



Water, Sanitation, and Health in Disadvantaged Unincorporated Urban Communities



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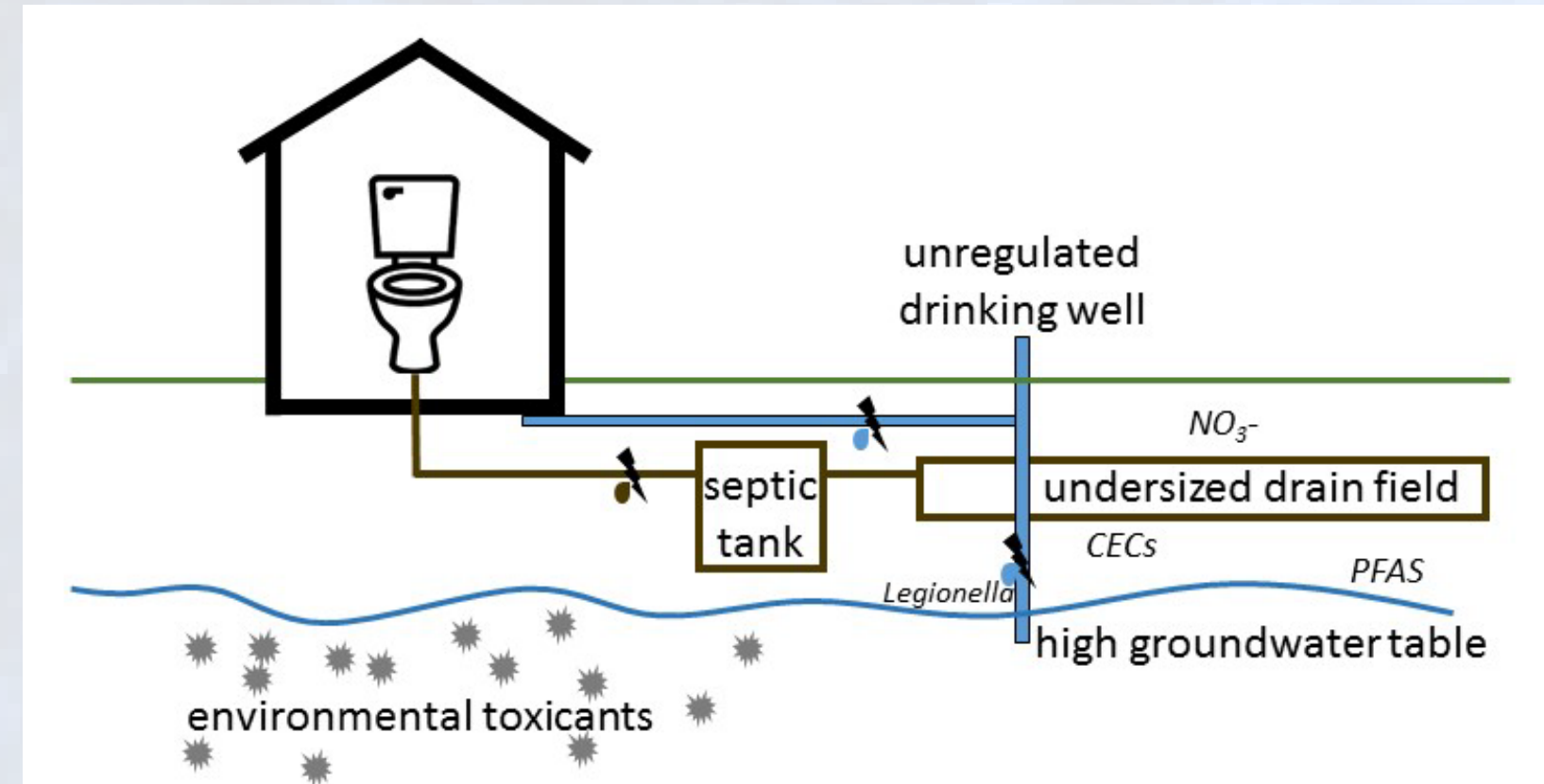
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Overview

Water and sanitation (WatSan) challenges continue to escalate worldwide due to climate change, environmental degradation, and socio-political instability. While interventions are often aimed at low HDI countries, communities in the global north also experience high levels of WatSan insecurity, for example, those in rural and indigenous areas. Recent research in the United States has revealed that many urban disadvantaged unincorporated communities also lack consistent access to clean and safe water and adequate sanitation.

