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Know Your Audience: How Understanding Population Demographics Can Direct Your Water Messaging Efforts

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So what are we up to…

Much of the published water scarcity research has focused on <u>mechanical means</u> of water conservation—think new irrigation techniques, miserly appliances, water-wise farming practices, etc.

But even if these solutions are available, water conservation takes place only if a user <u>adopts</u> the new practice or technology.

My research (along with a group of PhD students) has focused on what <u>communication practices can aid in this adoption and water-positive behavior</u>.

Ultimately, the goal is to determine what <u>kind of media content can be produced</u> that would influence people to take action to conserve water.

What have we done so far…

- <u>Surveyed</u> almost 3,000 people across the US regarding their thoughts on water conservation, climate change and their own demographics

- <u>Tracked social media </u> traffic as it relates to water conservation and water quality

- <u>Content analyzed </u> newspapers to determine how drought is covered across the state over the last 20 years

- <u>Dial-tested</u> various water conservation message frames on High Plains farmers

- Conducted <u>focus groups </u> with farmer participants investigating the communication channels that influence water-wise technology adoption

- <u>Experimented</u> with different water conservation practices a company (beer brewer in our case) may use to help attract potential eco-friendly consumers

- Ran <u>message-testing experiments </u> to see how infographics are processed in media espousing the need for water conservation

What we have uncovered…

Conservatives are Generally Less "Concerned" than Liberals

**RQ1:** How does political ideology influence perceptions/ behaviors related to water scarcity/pollution?

H2: Liberals demonstrated stronger water consciousness attitudes, intended behavior change & viewed related material as more credible than Conservatives.

Table 1. Responses by Scenario and Political Identity

	Scarcity			Pollution			Overall		
	Lib	Mod	Con	Lib	Mod	Con	Lib	Mod	Con
Scared	5.94[A]	5.42[AB]	4.86[B]	6.12[A]	5.51[B]	5.09[B]	6.04[A]	5.47[B]	4.98[B]
	$F(2, 471) = 6.55, p < .01, \eta_p^2 = .027$			$F(2, 471) = 6.12, p < .01, \eta_p^2 = .025$			$F(2, 470) = 8.01, p < .01, \eta_p^2 = .03$		
Worried	7.23[A]	6.55[A]	6.04[B]	7.57[A]	7.06[B]	6.32[C]	7.39[A]	6.79[B]	6.18[C]
	$F(2, 471) = 10.38, p < .001, \eta_p^2 = .042$			$F(2, 470) = 11.57, p < .001, \eta_p^2 = .047$			$F(2, 472) = 13.64, p < .001, \eta_p^2 = .055$		
Threatening	7.36[A]	6.95[B]	6.10[B]	7.38[A]	6.93[B]	6.20[B]	7.36[A]	6.93[B]	6.13[B]
	$F(2, 472) = 11.54, p < .001, \eta_p^2 = .047$			$F(2, 472) = 10.10, p < .001, \eta_p^2 = .041$			$F(2, 472) = 14.53, p < .001, \eta_p^2 = .058$		
Topic Skepticism	2.65[A]	3.16[B]	3.58[C]	2.55[A]	3.06[B]	3.42[C]	2.60[A]	3.11[B]	3.50[C]
	$F(2, 471) = 25.99, p < .001, \eta_p^2 = .099$			$F(2, 472) = 23.83, p < .001, \eta_p^2 = .092$			$F(2, 472) = 27.36, p < .001, \eta_p^2 = .104$		
Important Issue	8.29[A]	7.68[B]	6.98[C]	8.30[A]	7.77[B]	7.29[C]	8.30[A]	7.72[B]	7.15[C]
	$F(2, 470) = 18.00, p < .001, \eta_p^2 = .071$			$F(2, 472) = 12.15, p < .001, \eta_p^2 = .049$			$F(2, 472) = 18.87, p < .001, \eta_p^2 = .074$		
Change Actions	5.32[A]	4.94[A]	4.75[B]	5.25[A]	5.05[A]	4.62[B]	5.28[A]	4.99[B]	4.68[C]
	$F(2, 471) = 9.01, p < .001, \eta_p^2 = .037$			$F(2, 472) = 8.25, p < .001, \eta_p^2 = .034$			$F(2, 472) = 11.28, p < .001, \eta_p^2 = .046$		

Note: All horizontal means within scenario not sharing a superscript letter vary significantly by SNK post hoc tests.

