catch it on sale.

&Everything gets expensive.

@Catch it on sale ...

%Everything goes up.

*Ok.

%[to @]Get me some of that cornbread, or whatever it is ... bring me a piece of that bread.

*So, for things that you, is there anything about the tap water that you like?

%Is there anything about it I like? Well ...

&You can take baths in it. But sometimes you can't take a bath with well water, you have to have a ...

%Some folks don't like tap water at all, but it don't bother me. I pull the tap water put it in a bottle put it in the freezer and freeze it. Then drink it.

*Ok, ok. So, if you, if you were to say what the most important thing is that would make you decide to drink water or not; would it be taste, cost, how much you trust it, like what are things you think about?

&Cost, taste.

\$I was just going to say all of it.

*Ok. And you said you don't drink—

\$Until the tests is showing that the water is ok, you know because some some bad water will break your skin out, take your hair out ...

*Ok

&And you have to be careful about the water coming out of the faucet because it ain't always good water coming out. Some water is hard too.

%One time the water really got me, was in Texas girl. Look like my head broke out and look like a rattlesnake all dried out. My whole body was like that with the Texas water. Went to see a friend, stayed a month. I looked at them like "The two of you should have told me". Used to fetch it [the water] and everything. Then I talked to this woman, she stayed in Texas and she said Texas water was the hardest water in the world ... it sure got me. I had to buy me some Neutrogena soap and once I got up here I was still scared.

*So, talking about information: what kind of sources of information about your water do you trust, like what, like the local news, friends, neighbors, like who is the group that you trust the most?

%News.

&The news and the newspaper.

%Sometimes on the Facebook.

*Like the local news?

&Yeah. Like # ain't got no Facebook and she know everything and go on and on.

*Wait, who knows it all?

^#

&# does, she got no Facebook page.

\$I got Facebook but I ain't go on there, Facebook just drama.

&She [#] know whatever going on.

*What would be a group that you like wouldn't trust to give you information about your water?

\$My neighborhood.

@The people on the street.

\$The city workers.

%The city.

*The city workers and people in your neighborhood?

[agreement]

&Yeah.

*Ok, people in your neighborhood. #, who would you trust the most?

@Nobody.

#I tell you like this: sometimes I don't trust myself.

[laughter]

#Sometimes people tell you "Oh, all good" and you go and find out it's worse stuff they ever been in.

@Yeah.

\$Hmmm, hmmm.

#So it's best to taste the water, and so you know where you coming from. It's just like all that bottled water don't taste the same.

&Mmmm, mmm [negative].

\$No it don't.

*Oh really?

&You can tell it's different.

\$Each name got a different taste to it.

@Yeah.

*Ok.

\$And some people [say] "Why it ain't got no taste?" and it do.

#Yeah.

^[unintelligible] nevermind.

#Because that's living long is the ones that are drinking the well water. It's city water that ain't no good for nobody.

%I don't know ... that well water got all that rust and stuff in it and I'm scared.

@I got the rust, and it's all in the toilet and the sink. It'll just right through.

\$You see to me the best water is toilet water. I taste it and it is so fine.

[laughter]

@Toilet water?

\$So crisp and so good.

@You drank toilet water? Man quit telling your stories. Naw, she taking it out of the stool.

&You mean the tank?

@She probably drank out of the stool.

\$Just keep your toilet clean, seven times [a winter?] and that water is good.

&Look one time my pipes has froze—

#It is more cold ...

*But how do you get it out? Do you dip—

\$It's more pure and it's got a crisp, fresh taste to it.

@Well I ain't drinking none of it. Don't care what you say.

&For real. We uh, our water has froze, the pipes had froze and one time it was washing, wash out with the back of the toilet. We used the toilet to the fullest. We washing up and everything in the bathroom and what we do is take the dirty water and flush it down.

*Mmmmm.

&And it be clean when it come out the back. Why you all think all the babies is still living? Why they fat? When you catch them where you catch them at: around the toilet.

#Did you all ever go to that joint the sewage disposal you would see what they do you wouldn't drink no more that water from the [unintelligible].

*What?

#The joint sewage disposal, it's between the two bridges. You can't go back—my brother used to work there and uh, it's off limits to ya.

&They got a purify.

#Everything is purified! Everything!

\$Hmmm, hmmm.

%Through filters

#Going through filters and stuff, that's why that water taste like it do.

&That's why we can't go back there.

#Everything! I'm not going to tell you what's going through the water.

%I believe ... whatever you think.

#Like I said, they ain't going to let you go in that joint sewage disposal to see what's going on.

*Joint sewage disposal?

#Mmm, hmmm [affirmative].

%There's like a whole lot of stuff in that food they something to it.

#Mmm, hmhhh

\$Don't be just fertilizing it.

&No they put that one stuff in there to keep it from spoiling. Forgot what you call it.

15:08:23

#Well anyway it's just right there you know, what is it ... it's right between the two bridges like you're going to St. Jo

&Is it St. Joseph park?

@It's like [unintelligible] street and you go across the bridge.