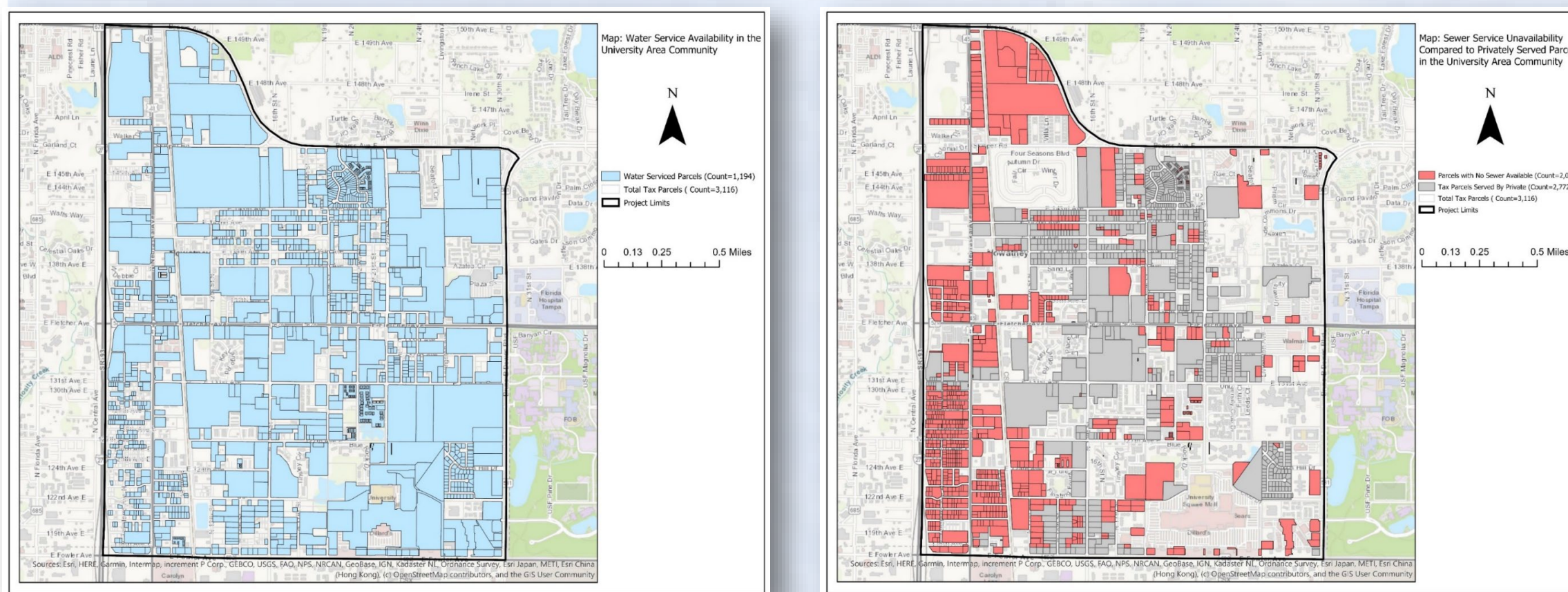


In Florida, these environmental justice communities often originated as unregulated subdivisions of unincorporated land and, as such, lack adequate public investment in WatSan infrastructure. In these settings, some households have access to centralized water treatment and delivery systems, while others rely on private drinking water wells and on-site wastewater treatment such as septic systems. In both cases, water quality and wastewater infrastructure can be insufficient to protect human health.

Research Context

University Area Community

- Urban disadvantaged unincorporated community
- History of racial segregation
- High residential densities
- High proportions of renters
- Aging housing stock
- Proximity to hazardous wastes
- Lack of critical infrastructures

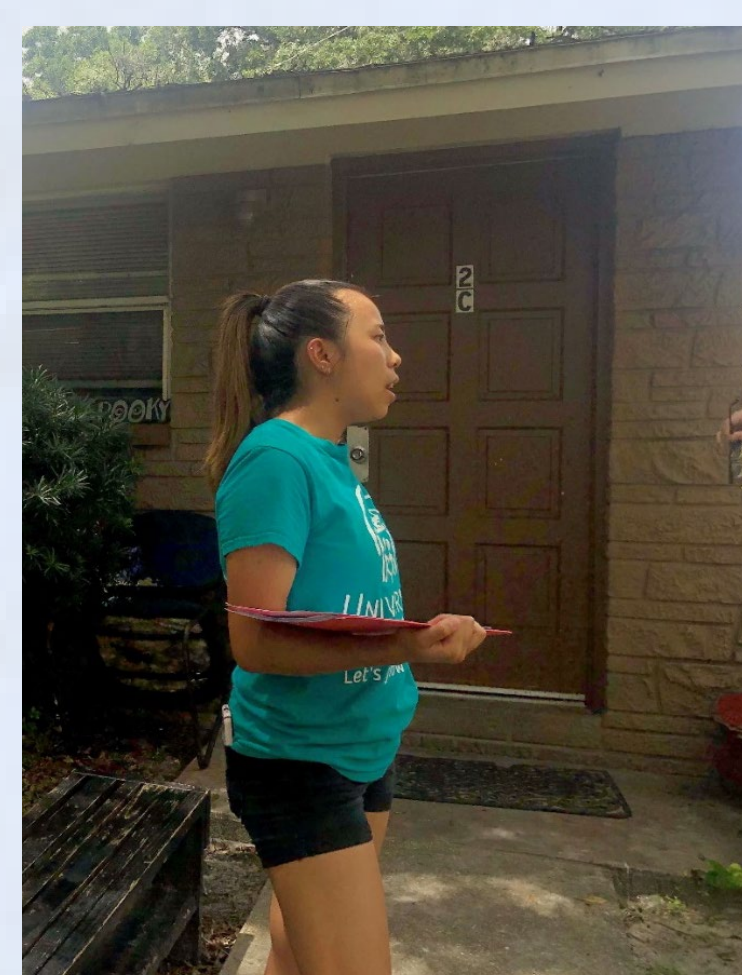


Methods

Our research draws on social science methods—including participant observation, rapid field assessments, and in-depth interviews—to examine local residents' perceptions and experiences with water and sanitation, focusing on the University Area Community located on the northern unincorporated edge of Tampa. We also explore the broader regulatory context of water and wastewater infrastructure at both the municipal (Tampa) and county (Hillsborough) levels through interviews with WatSan utilities administrative staff and engineers. We find contrasting perceptions of WatSan problems and notions of risk between these stakeholder groups, which have contributed to misunderstandings and miscommunications about problems and potential solutions to WatSan challenges.