Figure 1. Impact of Political Ideology on Issue Perception, Organization/Spokesperson/Information Credibility and Behavior Change
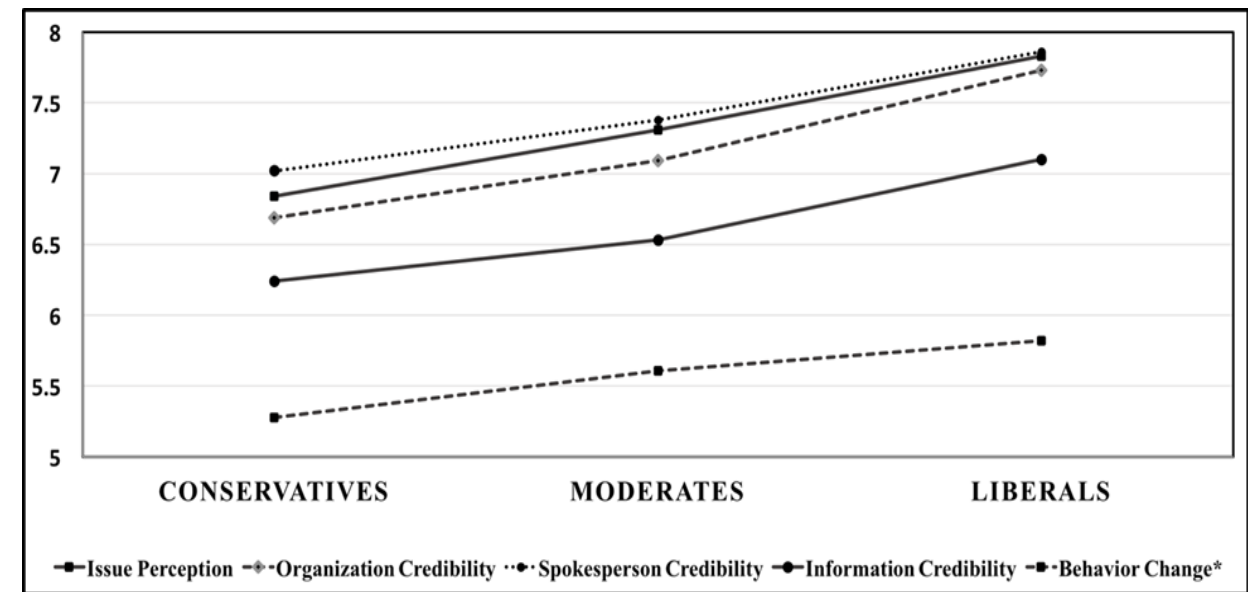
Note: All measures on a 0-10 scale other than Behavior Change, which was measured on a 1-7 scale.

What we have uncovered...

But Experience with Water Scarcity Overcomes Influence of Ideology

RQ2: How does experience with water scarcity/pollution influence perceptions/expected behaviors?