#You know where that roofing place is?

@Mmmm, hmmm.

#You turn, go down that way and you turn.

@I know what you talking about.

#You can't go in there, it's off limits. If you go in there I bet you go to the hospital. What is that street ... Sorts or some kind of ... roofing place.

%That's just like when you know you go to the store and you see them big old type chicken-wire turkey wings you seen how big that chicken big there is. What they got ...

&Steroids—

%What I'm talking about.

@Yeah.

\$It's steroids that mess us up, steroids is already a drug.

&Yes it is.

\$Then you turn it around and shooting the stuff in our food, it's messing up people bodies that's why these little kids is so big looking like they're thirty and forty years old and they nothing but seven and eight and nine years old. They're looking ...

[laughter]

\$I'm serious!

&12, 13, 14 maybe, you saying 7, 8, 9

\$I got a great-niece and she's nothing but three and she's so big, she is the illist thing ever and she so big and since we cut her from eating the chicken and stuff like that she starting to slim down.

&Look at my son [^] ... that skinny old little thing.

\$And that's the stuff they putting in the food.

#How many pounds was he with when he was born?

&He's just started getting big four years ago. He was 4-10 when he was born .

#4-10! Well you know little babies they grow faster than the bigger ones.

\$Because I premie and look at me.

[laughter]

\$Two pounds, two ounces and look at me I'm 218 lbs.

*Can I ask you guys, I was curious about the water bills you've been getting and how they've been changing and what you've been noticing about that. How would you describe what's been going on with your water bills?

&You want the truth?

*Yeah.

#Well one thing, we don't have, we don't need [name] down there.

\$They make you pay their bills.

[laughter]

&Because a lot of people don't pay they bills.

#How you going to pay all of these high water bills if you move in one of them senior citizen complex you don't pay no water there.

&And that's why we got to pay it, we got to pay it for the people that ain't paying it.

\$And then I still don't get why if you're house or apartment is sitting in a certain area a spot or whatever, your light bill is high, your gas is high, your water is high, they wants to make you pay for a streetlight because it's by your house and

&Cost me three dollars a month [re streetlight?]

\$And I'm like wow, but that's the city's, why you know

&It could be the city but you also, if they paying for a light pole they call the people and have that light pole set up and you got to pay three dollars a month for that.

\$Well then the owner should pay it and not the renters. The renters shouldn't pay it, because it was there when the renters got there.

&And it's going to be on the rentals.

\$Yeah, it be on the bill and in the winter, in the winter, all the bills is higher in the winter.

&Water bill not.

%It can't be equal, some folks use water more than others.

@Yeah.

\$Right.

&Well I mean your water bill is a hundred and something then the next month it's like five hundred dollars and they don't warn nobody.

*How often does your bill come?

&#\$ and @Every month.

*Every month, ok. And it's up and down, up and down and you don't know how to—

&Mine is the same, except the last three months, including July. July it shot up! And I been there like four years. It's the first time I ever—and the last time when I first had my pool and I filled that pool up I was like there's something going on with the water, they ain't warn me. Didn't warn me, and my ankle was broke and I was in a whole cast, couldn't go check nothing or do nothing. I'm a homeowner. I could have fixed that problem. Like you said, kids don't care ...

20:00:00

&I could have fixed that problem. Like you said, kids don't care. I would have been like it's [unintelligible] in there. Something leaking.

%And it'll be leaking and they won't even tell you.

&Won't even tell you.

&And they'll charge you for that. Lady leave the water hose on side the house, didn't turn it off. That's Sam, see because he want to fish every day.

[laughter]

*Are the bills easy to understand? If you pull your bill out of the envelope, like is it easy to understand?

&Yeah. If you can read it's easy.

[laughter]

\$But I just don't get, on the bills, like the electric bills and stuff, they make you pay for stuff that you have no connection to, don't know what it is, where it's at, none of that. But they still have you paying it though. I don't get it.

&Now look at [name]'s bill, I'm just glancing at hers. It's a hundred and seventy some dollars a month compared to mine, I got a whole family and then some in my house and that's a \$102. It's jacked up. Like I said last, what—who is using all that water in her house? She ain't using no water like that in her house.

#I ain't even be there half the time.

#[Unintelligible] and then you can [unintelligible] run into the water bill that [name] looking in your face, Lord knows, she look like she's smelling something.

&That [name] down there, they got to be doing something wrong.

&She is a one person by herself. How does a \$170-some [unintelligible]. She in her whole house and she have enough just for one person. She ain't got no kids, no baby, no babies like my grandbaby go in there and turn on the water. And to play in the water and all that.

*I think this is complicated, I don't know how to read this. To me this is complicated. Do you—can you understand this?

&Yeah. All you got to do is read it.

#Yeah. I understand you got to pay the water bill.

[laughter]

\$She said that's all I understand.

*But it's so long, is this for many months?

&Yeah.

#That's just for this year.

*Oh.

&If you glance at the side amount, might stay the same amount for the last past ... whenever. See the \$101? Now you turn it on the next sheet, going to see \$102 ... you know what I'm saying? See how mine is like ... steady like the same? And it's cheaper than hers!

