



UNIVERSITY OF WISCONSIN-MADISON

Rural Resident Perceptions of Wisconsin's Waters

Survey Results Summary Report



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2023

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INTRODUCTION

The comprehensive “Water Perspectives Study” survey was sent to 1,500 randomly-selected households across 16 targeted counties in Wisconsin between April and June 2023; each household fell within a Census-designated “rural” census block. 481 survey responses were received.

The survey itself was a 12-page questionnaire, mailed to residents with a small monetary pre-incentive, followed by a second reminder mailing one month after the initial mailing. In addition to demographic information, the survey’s questions asked about perceptions of water safety and availability, perceived risks to clean and plentiful water, sources of information that rural residents rely on, and how residents use and treat water in their home.

100 survey recipients were selected from within each of 16 different counties: Bayfield, Buffalo / Pepin (split 65 / 35), Dodge, Grant, Juneau, Kewaunee, Langlade, Manitowoc, Marinette, Racine, Rock, Taylor, Vilas, Washburn, and Waushara.

This project was carried out by an interdisciplinary group at the University of Wisconsin-Madison with support from Wisconsin Sea Grant, Water@UW Madison, the UW Survey Center, and the United States Geological Survey (USGS).



16 rural counties surveyed, map provided by Dan Huack.

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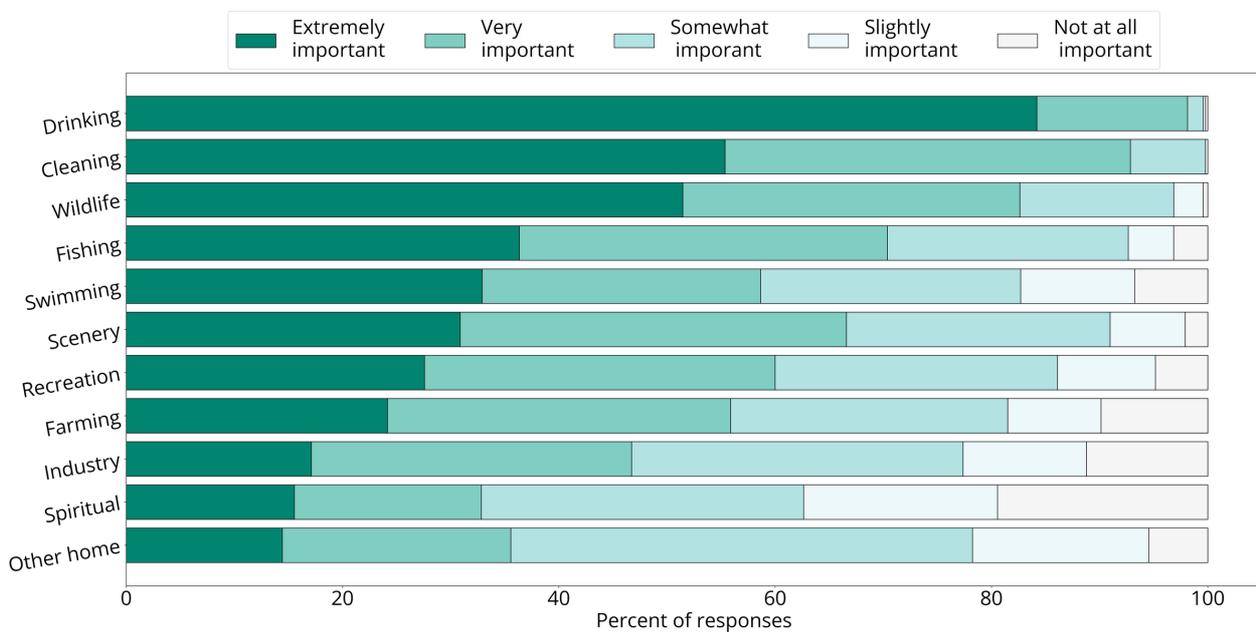
KEY FINDINGS

- 78% of respondents stated their home source was a private well. Among private well owners, only 21% have had their water quality tested within the past year as recommended.
- Respondents ranked water as very or extremely important for home uses including drinking (98%) and cleaning (93%). Among other uses surveyed, water for supporting wildlife (83%) and hunting & fishing (70%) was ranked very or extremely important.
- Rural residents perceived significant risks associated with water quality. In particular, rural residents perceive quite a bit or a great deal of risk from pesticides (47%), PFAS (39%), and nutrients (34%) in water supplies. In contrast, less than 20% of respondents perceived significant risk from factors that influence water supply (such as floods / droughts, farm pumping, and population growth).
- About 60% of rural residents report seeing little to no information about water in their community. The most used sources of information include local news and friends/family or neighbors.
- Despite hearing from local news and friends/family most often, less than 20% of respondents reported trusting these sources “quite a bit” or “a great deal”. In contrast, the highest levels of trust were for water experts including private well testers and staff at state/federal regulatory agencies, county conservation departments, and the UW System.

WATER IMPORTANCE



Rural residents were asked how important they consider water in their community to be for various purposes. After use for drinking and cleaning, rural residents described water as being most important for supporting wildlife, hunting / fishing, and scenic beauty. Less importance was ascribed to economic uses such as farming and industry. All exact figure values for the bar charts in this report can be found in the appendix.