Table 2. Responses by Politics and Experience

	Liberal		Moderate		Conservative	
	Low Exp	High Exp	Low Exp	High Exp	Low Exp	High Exp
Scared[Scarcity]	5.54[A]	6.34[B]	5.01[a]	5.70[b]	4.27[A]	5.71[B]
	$F_{(1, 224)} = 4.33, p = .039, \eta^2_p = .01$		$F_{(1, 153)} = 3.47, p = .064, \eta^2_p = .022$		$F_{(1, 98)} = 5.22, p = .025, \eta^2_p = .051$	
Scared[Pollution]	5.69[A]	6.46[B]	4.78[A]	6.04[B]	4.02[A]	6.19[B]
	$F_{(1, 223)} = 5.12, p = .025, \eta^2_p = .023$		$F_{(1, 155)} = 11.50, p = .001, \eta^2_p = .069$		$F_{(1, 99)} = 16.04, p < .001, \eta^2_p = .139$	
Worried[Scarcity]	7.05[a]	7.45[b]	6.10[A]	6.89[B]	5.27[A]	7.08[B]
	$F_{(1, 223)} = 2.83, p = .094, \eta^2_p = .013$		$F_{(1, 153)} = 5.71, p = .018, \eta^2_p = .036$		$F_{(1, 99)} = 8.53, p = .004, \eta^2_p = .079$	
Worried[Pollution]	7.26[A]	7.84[B]	6.82[A]	7.23[A]	5.55[A]	7.14[B]
	$F_{(1, 223)} = 5.15, p = .024, \eta^2_p = .023$		$F_{(1, 154)} = 2.40, p = .123, \eta^2_p = .015$		$F_{(1, 99)} = 7.29, p = .008, \eta^2_p = .069$	
Threatening[Scarcity]	6.94[A]	7.77[B]	6.28[A]	7.46[B]	5.29[A]	7.16[B]
	$F_{(1, 224)} = 9.38, p = .002, \eta^2_p = .04$		$F_{(1, 153)} = 13.89, p < .001, \eta^2_p = .083$		$F_{(1, 99)} = 17.2, p < .001, \eta^2_p = .148$	
Threatening[Pollution]	6.94[A]	7.77[B]	6.48[A]	7.26[B]	5.10[A]	7.30[B]
	$F_{(1, 223)} = 9.45, p = .002, \eta^2_p = .041$		$F_{(1, 153)} = 6.47, p = .012, \eta^2_p = .040$		$F_{(1, 99)} = 19.69, p < .001, \eta^2_p = .166$	
Topic Skeptic[Scarcity]	2.28[A]	3.07[B]	2.79[A]	3.41[B]	3.43[A]	3.77[A]
	$F_{(1, 224)} = 25.29, p < .001, \eta^2_p = .101$		$F_{(1, 152)} = 11.18, p = .001, \eta^2_p = .068$		$F_{(1, 99)} = 2.63, p = .108, \eta^2_p = .026$	
Topic Skeptic[Pollution]	2.30[A]	2.77[B]	2.65[A]	3.35[B]	3.49[A]	3.35[A]
	$F_{(1, 223)} = 8.72, p = .003, \eta^2_p = .038$		$F_{(1, 155)} = 13.91, p < .001, \eta^2_p = .082$		$F_{(1, 99)} = .346, p = .558, \eta^2_p = .003$	
Import Issue[Scarcity]	8.35[A]	8.22[A]	7.83[A]	7.61[A]	6.44[A]	7.67[A]
	$F_{(1, 223)} = .128, p = .720, \eta^2_p = .001$		$F_{(1, 153)} = .061, p = .805, \eta^2_p = .000$		$F_{(1, 99)} = 5.43, p = .022, \eta^2_p = .052$	
Import Issue[Pollution]	8.24[A]	8.37[A]	8.10[A]	7.55[A]	6.90[A]	7.69[A]
	$F_{(1, 223)} = .529, p = .468, \eta^2_p = .002$		$F_{(1, 155)} = 2.19, p = .141, \eta^2_p = .014$		$F_{(1, 99)} = 3.13, p = .080, \eta^2_p = .031$	
Change Actions[Scarcity]	5.22[A]	5.44[A]	4.80[a]	5.07[a]	4.38[A]	5.28[B]
	$F_{(1, 224)} = 2.51, p = .114, \eta^2_p = .011$		$F_{(1, 152)} = 3.31, p = .071, \eta^2_p = .021$		$F_{(1, 99)} = 8.59, p = .004, \eta^2_p = .08$	
Change Actions[Pollution]	5.00[A]	5.47[B]	4.91[A]	5.14[A]	4.17[A]	5.13[A]
	$F_{(1, 223)} = 7.95, p = .005, \eta^2_p = .034$		$F_{(1, 155)} = 2.73, p = .101, \eta^2_p = .017$		$F_{(1, 99)} = 8.99, p = .003, \eta^2_p = .083$	

Note: All horizontal means within political category not sharing a superscript letter vary significantly by SNK post hoc tests. Capital superscript indicates p value less than .05. Lower case superscript indicates p value more than .05 but less than .10.