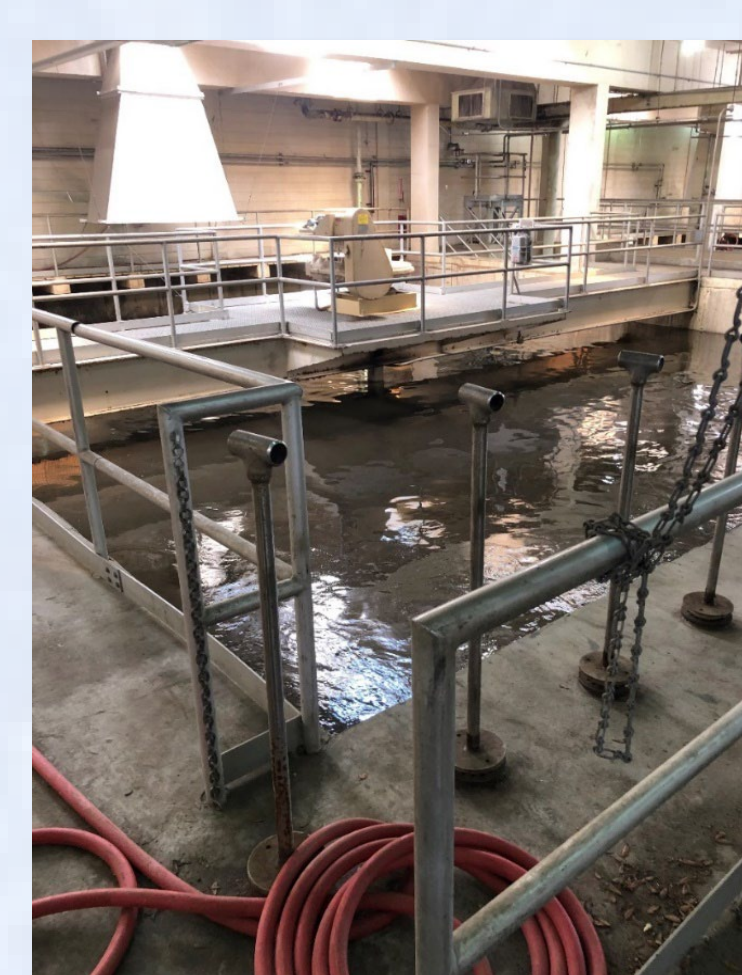
135 hours of participant observation



12 in-depth, semi-structured interviews with residents

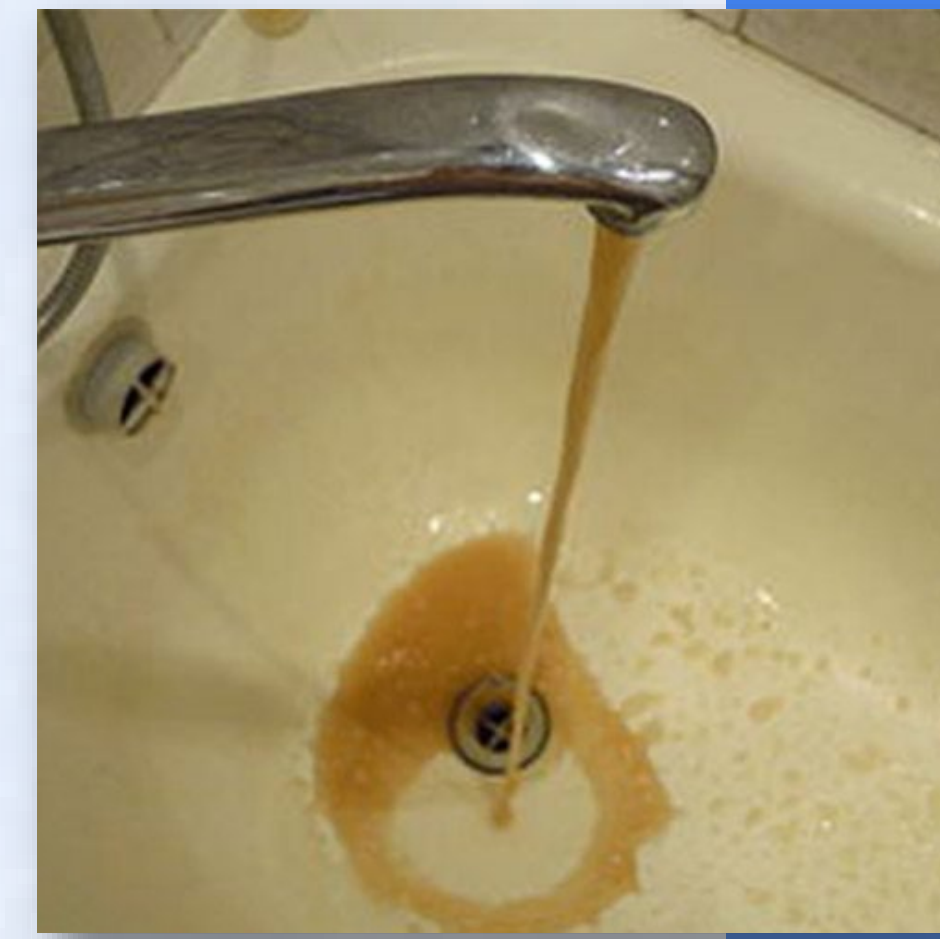


28 rapid field assessments



10 in-depth, semi-structured interviews with city/county utilities administrators