*I see that!

&One, two, three, four, five, six, seven and a grandbaby and don't forget I got people over there come and spend the night. Then they want to come and live.

%You know something? I tell you something else: if something, if something like a water leak in the street they're gonna get you for that. Because it's your street. They show weird ... like water in my mama's house every year there a leak right in the middle of the street and mama's bill be high. We been talking about it and I says "You need to check that leak out." Most likely they charge everybody on that street for that.

&Yeah, they do. Don't matter if I be no homeowner. Like you got to buy.

%Everytime you come there, there's a big old flood in the middle, in the middle of the street.

&That's the only thing everybody really always talk about, is water bills. Water bill, water bill, water bill.

\$You used to get help

&It's just a water bill, like we was ... I was seeing this guy on Facebook and he was like "Go vote" and asked [unintelligible] if there was anything else and I said "Water bills." Don't forget the water bills y'all. They getting up on your all's water bills, make sure you all vote.

%Sometime you used to get the help. But they raised it up.

\$You can't even get help for and water anymore. Ain't they help paying anything anymore. Not even the lights. Not helping you pay gas anymore, they not helping with water anymore. They agencies like "No."

*What agencies?

\$They say "You have to pay," the only thing they paying now is electricity. And when you go to file with your income taxes, they're not doing anything but electricity.

%I known that for a fact because [unintelligible] I gone [unintelligible].

&People should pay they bills, I don't blame them [agencies] to not to pay people's bills because people should pay them right away.

%People sometimes don't owe much, but they will pay it.

&I mean ... you live to pay bills. Why should people be arguing about bills? But then this water bill thing, I think—

\$Because sometime, a certain ... some bills can be higher than others, they can be higher than your rents. That's if you're renting. Then you're stuck wondering, what should you do because this bill is higher than my rent.

*A water bill higher than your rent?

\$A bill, any bill.

&My mortgage—

\$If you're renting and your bill is high, you're going to need a little help on that bill.

*So were there places where you could get help but now you can't? Where were those places?

\$Anywhere you could go and get help. Now

%I got a friend and he know every place where going to get help, because he good at it. And anyway you going to go get help, he going to go get it. Can't think of the name right now, it was on the tip of my tongue. And he go and get his help. They turn the lights off, they turn them back on.

&That's what happen when you get a check for and make sure and you don't pay your bills. You don't need no help from the system. The system already taking care of you.

*So when do you think it changed that they weren't helping anymore? Is that recent or a while ago?

\$No, I heard a friend talking about it last year. And I was like "Really?" and she was like "Yeah, they starting not to help no more" because they said a lot of people they come in to get help on they bills and everything and they are only supposed to help once or twice out of the year or something. But they're coming all the time for this help. It could be a different bill but they

&I'm mad because they don't help the homeowners. Homeowners can't get that help. We can't get help on electric, gas, water

%My mama owned a house and she done got help, because my friend [name] down the street showed her how to do it.

&Your mother is older.

%Well that's it then, she sure is, well that's it then.

&It's a big difference.

%I didn't know that, ok. Yeah, because she sure is a homeowner.

&A homeowner can't get help unless they are older people, yeah, they going to help you all. Look at #, she probably get help and she a homeowner.

\$Maybe that's because you all own your own homes.

%Mama a homeowner but she didn't know about it until [name] told her what to do.

\$When it's higher than my own rent, then I call my caseworker up [unintelligible] because I need some help. But I don't go to him too much, I haven't been to them in like eight, nine years. So I just take from my household needs or personal needs, food and just go on and pay it. Be lacking in whatever, long as the bills is paid. Because sometimes they are slow at it and they tell you they going to do it, but when it's done and over with, they ain't been the deal or nothing.

[Discussion about what Jonathan is taking notes for and whether he is able to keep up]

\$All the bills go up in the winter time.

&We stock up with just a whole bunch of candles.

%Best watch out.

#The landlord, they don't pay ... the ... those people is got problems

*Are there different rates for homeowners versus renters?

[Agreement]

30:00:28

*We talked about a number of issues relating to drinking water—which one is the most important to you?

%The most important is the water company itself: you got to have that H2O!

*So, the water, like the quality of the water?

%Just the water.

*You mean, like, just the access?

%Yeah, the access to it. Got to have the water. You know what, you can't use just to drink, you can drink all the juice you want—you got to have the H2O. [Without water] your [unintelligible] won't work right, you can't go to the bathroom right. I don't care what you get, some form.

&Still go to have it.

%Got to have it.

&It ain't quality, I don't know what you call it—

%You got to have it.

@Access to it, access to it.

*So, the last time you paid your water bill or when you go and fill up the big bottle that you use, do you think a lot about the price? Or the price of the filter that you use or the bottled water that you use—do you think about the price?

&No, because the water that you buy in the store ain't never going to reach you, but the water running in your house is going to cost, you going to be paying out more money. It's going to cost more in the store than if you fill that big bottle up at home.