Perceptions of Water Scarcity & Messaging by Politics and Scarcity Experience

	Conservative		Moderate		Liberal		Independent of Politics	
	Low Exp	High Exp	Low Exp	High Exp	Low Exp	High Exp	Low Exp	High Exp
ISSUE THREAT	4.95	8.00	4.71	7.60	5.04	8.14	4.93[A]	7.96[B]
	6.59		5.91		6.18			
INFO CREDIBILITY	7.11	6.69	6.94	6.25	7.68	6.89	7.35[B]	6.66[A]
	6.88[B]		6.65[AB]		7.39[BC]			
INTENT TO CONSERVE	6.83	8.52	6.05	7.88	7.07	8.34	6.75[A]	8.29[B]
	7.74[B]		6.81[A]		7.54[B]			
SELF EFFICACY	7.15	7.89	6.68	7.44	7.45[A]	8.27[A]	7.18[A]	7.93[B]
	7.54[B]		7.00[A]		7.75[B]			
INFO RECALL	2.76	2.35[A]	3.00	2.68	3.03[A]	2.60[A]	2.96[B]	2.53[A]
	2.54		2.87		2.87			

Note: All horizontal means within political category not sharing a superscript letter vary significantly by SNK post hoc tests.

What we have uncovered…

Perceptions of Efficacy Matters

How threatening is the issue of water scarcity?

Predictor	b (SE)	β
Political Ideology	.18 (.07)	.10*
Water Scarcity Experience	.30 (.03)	.46**
Self-Efficacy	.43 (.04)	.41**

Note: *$p \le .01$ **$p \le .001$ Model $R^2 = .52$

How concerned are you with the issue of water scarcity?

Predictor	b (SE)	β
Political Ideology	.01 (.11)	.00
Water Scarcity Experience	.32 (.04)	.40**
Self-Efficacy	.22 (.06)	.17**

Note: *$p \le .01$ **$p \le .001$ Model $R^2 = .25$

To what extend do you believe conserving water is beneficial?

Predictor	b (SE)	β
Political Ideology	.41 (.14)	.14**
Water Scarcity Experience	-.47 (.05)	-.46**
Self-Efficacy	.52 (.08)	.32**

Note: *$p \le .01$ **$p \le .001$ Model $R^2 = .22$

Do you intend to actually to conserve water?

Predictor	b (SE)	β
Political Ideology	.14 (.07)	.08*
Water Scarcity Experience	.12 (.03)	.20**
Self-Efficacy	.60 (.04)	.62**

Note: *$p \le .05$ **$p \le .001$ Model $R^2 = .52$

What we have uncovered...

Perceptions of Efficacy Matters—As Does Temporal Framing

See Threat in Water Scarcity	Has Concern for Water Scarcity	+Attitude Toward Conservation	Will Have Water-Positive Behavior
Liberals*		Liberals*	Liberals*
Scarcity Exp	Scarcity Exp	No Exp	Scarcity Exp
Self Efficacy	Self Efficacy	Self Efficacy	Self Efficacy
Current Gain	Current Gain		
Future Loss	Future Loss		Future

- **Scarcity experience** & **self-efficacy** are more robust predictors than ideology

- Discussion of **current gains** & **future losses** leads to **greater perceived threat** & **concern.**

- **Future** frames yield **greater behavioral intentions.**

What we have uncovered...