Some Residents Can't Drink the Water

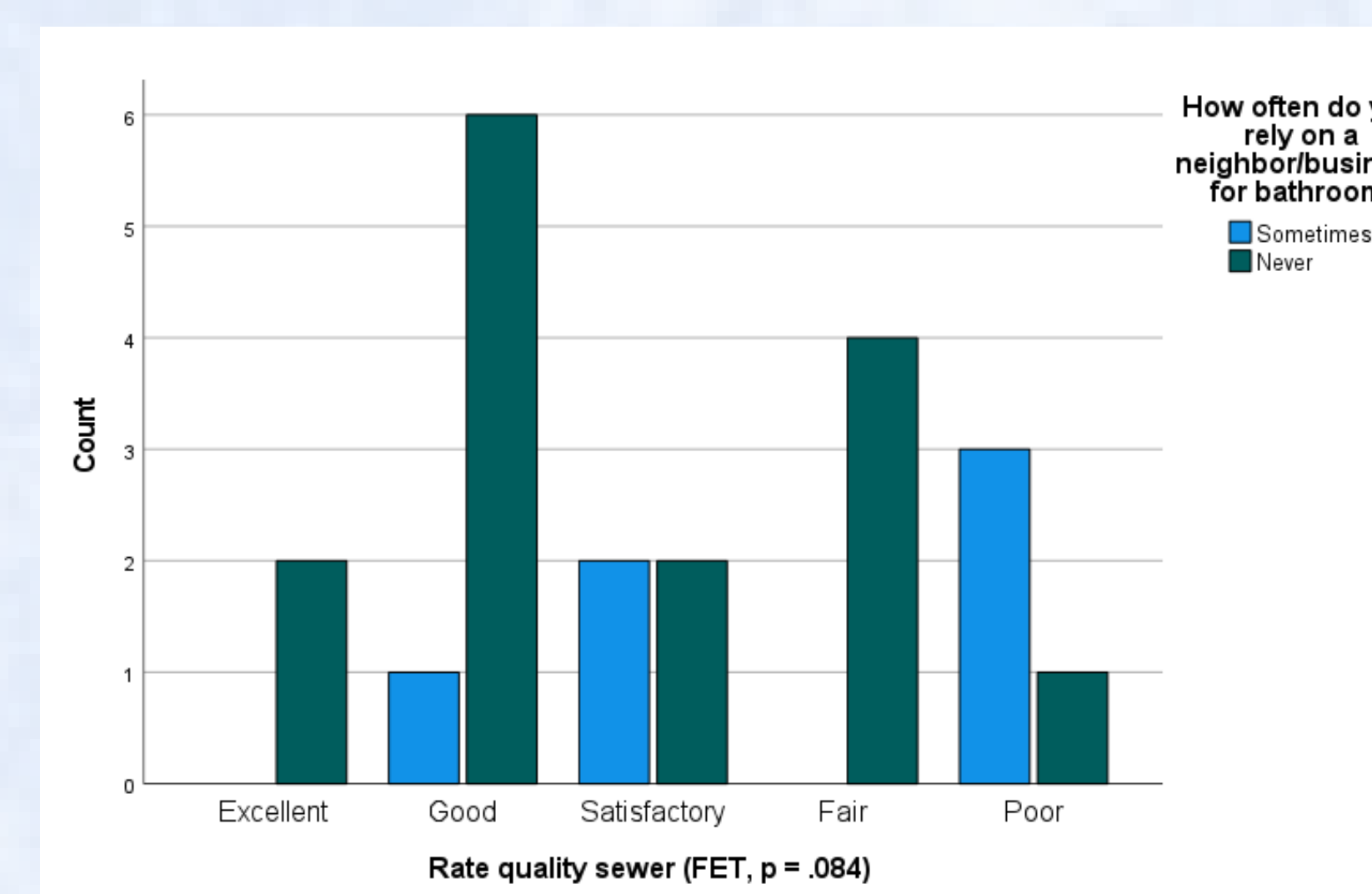