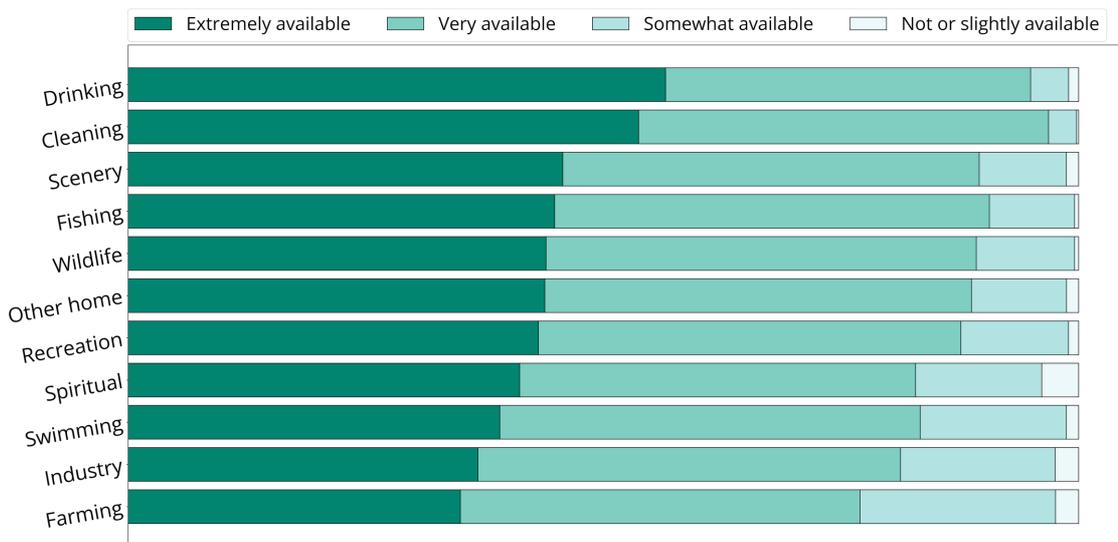


IMPLICATION:

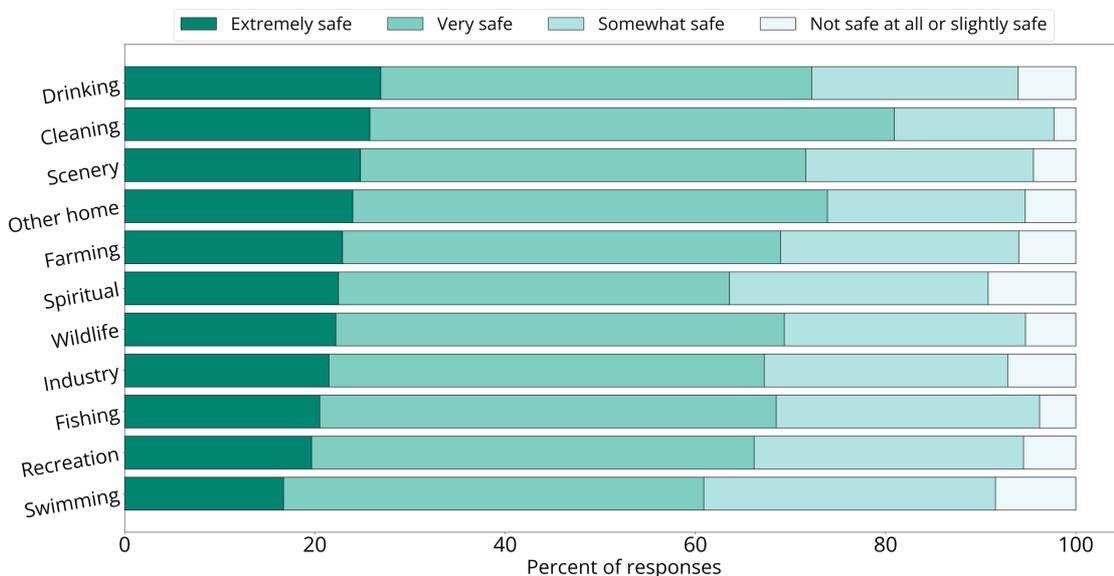
Agencies working to protect water resources can connect with rural users via their shared understanding of the importance of water for drinking and for supporting the health of wildlife.

WATER AVAILABILITY AND SAFETY

Most rural Wisconsin residents consider water to be safe and available in their communities, with over **60% of respondents considering water to be very or extremely safe** for all of the purposes surveyed and over **70% considering water to be very or extremely available** for all purposes surveyed. Our results indicate that water quality concerns are more prevalent than concerns about water availability. These results align with later findings in the survey related to perceived risks to water.



How **available** is water for the following purposes?



How **safe** is water for the following purposes?

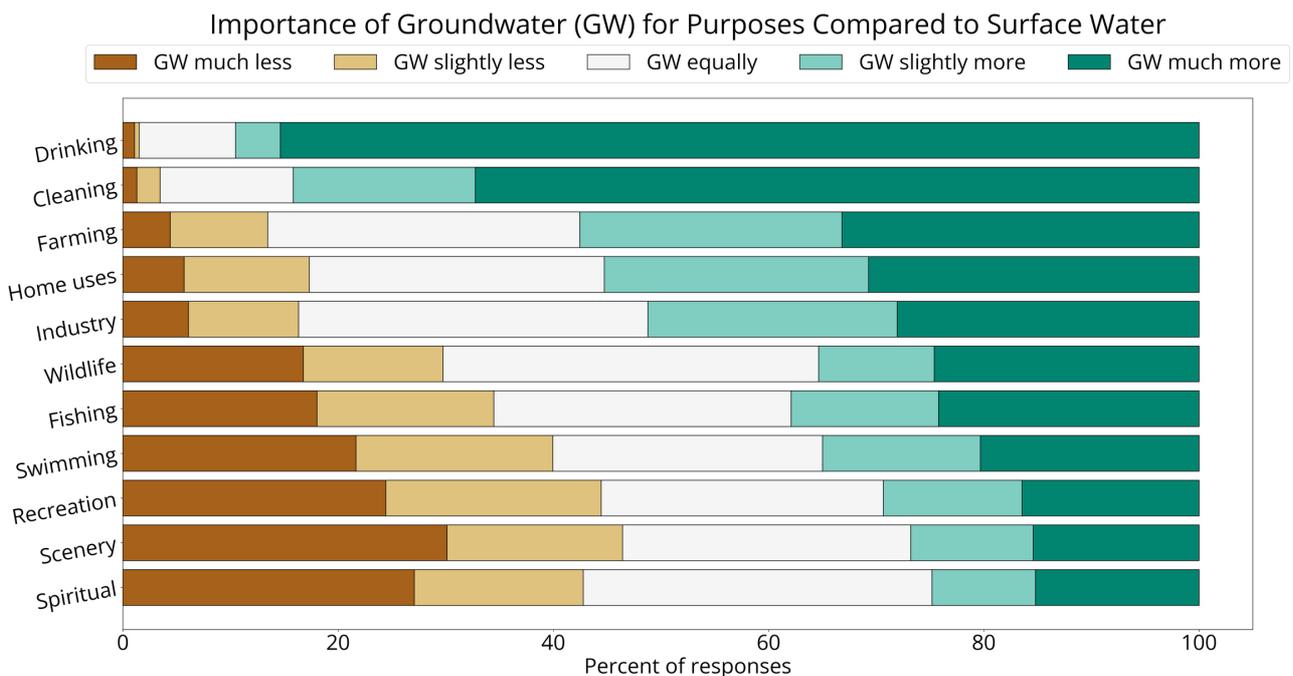
IMPLICATION:

While water is generally viewed as safe and plentiful in Wisconsin, rural residents expressed more confidence in the availability of their water than in its safety.

IMPORTANCE OF GROUNDWATER VERSUS SURFACE WATER



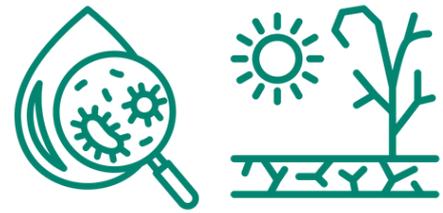
Respondents compared the relative importance of groundwater and surface water for various activities. Groundwater was viewed as more important for drinking, showering and cleaning, farm operations, other home uses, and manufacturing and industry. Surface water sources were viewed as more important for scenic value, recreation, and swimming. Groundwater and surface water sources were viewed of approximately equal importance for supporting local nature and wildlife, meeting spiritual needs, swimming, and fishing and hunting.



IMPLICATION:

Rural Wisconsinites perceive groundwater resources as more important for economic and personal uses than for supporting outdoor/natural activities. Our data suggest that some respondents may not recognize connections between groundwater and surface water that are vital to fish, wildlife, and their habitats.

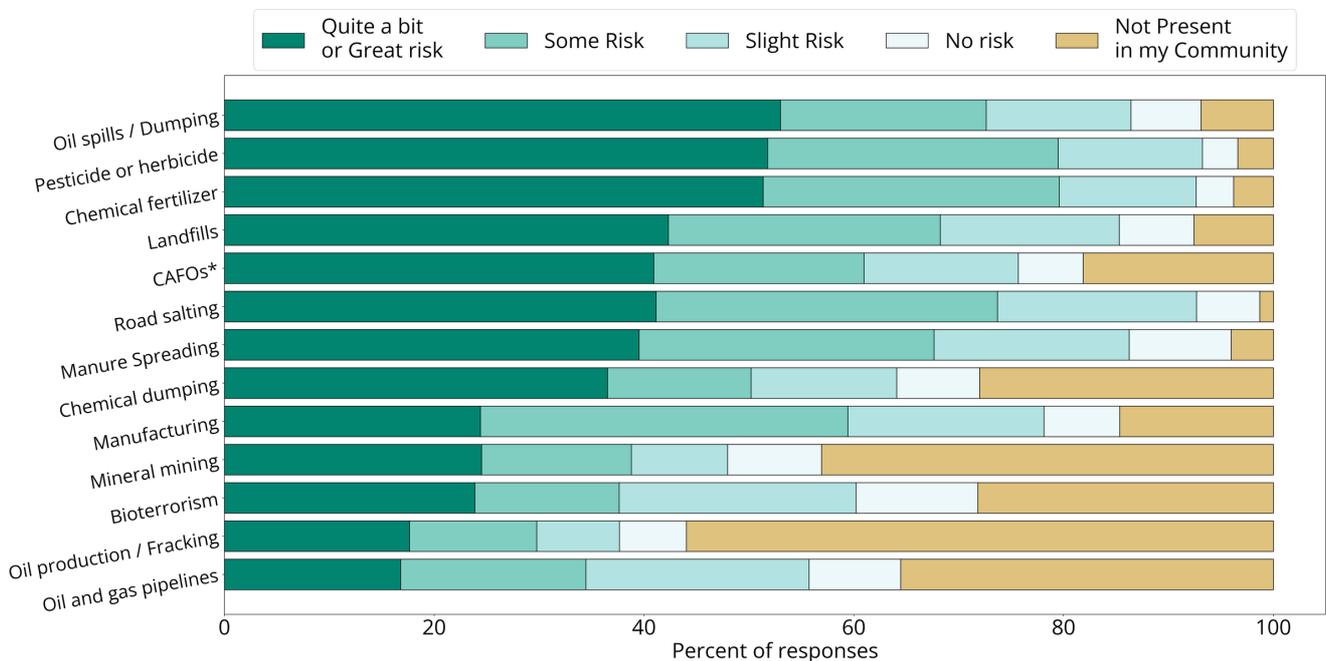
RISKS TO WATER



Respondents were asked to rate the level of risk in their community from actions in different categories including: town and residential actions, commercial and industrial uses, energy-related uses, agricultural uses, and other uses. On average by category, risks related to agricultural uses (such as pesticide and herbicide application; chemical fertilizer application) were ranked highest of these categories, followed by town and residential actions (such as oil spills and dumping; landfills). Energy related uses (such as green energy or nuclear power) were seen as the lowest risk, or not present in many communities.