Science Curiosity Coincides with Interest in Water-Wise Behavior

Table 2. Influence Political Ideology and Science Curiosity on Intended Water Conservation Behavior Change

	Low Sci. Curious		Mod Sci. Curious		High Sci. Curious		Collapsed	
Liberal	5.11	(1.24)	5.84	(1.07)	6.30	(0.91)	5.82[1]	(1.16)
Moderate	5.25	(1.22)	5.67	(0.99)	5.97	(1.12)	5.61[2]	(1.15)
Conservative	4.72	(1.68)	5.45	(1.43)	5.83	(1.26)	5.28[3]	(1.55)
Collapsed	5.07[A]	(1.37)	5.69[B]	(1.14)	6.09[C]	(1.08)	5.62	(1.27)

I Plan to Conserve Water
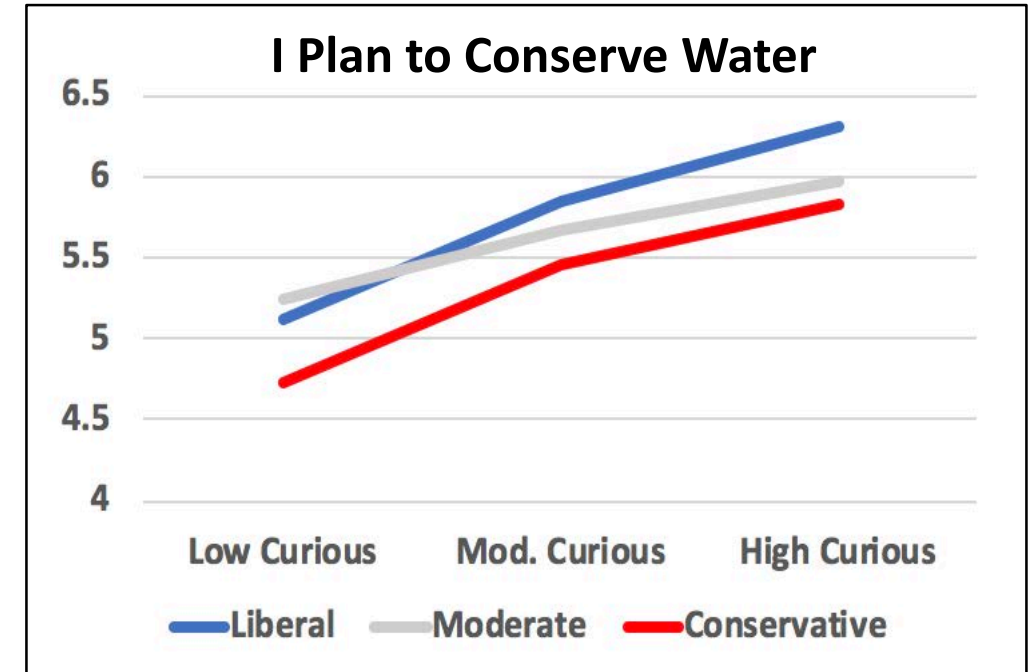
Science Curious =/= Science Knowledge

What we have uncovered…

Can we induce a feeling of water scarcity experience?

Time 1---Have you ever experienced water scarcity? What is your level of experience?

Then-–Here are some possible examples of how you may have had water scarcity experience.