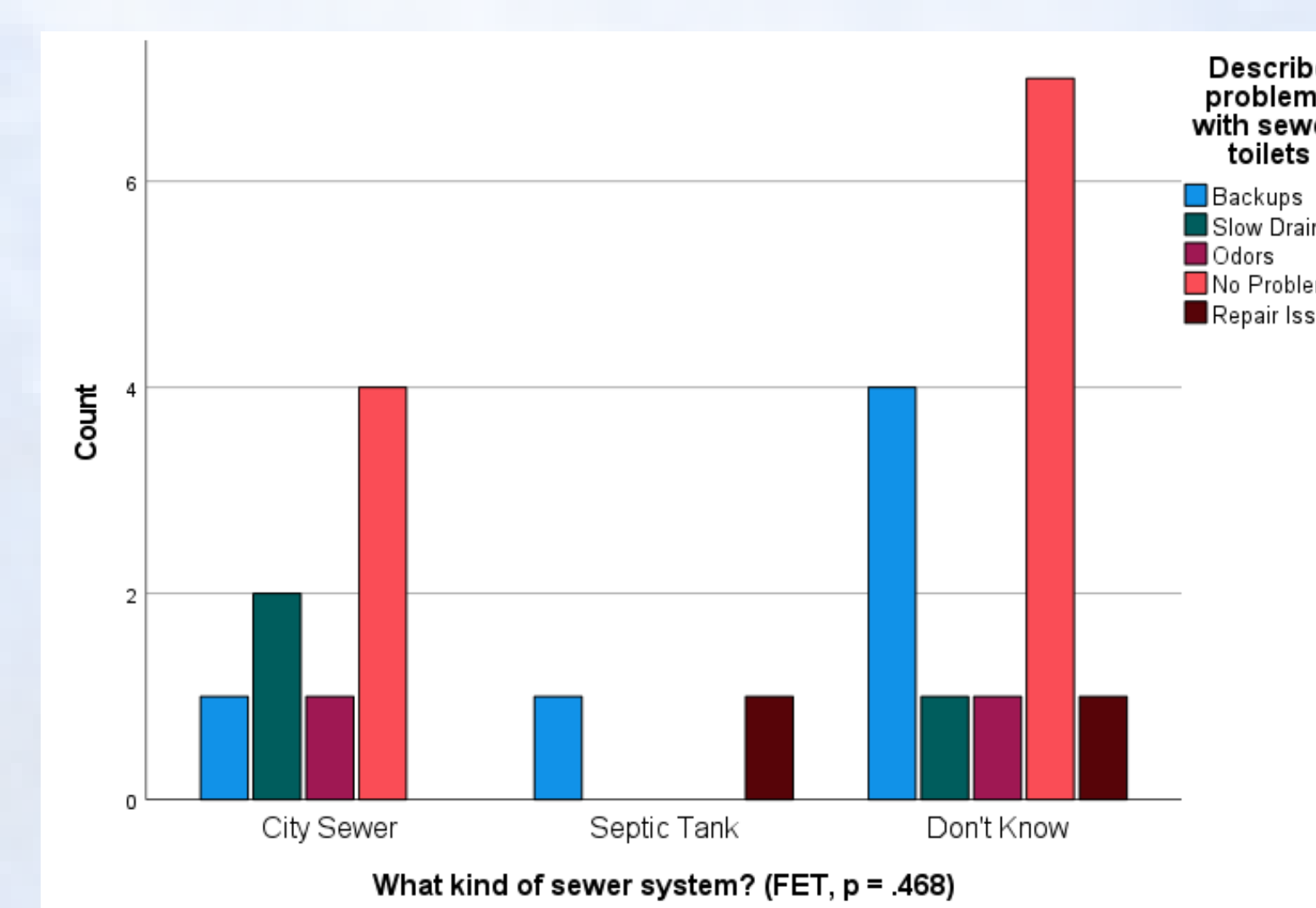
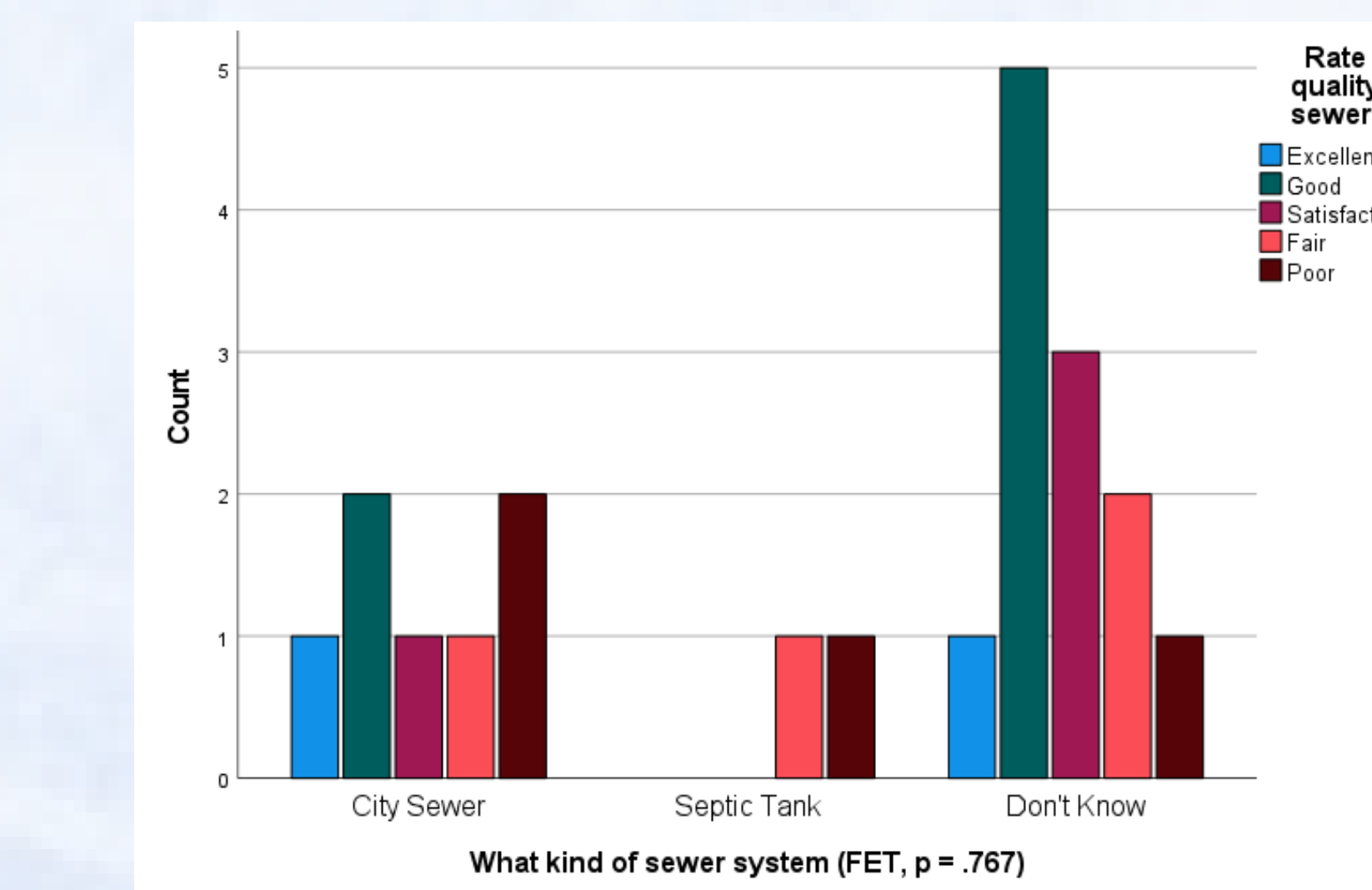