*Even though you all mentioned the importance of having access to it [water], you also said you might not necessarily drink it, you might use a different source, you might filter it etc. Are there other things [in addition to drinking] that you don't do with the water other than drinking—do you use it for everything else like bathing ...?

%You got to use it for bathing, washing, cleaning up the house.

&Cleaning, mopping [things they do with the water]

%Gotta have water that smells good, I use it for everything.

&You even need it for fishing—you need clean water to clean the fish!

[laughter]

*Do you catch anything?

&Yes.

*Yeah! What?

&Well today, one big bass, a blue gill, I ain't had good luck.

#Bass season be only for thirty days!

&No it's not, you don't know what you talking about.

%I eat anything I can catch! I like it all.

*I have one more question: so we asked some questions and you all offered up your thoughts on a lot of stuff. Is there something that's important to you or in the community that we're forgetting? Like is there something that's missing that we should have talked about? We talked about affordability, safety ...?

#Safety?

*Well, the safety like if you trust the safety of the water. Which it sounds like you don't.

#Oh! I thought you talking about public safety!

[laughter]

#Didn't know what safety you was talking about.

*You got me.

#I think you need to go down there [unknown where] with a club and start with the chief and go all the way down

[laughter]

%That ain't going to help.

*Is there anything else about water that we're leaving out?

&Even though they go on [unintelligible] with this water

#If you going to go drill a well in your yard they going to get mad. And everybody know what well water like in they yard.

@Clean well water.

%My mama with her well water, she almost done killed my daddy

@What?

%Yeah. Baby fall down there it would never be find. Long way down there in the back of my mama house.

*Is she in town?

%Unintelligible.

&Even though they going up on the water bills though, it's ... I guess ... they supposed to because ... ain't nothing going to stay the same forever. Just like # said: "I remember when the water bill was \$13" Of course, just like I remember I could go up to the store and get four

things with a quarter. So, everything is different, we might be saying "why they going up on the water bill" and water bill this and water bill that But you still got to pay for it, because we still need it. Whether it's safe or not safe, you still have to use it. So, it's a 50/50 to me.

%Like JCPenny, you could get a whole outfit ... shoes

&Just like they say: "You can't win for losing."

[laughter]

37:06:01

&I don't know why that [unintelligible] just don't want to act right. Still, after I done ...

\$But you know we got one spot in our head that hair would not grow ...

& ... back here that ain't acting right. It's time to get something done.

%You put a cap on it [re hair] and keep a cap on it and have a braids going back at night and take them off, every night put them braids ...

&I can't [unintelligible] guys because they hair grow so fast ...

%Don't they? They don't care ...

*I know we already said one last question, but I actually have one last question so: I just want to kind of go around the table and get it right about who drinks out of the city drinking water. I'm remembering yours [@] very clearly for some reason, I think you said you use a large blue big bottle that you use, you fill up and it carries 5 gallons or something like that?

@ Yeah.

*So, like \$ what do you use for drinking water?

\$Bottled water, and ice, like bags of ice because I really like ice. I eat the ice.

*And, \$, the bottled water you use is actually in a plastic bottle, is that right?

%Yeah them plastic thing take a lickin' and keep on tickin' because I take my regular water bottle and I fill it about half way and I lay it in the freezer, lay it down, take it out and beat it to death and have ice then, you know? You can take a hammer and hit it—it won't break.

*So, % what do you use most the time for your drinking water?

%Off the sink, every night I [unintelligible] my water, because I'm good on that [sink water]. If something wrong with it then I go buy it.

*But not the well water?

%Hell no, oh my god.

\$Well water, it makes you ... you pass gas, it stinks. You have a bowel movement, it stinks.

%It smells like a bowel movement.

[laughter]

\$If you burb it stinks.

*Next, what kind of drinking water, #, where do you get your drinking water?

&City water.

#You said what?

*Where do you get your drinking water?

&[interjecting] Do you drink faucet water or bottled water?

#I buy it. From Save-Along or whoever got a sale on, mmmhmmm.

\$I get the bottles, the gallons, the bottles of water. Sometime I go to Meijers, because you can take the jugs back and refill it.

&The whole house with water bottles, you can get water from # in the winter time—the water bottles be sitting outside, they do.

*I'm sorry, what did you say about how you ...

&I said her, #, got all kind of water bottles. I said in the wintertime she still be having water bottles sitting outside, froze, waiting for the next year to come.

*I guess, it doesn't go bad, does it?

\$%&#@ No, doesn't.

*[to &] what do you guys use in your house?

&What we use? Regular water, city water ...

*Just straight out of the tap, is that right?

&Yeah, pool too.

*And the way that you fill your pool is just, like with a garden hose?

&Yeah, sometime it overflow [gestures to son]. Can't fish no more, can't swim ...

*Michigan Environmental Council is going to go out to other communities in Michigan [unintelligible]

&I can play like I can swim

*Now that we talked about where you get your drinking water—what's the primary motivation for the people that do or don't drink it out of the tap—maybe we could go around the table the other way—is it taste is it smell is it cost or is it the quality?