- Lawn watering/car washing restrictions
- Encouragement to use low-flow appliances
- Incentives to install water-wise landscaping
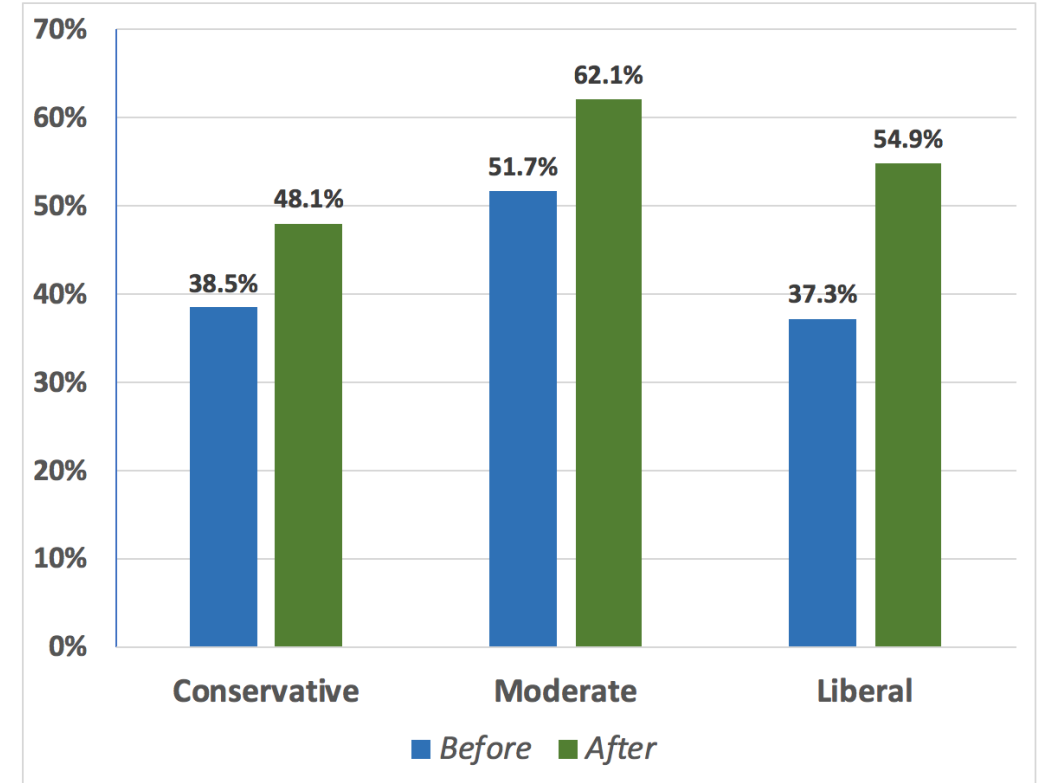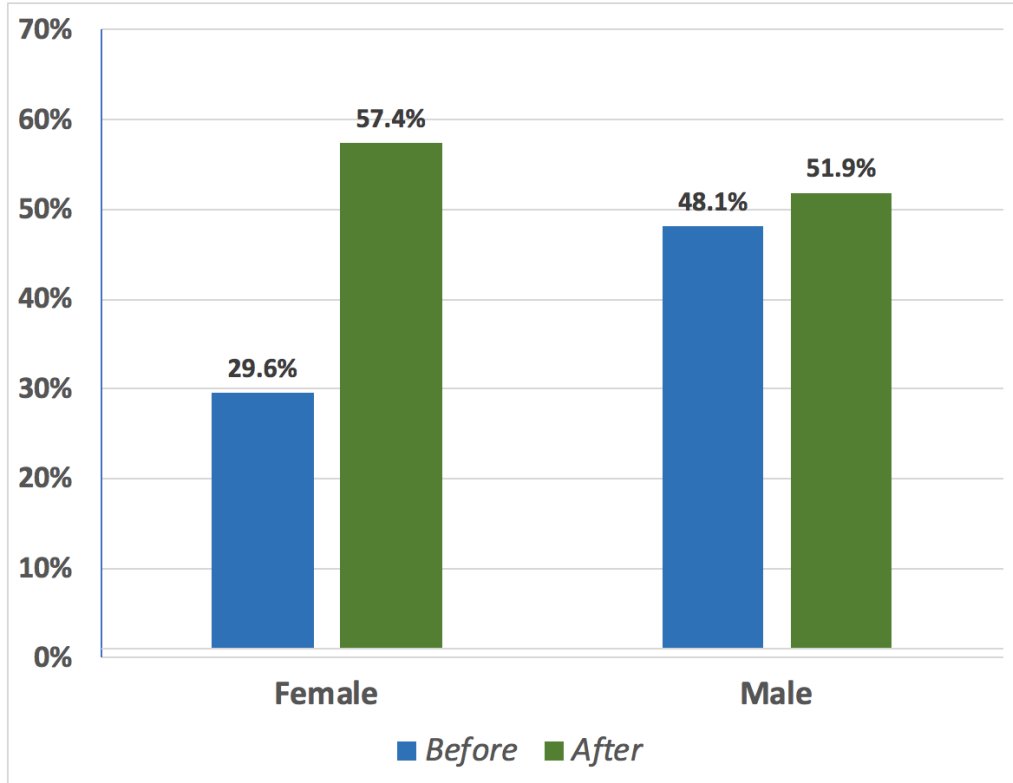
Time 2—SAME QUESTIONS AS TIME 1