The graph below shows selected risks from each category. For the full data, see the Appendix pages 15-17

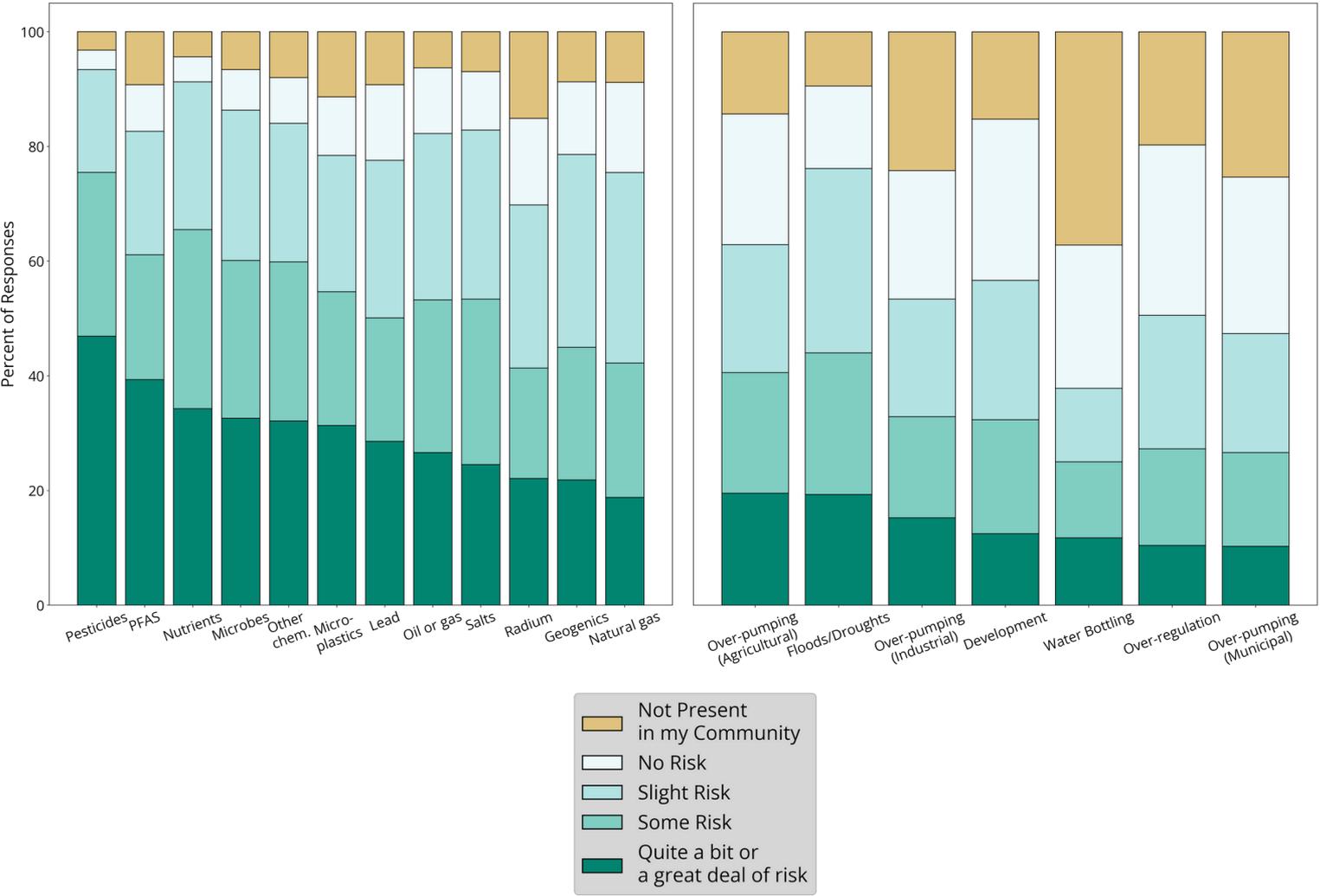
Risks from selected
Community Actions



*Concentrated Animal Feeding Operations

Risks to Water Quality

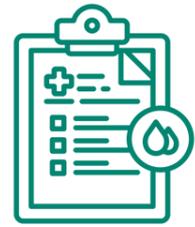
Risks to Water Supply



IMPLICATION:

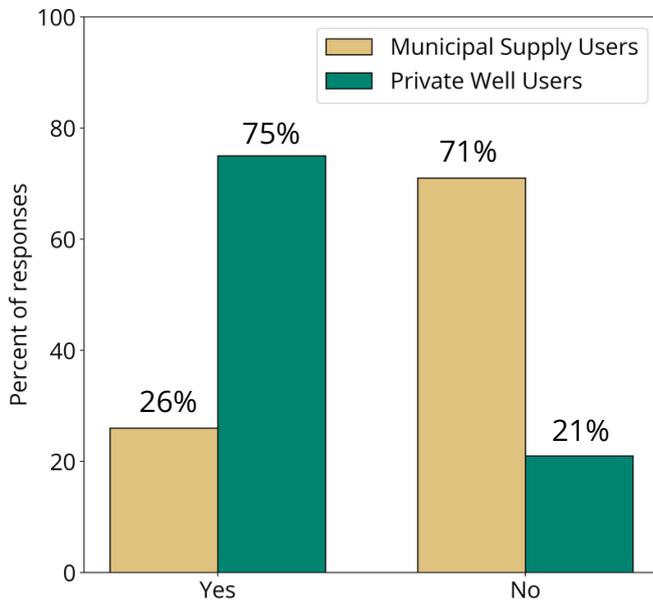
The highest perceived risks by rural residents come from agriculture-associated pollutants including herbicides / pesticides, nutrients, and microbes. PFAS is also perceived as high risk. Water supply issues overall are viewed as presenting less risk to community water than contaminants. However, among supply issues, climate variability and farm pumping were viewed as presenting the most risk.