&The taste [&'s household drinks tap water]. Because sometimes you really do gotta let that water sit for a while. It tastes like a plant or something sometimes, I don't know.

\$It do, it do. Some of it taste like it's dirty. It be clear but it have a dirt taste to it. Like it's been sitting there for a long time.

&Not dirt, it's like a steel taste or something. That's why they always say let the water run, don't you get me no water straight out the tap. You always got to let your water run, you not supposed to get the first water out the tap.

\$Uh, uh [in agreement] let that [unintelligible] run.

&No wonder you always tell me that.

\$Because you can see ... water, it's odious.

%Particle.

&Like it's, someone get you some water turn on the thing and put the water under there you can see the air bubbles and all that stuff flow.

\$That's why you gotta let it run. Coming from the pipes, from inside them.

&I guess it's just a steel pipe, like uh ...

#So you still paying about two dollars for the ...

%Gotta let it get clean before the water run through.

#If you going to let it run, that's what you paying.

*I was wondering that—if you're letting it run, are you thinking about your water bill while you're letting it run or ...

&Yeah, but who cares about the water bill if [unintelligible] that much water.

*#, it sounded like earlier you thought smell and black specks were an issue, what would you say your main reason is for drinking bottled water?

#The bottled water to me is more healthy, because I don't have to take all them pills like I used to. I don't take all that stuff I used to take. If I drink that bottled—if I drink that city water, if I drink that water at home I got to take them pills.

44:24:01

APPENDIX C:

COMMUNITY ASSESSMENT GUIDE

COMMUNITY SURVEYING GUIDE

PURPOSE

This guide seeks to help pave the way for efforts in gathering information on water concerns from residents in communities throughout the state of Michigan. A variety of factors influence the particular set of challenges faced by residents, city officials, and a water utility in ensuring water is drinkable and affordable. Local factors that influence a community's perception of water issues can include the recent and historical local water service events, news coverage of water issues affecting other communities, quality and frequency of communication about water issues, water rates and bill payment factors, perception of overall infrastructure and issues with city services, as well as various demographic factors such as residence types, employment rate, average education and literacy, income levels, and other socioeconomic factors.

Understanding that these factors vary a great deal between communities, any effort to describe or address the set of needs and issues faced by a community must begin with an assessment of the community itself. While a thorough and expansive data gathering tool may be desired, in most situations that ideal is far from practical. Instead, this assessment tool represents a data gathering method that can be implemented with limited time and resources. It is two parts: a brief, targeted survey for residents followed by a focus group guide that provides the opportunity to gain more detailed insight into targeted issues.

LIMITATIONS

The team that began this effort hopes that this guide continues to be an evolving work-in-progress, improving with subsequent iterations. This may include removing components that are less useful and adding portions that may fill gaps in the prior versions. Since this guide arises from a team of graduate students who are non-experts in the arenas of community surveying and municipal water management, it represents the culmination of our experience surveying in one community. While the experiences that informed this work was limited, it was also insightful and potentially translatable to a wide variety of situations.

STAKEHOLDERS AND OUTCOMES

Conducting a community assessment on residents' perceptions of water issues may be useful to a variety of stakeholders, including, but not limited to, the following:

1. A group of residents may wish to gather data on their community in order to inform possible actions or direct focus areas for advocacy.
2. A public health professional or working group on water issues may wish to gather data on the community to guide public health outreach, education, and initiatives related to safe and secure water.
3. A city official or water utility manager may wish to learn the community's perception of drinking water and areas in which their efforts could be targeted to improve public perception and consumer knowledge and trust.

4. An outside entity, such as a policy or advocacy group, who is interested in comparing perception of water issues across a variety of communities to inform the direction of policy making or advocacy efforts.

This assessment tool is not intended to cover the entire scope of water issues that may impact a community, nor is it intended to sample a fully representative range of community members. Though both of those goals influenced the design and approach recommended by this tool, they are can pose impractical constraints for the stakeholders listed above. Thus, many tips covering practical considerations and accepted limitations to this methodology are included in this guide.

DATA GATHERING

PREPARATION FOR ASSESSMENT:

Establishing Relationships:

Connecting with key stakeholders dealing with water issues in the municipality is critical for early success in establishing legitimacy in any assessment endeavor. First and foremost, listen to the concerns expressed by any stakeholder. Clearly explain the purpose of the planned assessment of the community; this will both help carve and clarify the path toward assessment and data-driven solution generation. Continue to update and elicit support from those in the local area who work directly in water issues or may be able to lend expertise and insight.

Data Gathering:

Prior to initiating a surveying effort, consider using a variety of sources (e.g. prior consumer confidence reports, news outlet archives, city website, city officials, water plant manager, etc.) to gather an understanding of the community and any unique water-related issues. Some questions to consider include:

- What entity runs the water treatment plant and utility service for the community? Is this service housed within the local government?
- What information on water is publicly available? Consider the CCR, water utility bills, city or plant website. Is there any additional information available by request?
- What prior violations of monitoring standards has the utility or municipality faced? What specific actions were taken?
- Have any recent or major historical local news stories covered specific water issues?
- What information is available on the cost of water, including average water rates, average monthly bills, percentage of consumer base that is behind in payments, shut offs, frequency of service disconnections?
- Are any consumer assistance programs (CAPs) available for assistance in water utility bill paying?
- Are any local, regional, or state-wide groups working on water issues that may relate to known water issues in the area?