N =140, Nationwide, Sept.

What is your level of water scarcity experience? 0=None ; 10 = A Lot

What we have uncovered…

For businesses, customer demographics can predict influence of water-wise measures
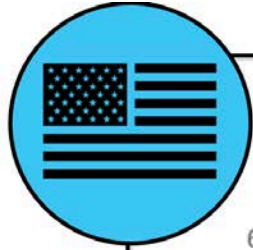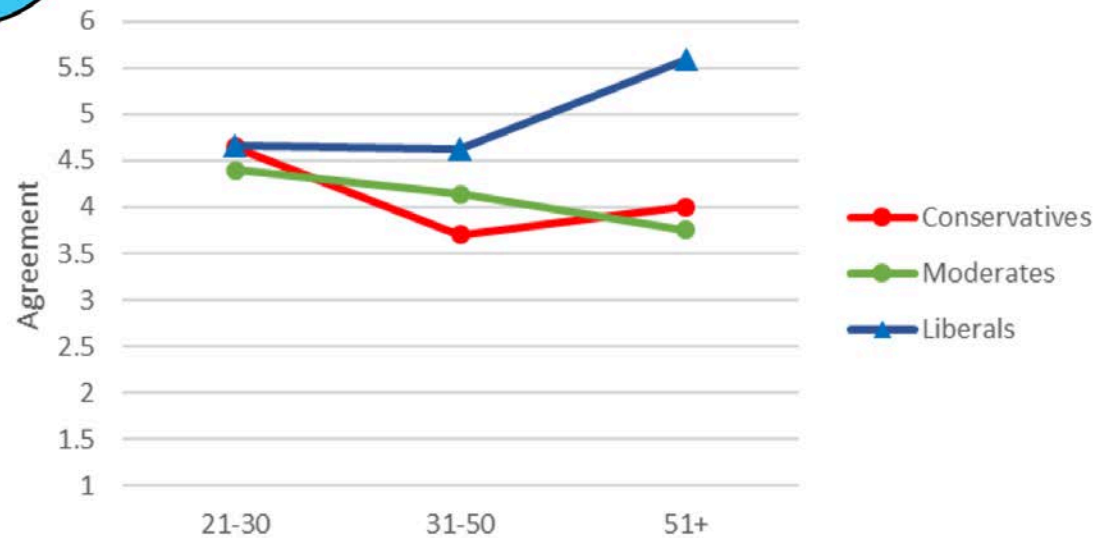

Figure 6. Pay More For Beer Brewed by Brewery That Supports Water Conservation

What does it all mean???

Know your audience!!! Expend some energy on gathering data

Some people are predisposition to be receptive to your message

… and some are primed to be opposed.

You can speculate on ideology and scarcity experience…
(look at voter registration data & your area's water issues)

…but you may have to *measure (& manipulate)* efficacy.

"Do you think you can make a difference?"

"Here is a brochure on how you can."

What does it all mean???

Encourage curiosity among your constituents.

It's hip to be square.