WATER TESTING AND TREATMENT PRACTICES



Respondents were asked about the primary source of water for their home, as well as how they tested and treated this water. Overall, **78% of respondents stated their home source was a private well, and 19% stated their source is a municipal supply.**

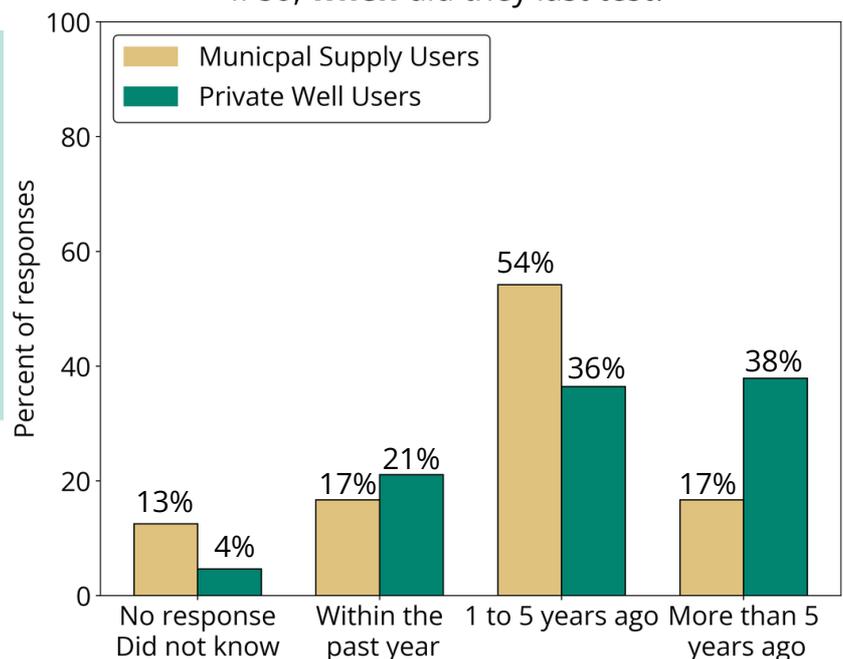
Have respondents **ever** tested their well for water quality?



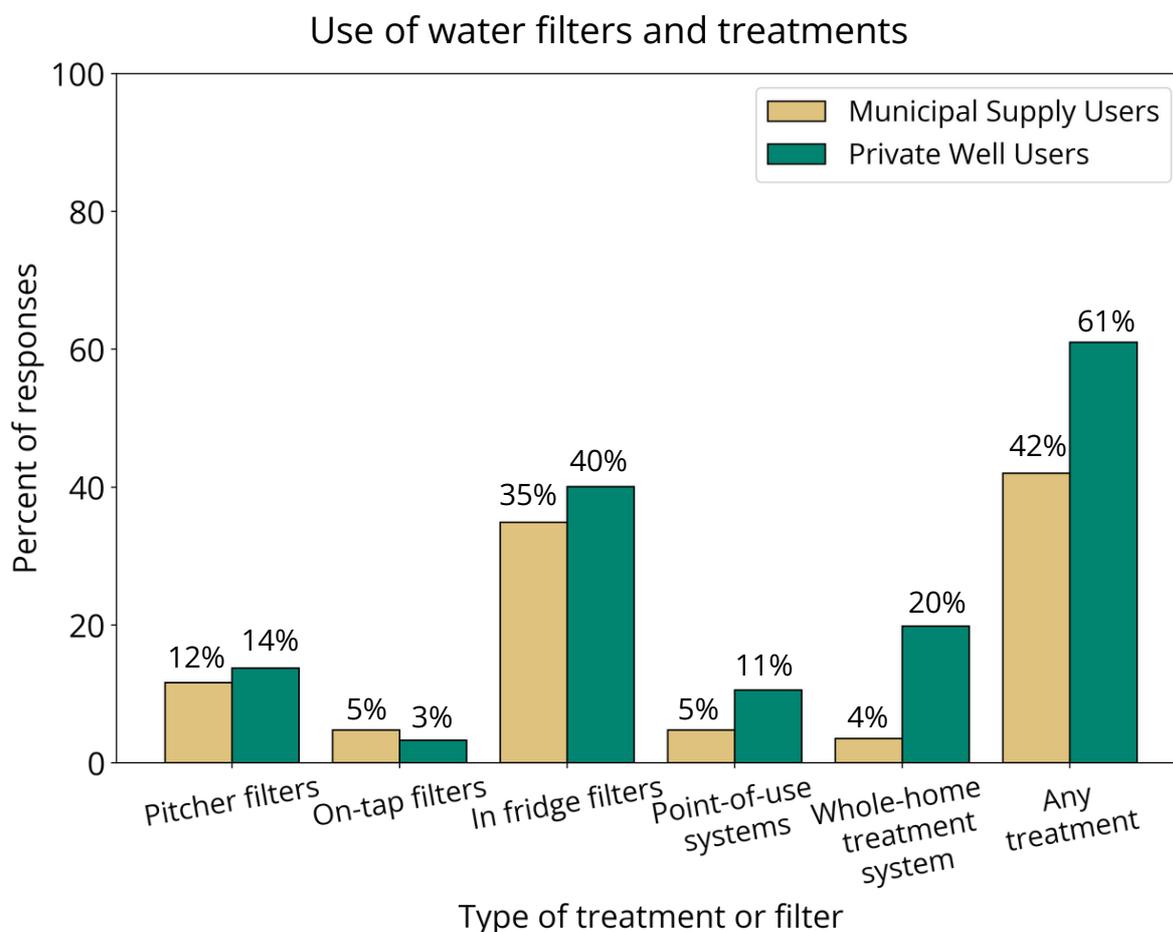
75% of private well users indicate having tested their water quality, in contrast to 26% of municipal water users having done so.

38% of private well users who have tested did so more than 5 years ago. Only 21% of private well users tested within the past year, as is recommended by the Wisconsin Department of Health Services for bacteria and nitrate at minimum.

If so, **when** did they last test?



The survey also asked about use of water treatment and filtration. **61% of private well users and 42% of municipal water users responded that they utilize at least one of the water treatments or filtration systems** listed for the primary source of water in home. In-fridge filters (such as water or ice dispensers) are the most commonly used for both private and municipal well owners. **19% of private well owners use a whole-home treatment system**, such as reverse-osmosis, activated carbon, or ion-exchange system.