SURVEY MODIFICATION:

Included in this community surveying guide is a basic survey that can be adapted to meet the needs of a particular set of stakeholders. Although it could be used without modification, most users will add, subtract or revise questions based on the particular information sought as well as the characteristics of the community being surveyed.

- Add, subtract, or modify questions in the survey to fit the local assessment needs.
- Demographic information may be of little value, or may be essential, depending on the objectives of the assessment. To compare a convenience sample to the general community demographics, it can often be helpful to have at least: age, gender, education level, occupation, type of residence, neighborhood or address.
- Key background information to gather related to water utility bills include: status of primary household water utility bill payer, average monthly bill (if known), recent shut offs or changes in service, and whether bills have been overdue recently.
- Have a small group pilot the survey to check the length, readability, and organization.
- A brief, targeted survey may take on average 2-3 minutes in length, and a longer survey may take 5-10 minutes. Surveys longer than 10 minutes can result in survey-taker fatigue, rushing, and potentially more inaccurate answers.
- Make a plan for survey accessibility. Consider creating a version with a lower reading level if literacy issues in the community are common. It may be necessary to plan for an additional person who can read the survey aloud for any individuals who are unable to read due to cognitive or physical impairment.
- Determine the best format to reach the community. The survey can be implemented in paper form, online, or both. Availability of computers or tablets may influence whether to offer it online, however many residents may be able to take a survey on a personal mobile device. Many communities may prefer one format over the other, so be sure to consider this if there is flexibility.

SAMPLING APPROACH

There are many approaches to sampling, each with advantages and disadvantages. A full discussion of these is beyond the scope of this document. The most practical approach within limited resources and time constraints is a convenience sample. There are a variety of common locations available in many communities that may provide an adequate venue for surveying. Consider public libraries, downtown public spaces, parks, farmer's markets, and community events. Each location and time which surveying occurs influences the specific demographics that will make up the sample. Varying the site location and times of surveying over a handful of dates and times can be helpful to obtain better diversity and representation of those surveyed.

For setting sample size targets, one approach is to attempt to capture as much of the population as possible, ideally 1% or more of the population. For example, in a small sized town with a population of 10,000, as few as 100 residents may reach this goal. The smaller the sample size, the less likely the sample will be to achieve power for statistical significance. However for many parties wishing to conduct surveying such as this, statistical significance may not be a realistic goal.

DATA ANALYSIS

The depth of analysis will largely depend on the needs of the group conducting the assessment. For a resident-led group of citizens, simple descriptive statistics that can be generated with tools such as Google Forms may be sufficient. For survey teams that are academic or professional organizations, more detailed statistical analysis software could be used.

CONDUCTING THE FOCUS GROUP

PREPARING FOR A FOCUS GROUP:

The following information may help guide focus group implementation:

- A script (such as the one included at the end of this appendix) should be used to ensure limitation of bias and open-ended questioning that is consistent among groups and interviewers.
- Questions should flow naturally, so it is acceptable to deviate from the script when appropriate
- When specific information provided by participants opens new doors to topics that were not anticipated, it is recommended to continue pursuing this information in greater depth, so long as it is possible within time constraints and other important questions are not overlooked
- Each participant should sign a statement of consent and confidentiality prior to participation. Some community members may worry about their identity being known and tied to their statements, so verbally reviewing this consent and confidentiality document is important.

SUGGESTED MATERIALS:

- Name cards/tags (first names only)
- Sign-in sheet
- Markers, note taking materials
- Tape recorder/phone with adaptor
- Interview guide
- Copies of consent form (2 per participant - 1 for participant, 1 for team)
- Food/drink (food can be an incentive for participation and also often helps create a relaxed environment)

TRANSCRIPTION & ANALYSIS:

If possible, the focus group discussions should be transcribed to facilitate review and analysis. Once transcribed, a pair or set of reviewers should listen to recordings and read the transcriptions, noting any common concerns and themes of discussion. Within these themes, representative statements can be organized to provide a cohesive summary of the dialogue, with useful quotes that may capture the major active water issues in a community.

COMMUNITY WATER SURVEY

We are (*Identify individuals, groups, and affiliated parties*). The results of this study are intended to inform residents, community leaders, water utility, and state-level decision makers about community perspectives related to water. Your participation in this survey is **completely voluntary**. You may skip any question. There are no right or wrong answers. All of your answers will be kept confidential and no personally identifying information will appear in any report. The survey should take (*5 - 7 minutes*). If you have any questions about the survey, please contact us at (*contact information*). Thank you for your participation in this survey.

1) WHERE DOES YOUR TAP WATER COME FROM?