Remind them of the scarcity that they may not be seeing.
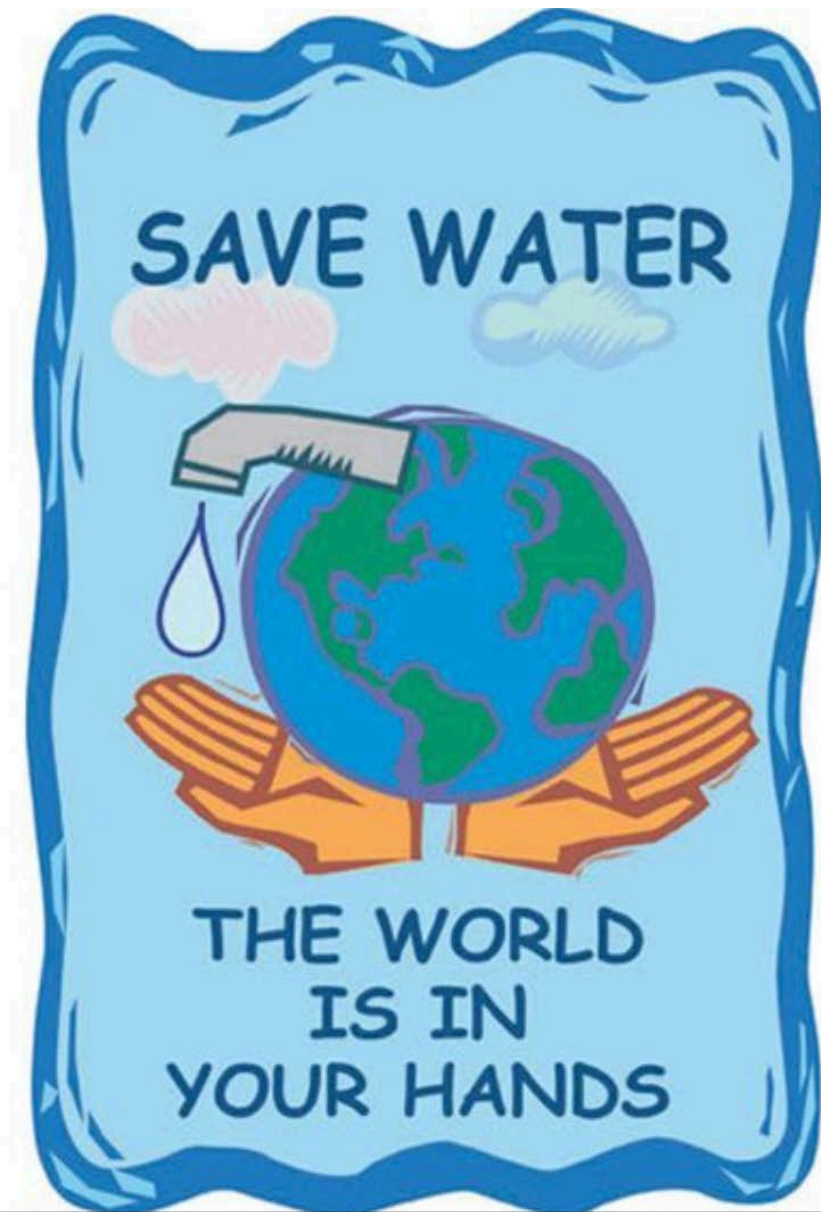
MESSAGE DESIGN: Be POSITIVE about NOW;

Be GLOOMY about the FUTURE.

And FUTURE overall is better.

And above all else: If you are selling expensive craft beer, target old hippies.

SAVE WATER

THE WORLD IS IN YOUR HANDS

Induce scarcity experience →

Offer self-efficacy →

Reference the "gloomy" future →

Last summer, **WATER SCARCITY** drove up rates & limited water use

This summer, **DO YOUR PART TO CONSERVE WATER**
- ✓ Install low-flow appliances
- ✓ Plant water-wise landscaping
- ✓ Water your lawn in the morning to avoid evaporation

Short-term solutions today can help prevent a long-term crisis tomorrow.

Questions?

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