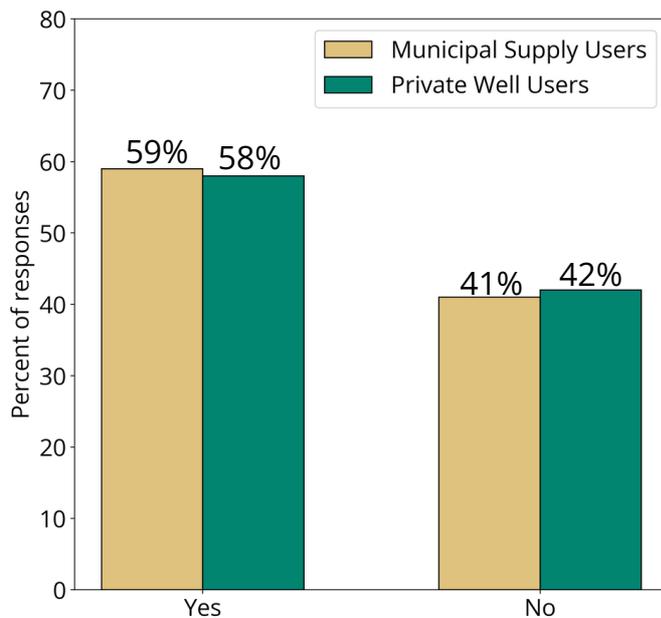


IMPLICATION:

79% of private well users indicated that they do not test annually as recommended. While 61% of private well users indicate using some filtration for their water, 39% did not report any filtration. Infrequent water testing and a lack of filtration may be a source of rural health risks.

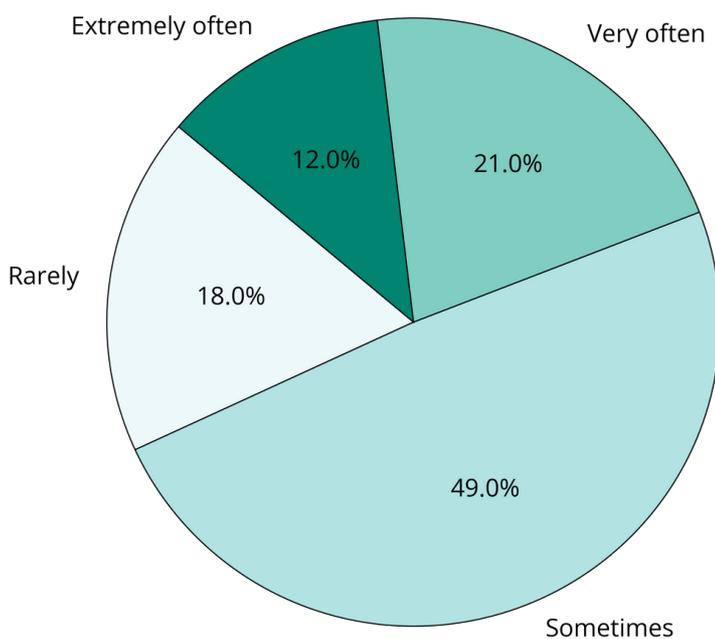
BOTTLED AND OTHER WATER SOURCES

Use of **other water sources** beyond primary source



Water source (municipal supply vs. private well) had no bearing on whether respondents used sources of water other than their primary source, with approximately 59% and 58% respectively indicating that they used additional sources of water such as bottled water, water coolers, or transported water.

Among respondents who use alternative water sources, **how often** are they used?

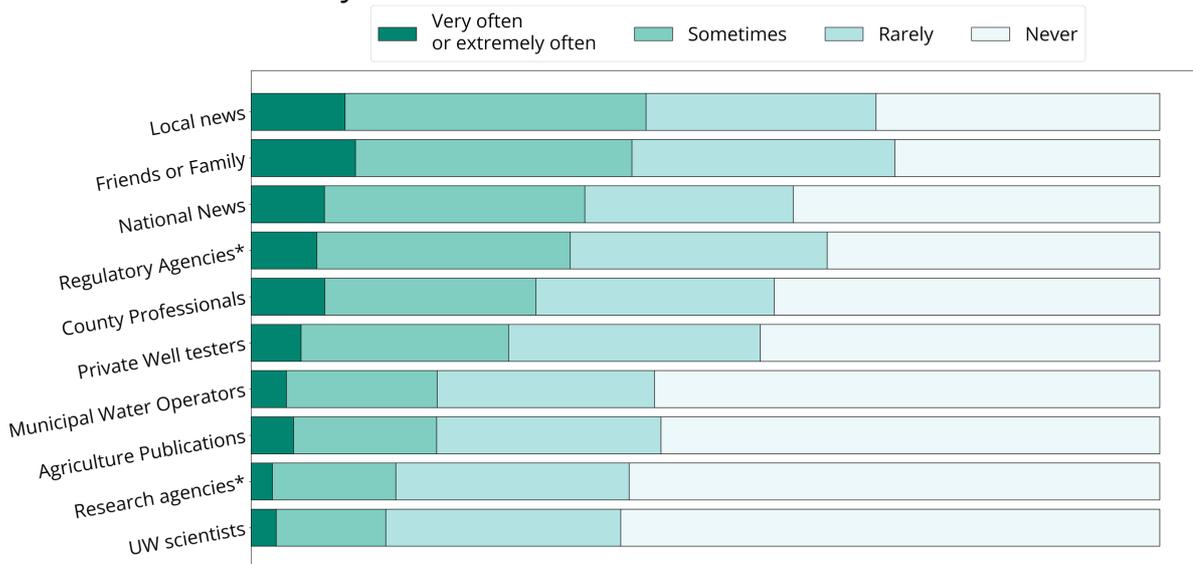


Even among those that use other water sources, the frequency of use is low, with almost 70% of respondents stating they utilize alternative sources only sometimes or rarely.