- Municipal water system (city water)
 Well water

2) Mark your level of concern for the following issues:	Not at All Concerned	Not Very Concerned	Moderately Concerned	Very Concerned	Extremely Concerned
a) Potential threats to the quality or safety of your community's water supply (i.e. the lakes and/or rivers where your area gets its tap water)					
b) The condition of the water treatment plant and pipes that bring tap water to homes					
c) Affordability of water bills in your community					

3) HOW OFTEN DO YOU DRINK WATER FROM YOUR HOME FAUCET?

- Every day
 Several times a week
 A few times a month
 Rarely
 Never

4) HOW OFTEN DO YOU DRINK BOTTLED WATER?

- Every day
 Several times a week
 A few times a month
 Rarely
 Never

5) WHY DO YOU CHOOSE TO DRINK BOTTLED WATER INSTEAD OF TAP WATER? (CHOOSE 1)

- Bottled water is **safer** than tap water
 Bottled water **tastes better** than tap water
 Bottled water is more **convenient** than tap water
 Other _____
 I don't drink bottled water

6) How much do you trust the quality and safety of the following sources of drinking water?	Completely trust	Somewhat trust	Neutral	Somewhat distrust	Completely distrust
a) Bottled water					
b) Water from my tap					
c) Water from my tap that has been through a "point of use filter "(i.e. Brita or Pur style filter)					
d) Water served to me in a restaurant					

7) How strongly do you agree with the following statements regarding the <u>current quality of your home's tap water</u> ?	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a) I am satisfied with the safety of my tap water					
b) I am satisfied with the taste of my tap water					
c) I am satisfied with the odor of my tap water					
d) I am satisfied with the appearance of my tap water					

8) HAS YOUR HOUSEHOLD EVER BEEN AFFECTED BY A WATER SHUT OFF (E.G. DENIAL OF SERVICE OR SERVICE LINE DISCONNECTIONS)?

- Yes
 No

9) PLEASE RATE YOUR OWN LEVEL OF KNOWLEDGE ABOUT YOUR TAP WATER?

- High (I know a great deal)
 Medium (I have some knowledge)
 Low (I know very little)

10) TO THE BEST OF YOUR KNOWLEDGE, HAVE YOU EVER RECEIVED AN ANNUAL WATER QUALITY REPORT KNOWN AS A CCR (CONSUMER CONFIDENCE REPORT)?

- Yes
- No

11) HOW DO YOU FIND INFORMATION REGARDING THE QUALITY OF DRINKING WATER? (MARK ALL THAT APPLY)

- Local news
- Government websites
- Social media (Facebook, Twitter, etc.)
- Annual water quality reports
- Friends and/or neighbors
- Local officials
- Other (please specify) _____
- I do not search for this information

12) HAVE YOU EVER CONTACTED ANY OF THE FOLLOWING WITH QUESTIONS OR CONCERNS ABOUT DRINKING WATER? (MARK ALL THAT APPLY)

- Drinking water treatment plant
- Local health department
- Local community organization
- City official
- State official
- Other _____
- No, I have not ever contacted any of the above about your drinking water

13) How well do you feel each group is doing in the shared responsibility of ensuring safe and high quality drinking water?	Excellent	Very Well	Well	Fair	Poor
a) Local government					
b) State government					
c) Federal government					
d) Drinking water utility					

14) Tell us about your thoughts on the following statements on cost and payment for water services:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a) In light of the Flint, Michigan water crisis, I am concerned about Benton Harbor public officials making the necessary investments needed to avoid similar issues.					
b) I believe the amount of money my household spends on tap water is appropriate for the quality and service received					
c) I actively try to conserve water in order to reduce my water bill.					
d) I understand how my water bill is calculated					

15) IF THERE ARE ANY OTHER **WATER QUALITY, SERVICE, OR AFFORDABILITY** ISSUES THAT YOU, YOUR FAMILY, FRIENDS OR NEIGHBORS ARE CONCERNED ABOUT, PLEASE EXPLAIN BELOW:

16) ON AVERAGE, HOW MUCH DOES YOUR HOUSEHOLD SPEND ON YOUR WATER UTILITY BILL PER MONTH?

- \$0-40
- \$40-80
- \$80-120
- \$120-160
- More than \$160
- Not sure

17) IN YOUR HOUSEHOLD, ARE YOU THE PERSON PRIMARILY RESPONSIBLE FOR PAYING THE WATER UTILITY BILL?

- Yes
- No, I contribute but another person in my household pays.
- No, another person in my household pays the entire bill.
- No, my landlord pays
- No water bill

18) WHAT IS YOUR AGE?

- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+

19) WHICH TYPE OF RESIDENCE DO YOU CURRENTLY LIVE IN?