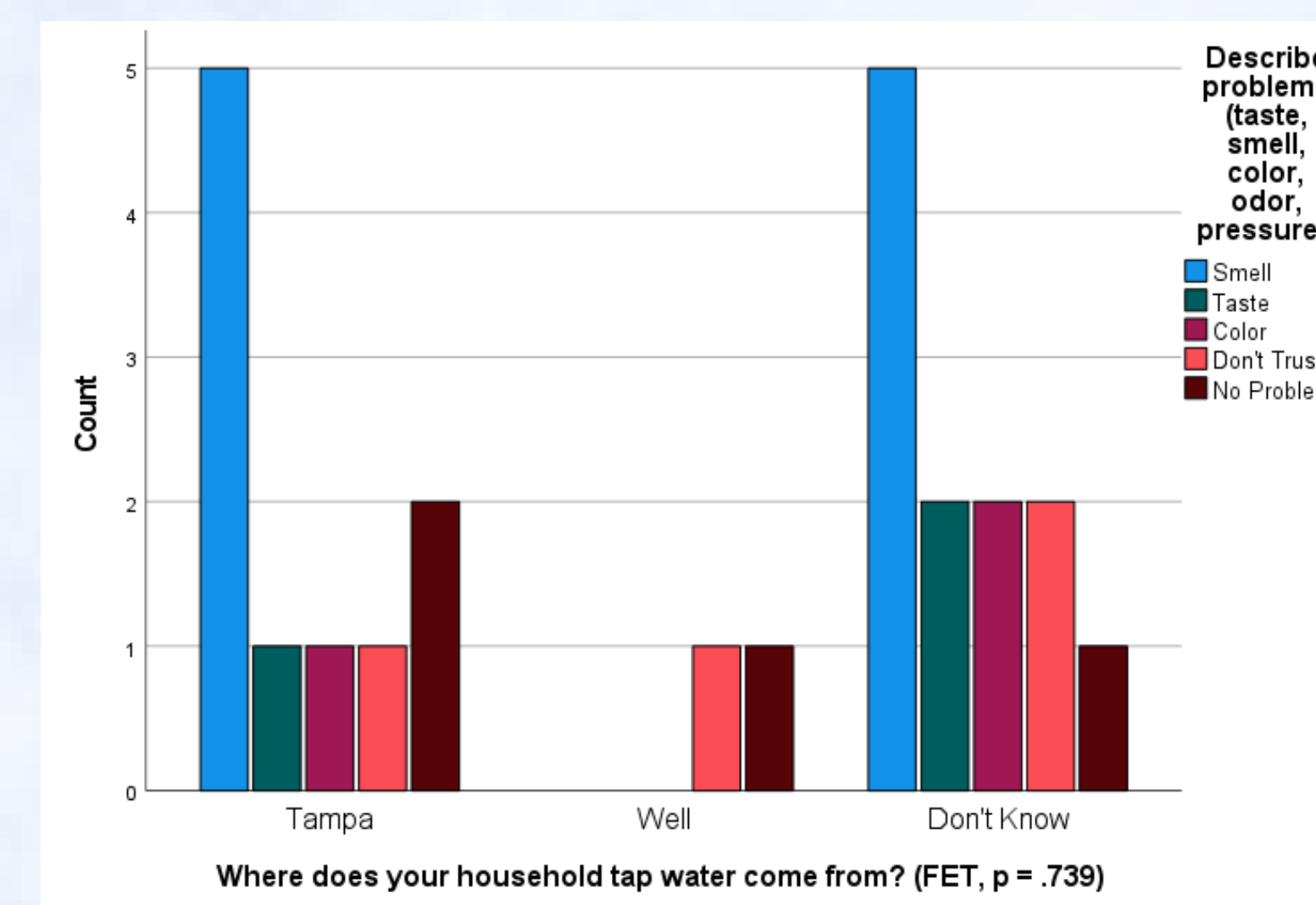