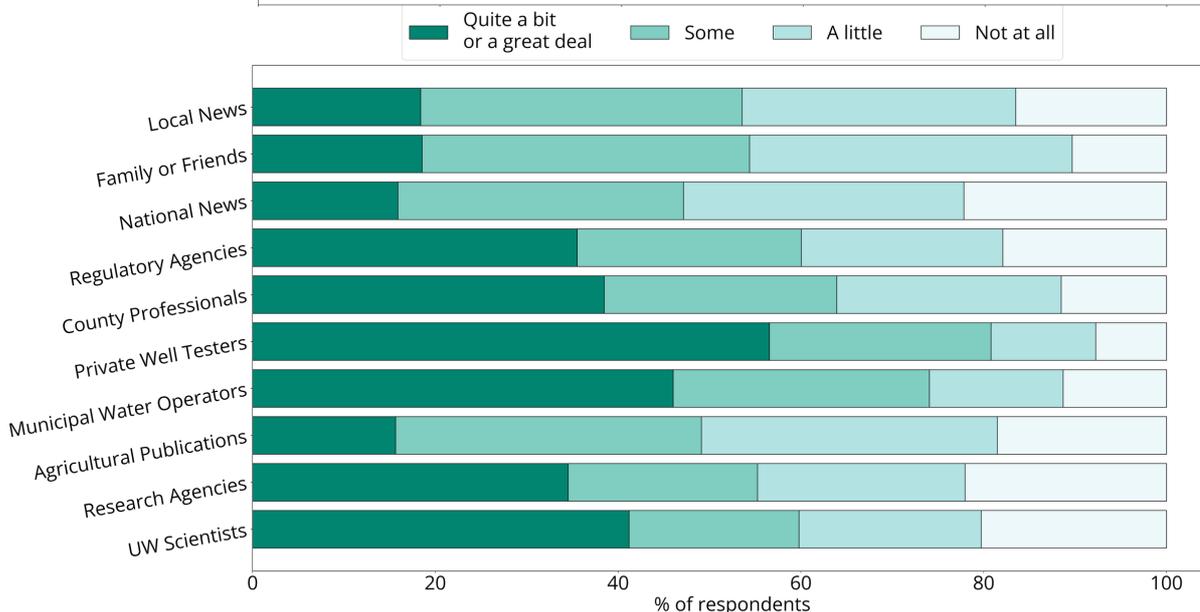
SOURCES OF INFORMATION & TRUST



The majority of rural residents reported hearing only rarely about water issues. Among sources of information, local news and friends/family were the most commonly cited, but with relatively lower trust compared to some other sources. Rural residents report hearing the least from UW scientists and research agencies, despite being ranked as more trustworthy.



What sources of information are **used**?



What sources of information are **trusted**?

*Regulatory agencies include Department of Natural Resources, Environmental Protection Agency

*Research agencies include Wisconsin Geological and Natural History Survey, US Geological Survey

IMPLICATION:

Our results indicate a gap in communications with rural residents on water-related issues in Wisconsin. Scientists and outreach professionals at UW System, agencies, counties, and other partners can improve communication strategies to better reach rural audiences.

CONCLUSIONS

This statewide survey on water issues in Wisconsin provides a snapshot of the knowledge, perceptions, observations, and practices of rural residents.



Most Wisconsinites express confidence in water's safety. Over 60% of rural Wisconsinites indicate their water is safe for all purposes.

Rural residents perceive "a great deal" or "quite a bit" of risk to clean water from agricultural actions such as chemical fertilizer applications (51%), pesticide or herbicide applications (52%), and Concentrated Animal Feeding Operations (CAFOs, 41%).



Rural residents report receiving little information about water issues. Trustworthy sources of information such as the UW System, state/federal research agencies, and municipal water operators can do more to reach this population.

APPENDIX

Thinking about your local community, in your opinion, how important is water for each of the following purposes?

	Not at all Important	Slightly Important	Somewhat Important	Very Important	Extremely Important
Drinking	0%	0%	1%	14%	84%
Cleaning	0%	0%	7%	37%	55%
Wildlife	0%	3%	14%	31%	51%
Fishing	3%	4%	22%	34%	36%
Swimming	7%	11%	24%	26%	33%
Scenery	2%	7%	24%	36%	31%
Recreation	5%	9%	26%	32%	28%
Farming	10%	9%	26%	32%	24%
Industry	11%	11%	31%	30%	17%
Spiritual	19%	18%	30%	17%	16%
Other home	5%	16%	43%	21%	14%

Thinking about your local community, in your opinion, how readily available is water for the following purposes?

	Not at all or slightly avail.	Somewhat available	Very available	Extremely available
Farm operations	4%	20%	42%	35%
Manufacturing and industry	4%	16%	44%	36%
Swimming	2%	15%	44%	39%
Meeting spiritual needs	5%	13%	41%	41%
Other Recreation	2%	11%	44%	43%
Other home uses	1%	10%	45%	43%
Supporting local nature and wildlife	2%	10%	45%	44%
Fishing and hunting	1%	9%	46%	45%
Scenic value or beauty	2%	9%	44%	45%
Showering and cleaning	1%	3%	43%	53%
Drinking	1%	4%	38%	56%

Thinking about your local community, in your opinion, how safe is water for the following purposes?

	Not safe at all or slightly safe	Somewhat safe	Very safe	Extremely safe
Swimming	8%	31%	44%	17%
Other Recreation	5%	28%	47%	20%
Fishing and hunting	4%	28%	48%	21%
Manufacturing and industry	7%	26%	46%	21%
Supporting local nature and wildlife	5%	25%	47%	22%
Meeting spiritual needs	9%	27%	41%	22%
Farm operations	6%	25%	46%	23%
Other home uses	5%	21%	50%	24%
Scenic value or beauty	4%	24%	47%	25%
Showering and cleaning	2%	17%	55%	26%
Drinking	6%	22%	45%	27%

How important is groundwater for each of the following purposes, when compared to surface water, that is rivers, lakes, streams, etc.?

	Groundwater much less important	Groundwater slightly less important	Groundwater equally important	Groundwater slightly more important	Groundwater much more important
Meeting spiritual needs	27%	16%	32%	10%	15%
Scenic value or beauty	30%	16%	27%	11%	15%
Other Recreation	24%	20%	26%	13%	16%
Swimming	22%	18%	25%	15%	20%
Fishing and hunting	18%	16%	28%	14%	24%
Supporting local nature and wildlife	17%	13%	35%	11%	25%
Manufacturing and industry	6%	10%	32%	23%	28%
Other home uses	6%	12%	27%	25%	31%
Farm operations	4%	9%	29%	24%	33%
Showering and cleaning	1%	2%	12%	17%	67%
Drinking	1%	0%	9%	4%	85%

How much risk to clean water do you think each of the following town or residential actions present to your local community?

