Well Aware? Perception and Private Water Quality after Disasters

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The Texas Gulf Coast region is home to **7.3 million (25%) of the state's total population** and continues to grow, increasing the demand for water while also exposing water resources to hazards that can affect quality. [1] [2]

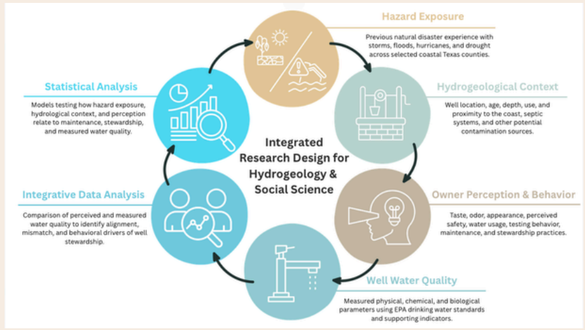
The quality of privately owned wells **rely on owner perception to address quality control** via maintenance which is why it is important to examine perceptions and how they are affected by disaster experince. [3]

Methodology

Figure 1. Selected Coastal Texas Counties

Sample: Harris, Galveston, Matagorda, Jackson, and Calhoun counties

RQ: How is disaster experience influenced by disaster exposure and well use frequency?



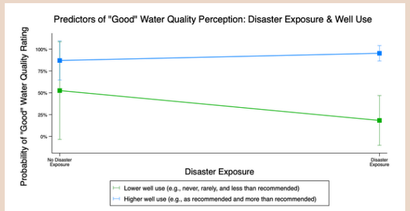
- **Only Galveston, Matagorda, & Chambers so far**
- Field Date: **September 2025 - 2027**
- Observations: **= 56 to date**
- Mode: **In-Person Water Sampling & Social Surveys**

Hypothesis

Well owners who **use their well water more frequently will likely show different perceptions** of water quality following disaster exposure compared to those who use their well water less frequently.

Disaster Exposure & Frequency Use Group	Predicted Probability of Rating WQ as "good"
No disaster + lower use	52.50%
No disaster + higher use	87.00%
Disaster + lower use	18.30%
Disaster + higher use	95.20%

- Dependent variable: "**How often do you use your well water for drinking?**"
- **Assessed the interaction between** disaster exposure with use frequency.
- All collected samples were from private well users who **primarily relied on their well water for domestic use**.
- However, some reported using their well water **more frequently** than others.



Disaster Exposure Group	Effect of Higher Well Use Frequency	p-value
No Disaster Exposure	+34.4 percentage points	0.26
Disaster Exposure	+76.9 percentage points	<0.001

Preliminary Results

Among respondents with disaster exposure, frequent well users were **76.9 percentage points more likely** to rate their well water quality as "good" compared to less frequent users (**p<0.001**). Results are exploratory due to small sample size (N=37).

Research Implications

- **Policy:** There may be a need to **expand post-disaster homeowner assistance programs to include private well water testing, treatment, and maintenance support** following flooding and other hazard events.
- **Practice**: Target private well outreach and water quality testing efforts **following** disaster events.

Next Steps:
Pair physical water sampling **with** social interview surveys.

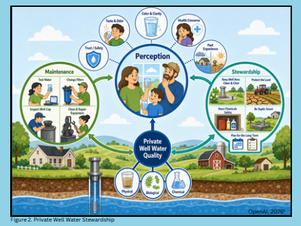


Figure 2. Private Well Water Stewardship

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