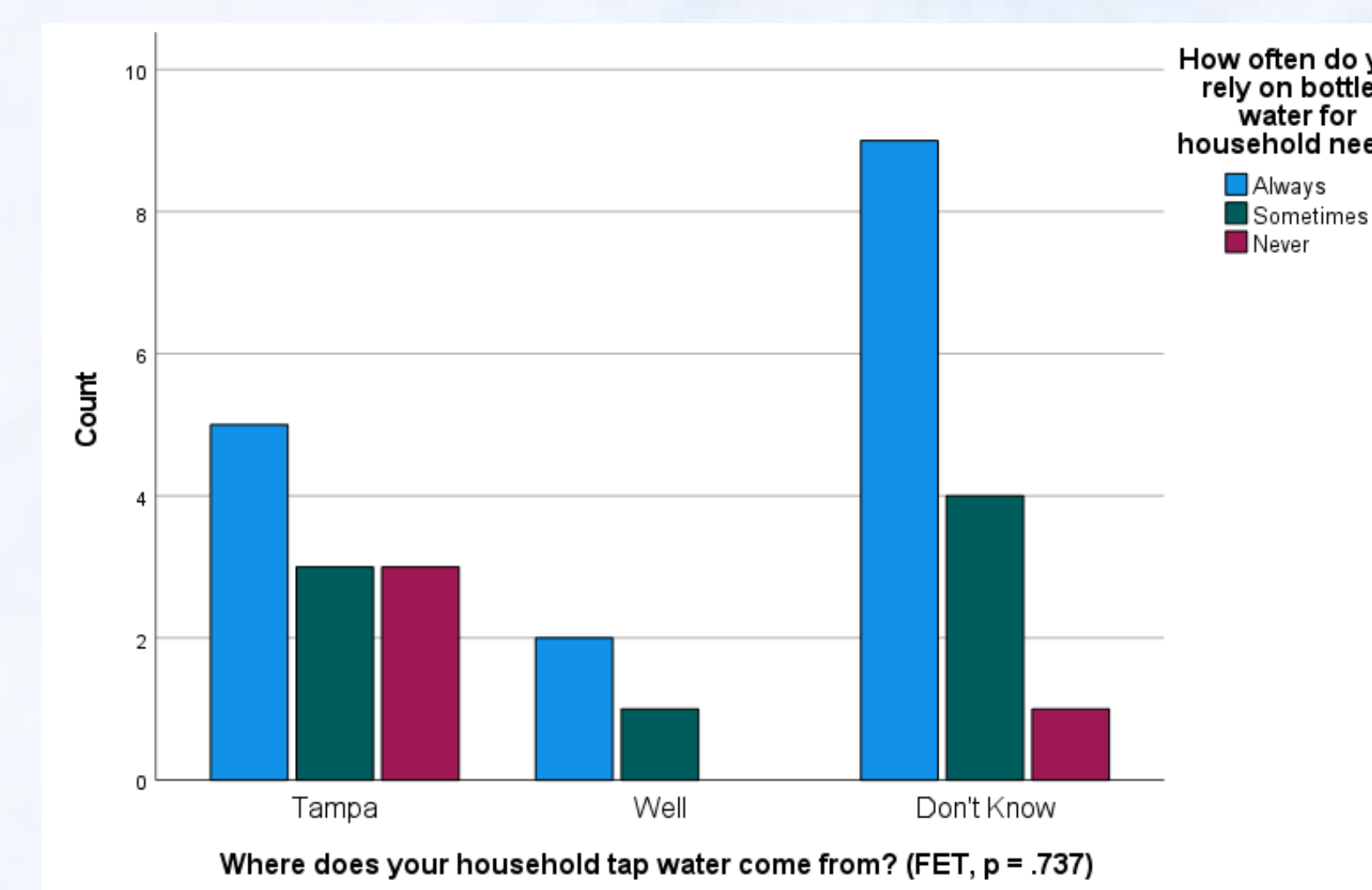
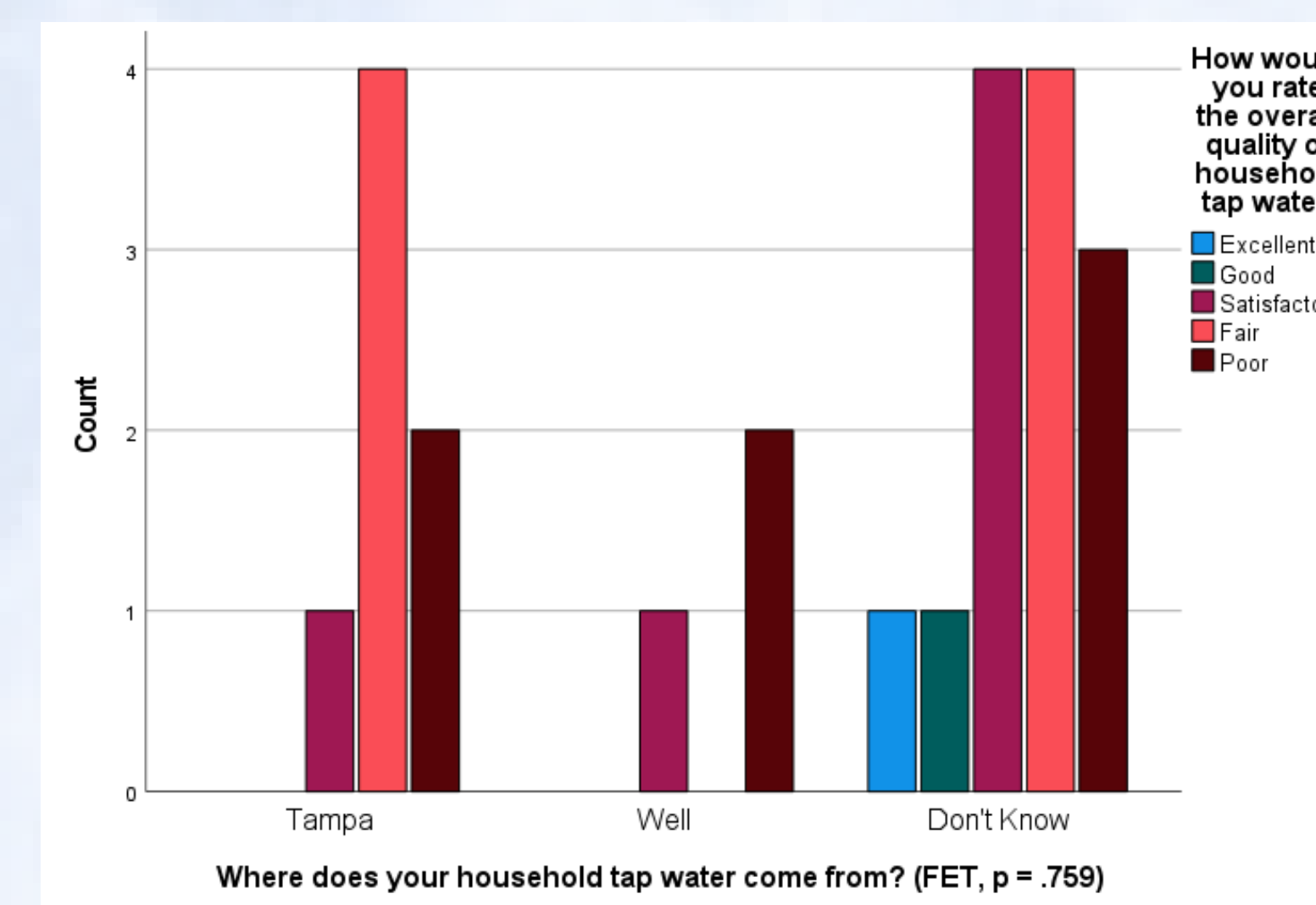