	Not present in my community	No risk	Slight risk	Some risk	Quite a bit or great risk
Wastewater treatment plants	11%	14%	23%	31%	21%
Septic systems	3%	13%	27%	34%	22%
Lawn care or landscaping	3%	18%	27%	28%	23%
Road salting	1%	6%	19%	33%	41%
Landfills or municipal waste disposal	8%	7%	17%	26%	42%
Other residential actions such as oil spills or dumping	7%	7%	14%	20%	53%

How much risk to clean water do you think each of the following commercial or industrial uses present to your local community?

	Not present in my community	No risk	Slight risk	Some risk	Quite a bit or great risk
Airport or military base operations	37%	11%	17%	17%	18%
Commercial operations such as gas stations	11%	7%	21%	41%	21%
Frac sand mining	44%	9%	10%	14%	23%
Manufacturing operations	15%	7%	19%	35%	24%
Mineral mining	43%	9%	9%	14%	25%

How much risk to clean water do you think each of the following energy related uses present to your local community?					
	Not present in my community	No risk	Slight risk	Some risk	Quite a bit or great risk
Green energy installations such as wind and solar	23%	37%	21%	14%	6%
Nuclear power plants	51%	9%	10%	14%	16%
Oil and gas distributions such as pipelines	36%	9%	21%	18%	17%
Oil and gas production such as fracking	56%	6%	8%	12%	18%
Power plants such as coal or natural gas	44%	9%	14%	14%	19%

How much risk to clean water do you think each of the following agricultural uses present to your local community?					
	Not present in my community	No risk	Slight risk	Some risk	Quite a bit or great risk
Farm Manure spreading	4%	10%	19%	28%	40%
Intensive livestock operations such as Concentrated Animal Feeding Operations (CAFOs)	18%	6%	15%	20%	41%
Chemical fertilizer applications by farms	4%	4%	13%	28%	51%
Pesticide or herbicide applications by farms	3%	3%	14%	28%	52%

How much risk to clean water do you think each of the following other factors present to your local community?					
	Not present in my community	No risk	Slight risk	Some risk	Quite a bit or great risk
Abandoned wells	15%	18%	32%	24%	10%
Natural elements within rocks or sediment such as arsenic	14%	11%	33%	29%	13%
Attacks such as bioterrorism	28%	12%	23%	14%	24%
Discovery of former chemical dumping sites	28%	8%	14%	14%	37%

How much risk to clean water do you think each of the following presents to your local community?

	Not Present in my Community	No Risk	Slight Risk	Some Risk	Quite a bit or a great deal of risk
Pesticides	3%	3%	18%	29%	47%
PFAS	9%	8%	22%	22%	39%
Nutrients	4%	4%	26%	31%	34%
Microbes	7%	7%	26%	28%	33%
Other chemicals	8%	8%	24%	28%	32%
Micro-plastics	11%	10%	24%	23%	31%
Lead	9%	13%	27%	22%	29%
Oil or gas	6%	11%	29%	27%	27%
Salts	7%	10%	30%	29%	25%
Radium	15%	15%	28%	19%	22%
Geogenics	9%	13%	34%	23%	22%
Natural gas	9%	16%	33%	23%	19%

How much risk of potential supply problems do you think each of the following present to your local community?

	Not Present in my Community	No Risk	Slight Risk	Some Risk	Quite a bit or a great deal of risk
Over-pumping (Agricultural)	14%	23%	22%	21%	20%
Floods/Droughts	9%	14%	32%	25%	19%
Over-pumping (Industrial)	24%	22%	20%	18%	15%
Development	15%	28%	24%	20%	12%
Water Bottling	37%	25%	13%	13%	12%
Over-regulation	20%	30%	23%	17%	10%
Over-pumping (Municipal)	25%	27%	21%	16%	10%

How often do you get information about issues related to water in your local community from the following sources?				
	Never	Rarely	Sometimes	Very often or extremely often
University of Wisconsin system scientists or researchers	59%	26%	12%	3%
State or federal research agencies such as the Wisconsin Geological and Natural History Survey (WGNHS) or the US Geological Survey (USGS)	58%	26%	14%	2%
Agriculture or industry-specific publications	55%	25%	16%	5%
Municipal water operators	56%	24%	17%	4%
Private well testers or consultants	44%	28%	23%	5%
County land and conservation professionals	42%	26%	23%	8%
State or federal regulatory agencies such as the Department of Natural Resources (DNR) or Environmental Protection Agency (EPA)	37%	28%	28%	7%
National print or broadcast news including national TV channels, newspapers, or websites	40%	23%	29%	8%
Friends, family, or neighbors	29%	29%	30%	11%
Local print or broadcast news including local TV channels, newspapers, or websites	31%	25%	33%	10%

How much do you trust the information you get from each of the following sources?				
	Not at all	A little	Some	Quite a bit or a great deal
University of Wisconsin system scientists or researchers	20%	20%	19%	41%
State or federal research agencies such as the Wisconsin Geological and Natural History Survey (WGNHS) or the US Geological Survey (USGS)	22%	23%	21%	35%
Agriculture or industry-specific publications	19%	32%	33%	16%
Municipal water operators	11%	15%	28%	46%
Private well testers or consultants	8%	11%	24%	57%
County land and conservation professionals	12%	25%	25%	38%
State or federal regulatory agencies such as the Department of Natural Resources (DNR) or Environmental Protection Agency (EPA)	18%	22%	25%	36%
National print or broadcast news including national TV channels, newspapers, or websites	22%	31%	31%	16%
Friends, family, or neighbors	10%	35%	36%	19%
Local print or broadcast news including local TV channels, newspapers, or websites	16%	30%	35%	18%