- Own house
- Own condo/duplex
- Rented house
- Rented condo/duplex
- Apartment
- Community living facility

20) HOW MANY PEOPLE LIVE IN YOUR HOUSEHOLD? _____

_____ Other _____

21) WHAT CATEGORY DESCRIBES YOU? (CHOOSE 1)

- Black, African American
- White
- Hispanic, Latino, or Spanish origin
- Asian
- American Indian or Alaska Native
- Middle Eastern or North African
- Native Hawaiian or other Pacific Islander
- Some other race, ethnicity, or origin
- Two or more of the above categories
- Prefer not to disclose

22) WHAT IS YOUR CURRENT EMPLOYMENT STATUS?

- Unemployed
- Employed full-time
- Employed part-time
- Student, trainee, or apprentice
- Work in the home
- Prefer not to disclose

23) WHAT CITY/TOWN/TOWNSHIP DO YOU LIVE IN? _____

FOCUS GROUP GUIDE SCRIPT

WELCOME

Hello, my name is **(name)**. This is my assistant **(name)**. We are **(explain role)** and interested in learning about the drinking water issues facing **(community)**. Today's conversation will be used to **(explain purpose and outcomes desired)**.

Thank you for taking the time to talk to us today. The purpose of this focus group is to learn about the water issues that residents are most concerned about and the ways in which these issues have been dealt with in the community. There are no right or wrong answers, only differing opinions. We hope that you are comfortable enough to say what you really think and how you really feel.

If you all consent, we may be tape-recording this discussion since we are not able to take notes quickly enough to keep up with the conversation and we don't want to miss any of your comments. Your identity will be kept confidential and your name or any identifying details will not be associated with any of the quotes.

If this discussion is something you are interested in being a part of and you agree to being tape-recorded and anonymously quoted in a published report, then please read through and sign the consent form we have passed out (Note: Sample consent form is included at the end of this document).

LOGISTICS

- This focus group will last one hour. Over the course of this focus group, we will be learning from you and would like everyone to participate as they feel comfortable.
- Again, there are no right or wrong answers, please feel free to share your point of view even if it's different than what others have said. Everyone's thoughts are useful and important to the discussion.
- Since we are tape recording, it would be helpful if only one person speaks at a time.
- My role as moderator is to facilitate the discussion. The assistant(s) will be checking on the tape recording and taking notes throughout the discussion.
- If you need to use the restroom during the focus group, you are free to go at any time.
- (If available) please help yourself to the food and drinks.

INTRODUCTIONS

Before we begin the discussion, let's go around and introduce ourselves. Share your first name and why you decided to come today. [Allow time for introductions.]

Great! Thank you for sharing and I look forward to hearing what everyone has to say about their drinking water. Now, we have some questions and topics that we're curious about, but what we're really interested in is what you consider to be important, so we'll try to focus on the topics that you bring up.

DISCUSSION QUESTIONS

1. Tell us a little about how and when you use your tap water
 - Drinking water
 - What kinds of things influence your decision to drink tap water?
 - Water filters
 - What kinds of things influence your decision on to use (or not use) a water filter (on your faucet or in a pitcher)?
2. Tell me about some things about this community's tap water that you've heard brought up often in your household, neighborhood, or community
 - Perceptions and concerns
 - What things about your tap water are you unhappy with, if any?
 - What things about your tap water are you happy with, if any?
3. Raise your hand if you buy bottled water sometimes. What influences your decision to drink (or not drink) bottled water?
 - Taste
 - Cost
 - Trust/safety
 - Availability
4. Think back to the last time you paid for drinking water, whether that be your tap water bill or buying a pack of bottled water, what sticks out to you about the amount you paid?
 - How does the cost of water compare to the quality of the water you are receiving?
 - Have you heard of consumer assistance programs?
 - How easy or hard it is to understand your water bill?
 - How much your water bill has been changing, be it increasing or decreasing?

5a. Trust and communication may be important in solving problems with water systems in communities. Who do you trust to provide accurate, up-to-date information on water in your community?

5b. How do you feel communication is going related to water information and issues in your community?

CONCLUDING QUESTIONS

6. Of all the things we discussed today, what do you think is the most important?

7. *Assistant Moderator:* Follow up questions?

8. *Assistant Moderator gives an oral summary of the discussion:* Is that an adequate summary?

9. Have we missed anything?

CLOSING STATEMENTS

Thank you again for speaking with us today. We have learned so much from this discussion. If you have any questions about the earlier survey or this focus group, please let us know. Also, if you are interested in hearing the results of our study, we will be sharing the final report (explain how and when data will be available to community members).

FORM OF CONSENT

Please read the three statements below. If you do not understand one of the statements or have questions regarding the process, please ask the moderator for more information.

- I, _____, understand that this discussion will be recorded using an audio recording device. I also understand that excerpts of this discussion may be used in a report, presentation, or similar publication, but that my name or any other identifying information will **not** be published or associated with what I say in any way.
- I understand that confidentiality and privacy is important to this discussion and will respect the confidentiality of the other participants during and after the focus group.
- I understand that I may refuse to answer any questions and may leave at any time.

Do you understand and agree with the above statements?

(check appropriate box)

YES, I UNDERSTAND AND AGREE WITH STATEMENTS

NO, I DO NOT AGREE WITH STATEMENTS

SIGNATURE: _____