"The property we live at, I feel like it's contaminated. We can't drink our water there, you end up going to the hospital. The water is a brown color. You have big rust stains in your tub. You wouldn't live in a place like that, so why would you subject someone else to live like that?"

—Rachel (UAC resident), interview June 16, 2021

Water & Sewer Challenges

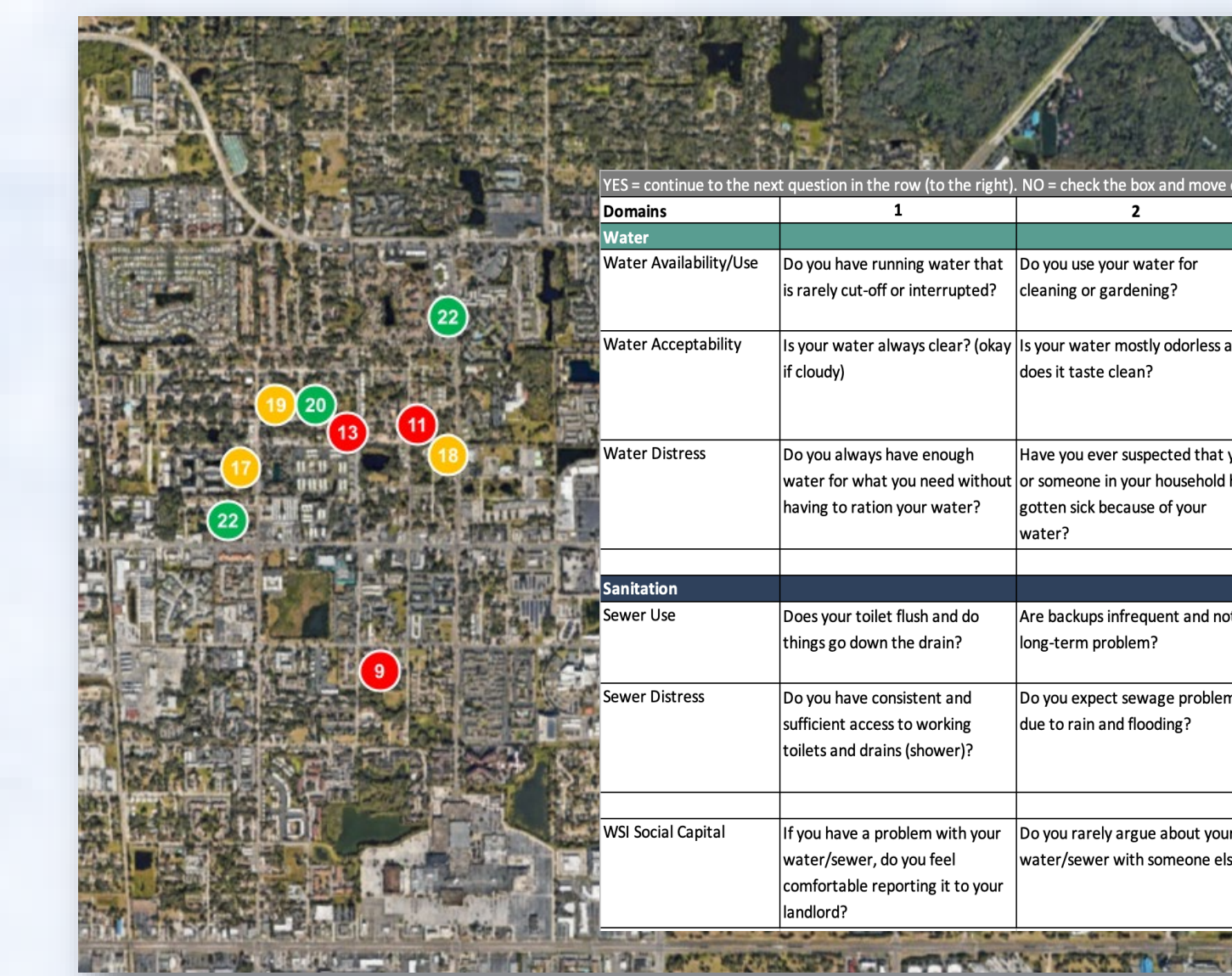
- Reliance on bottled water for drinking/bathing because of concerns about tap water quality
- Skin rashes/itching skin from shower water
- Concerns about septic system leach fields being close to drinking water wells
- Constant sewage backups in properties connected to city sewer
- "My tap water is always brown and smells"
- "Sometimes the water will be brown, sometimes it will smell like the sewage."
- "It smells. It was really bad. You can't drink it, so you're forced to buy bottled water."
- "I never drink the water. It is always bottled purchase."
- "You don't want to bathe in it, but you have no other choice."
- "Our babies get UTIs from bathing in contaminated water in the bathroom"



Key Findings

Our research also reveals potential interventions to these challenges in how interlocal agreements are negotiated between cities and counties regarding water and wastewater service provision. Finally, our research allowed us to develop a community-based, participatory rapid assessment tool for assessing household WatSan insecurity that helps us identify households in the community at greater risk for WatSan insecurity.

DUUC WatSan Insecurity Scale (DWISE)



WatSan Insecurity

- High level (≤14)
- Medium level (15-19)
- Low level (20-24)

| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Water Availability | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Water Acceptability | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Water Quantity | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Water Quality | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Water Access | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Water Security | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Water Affordability | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
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