Demographics, Immigration, and Tap Water Quality Perceptions in the Phoenix Metropolitan Area

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Key Results: Water perceptions are lowest amongst ethnic minorities, increase over time, and women are most concerned about water quality issues. Citizens who rate water quality low are more likely to purchase bottled water.

Introduction

Global demand for drinking water competes with water needs in intensified food production, landscape maintenance, and industrial production creating the potential for shortages, price increases, and reduction in quality.



The urban social-ecological system contains both drivers and responses to these environmental changes. The Phoenix Metropolitan area provides a case study where intense political struggles, climate changes, hydrological cycles, and uncertainties have significant implications for citizen and environmental health, and require complex management decisions. While management decisions rely significantly on scientific understanding, it is also important that the demands, concerns, perceptions, and coping strategies of urban residents are understood. Support and collective action from citizens have broad implications for the success of water management strategies. To further this understanding our study examines water quality perceptions and an important coping strategy, bottled water consumption, of Phoenix Downtown Market vendors and visitors. We constructed a tap water quality perception index using factor analysis. Using logit models, we assess how socio-demographic factors influence respondent's water quality index and bottled water consumption..

Survey Study Site

Farmers' markets have increased in number due to consumer demand for local and organic foods. Vendors and visitors to these markets are a subgroup of citizens, potentially with concerns about water quality and the resources to act.

We conducted a survey of water quality perceptions, consumption behavior, and demographics, adapted from Decision Center for a Desert City Ethnohydrology Project of visitors and vendors at the Phoenix Downtown Public Market.



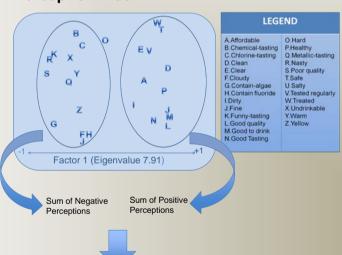
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Descriptive Statistics of Respondents

- 43 years old (+/- 15)
- Lived in Phoenix for 15 years (+/- 14)
- Median household income between \$60,000 and \$80,000.
- "Somewhat Liberal" political views
- 82% white
- 12% Hispanic
- 43% male
- 35% live outside inner city
- 21% state immigrants
- 38% positive water quality
- 40% use bottled water

Calculating the Tap Water Quality Perception Index



Water quality index is the sum of positive perceptions minus the sum of negative perceptions for each survey respondent. This was then collapsed into a binary index. Hardness is not included in the water quality index based on its' neutral status in the factor analysis.

Acknowledgements and Reference

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Logit Models for Water Quality Perceptions and Bottled Water Consumption

		Water Quality Perceptions		Bottled Water Consumption	
		Coefficient	Log Likelihood Odds Ratio	Coefficient	Log Likelihood Odds Ratio
Water Quality Percept	tion			-3.65***	0.26
White		9.62*	15100		
Income		2.26*	9.58		
Liberal		2.65**	14.2	0.86	2.36
Male		4.61**	100.5		
State Immigrant		3.66**	38.9	4.64	104
Outside Inner City		-4.40*	0.012		
Tenure		0.71**	2.03		
Education		2.06*	7.85		
Interactions					
White by Income		-1.97	20100		
Income by Outside In	ner City	1.38*	0.47		
Income by Education		-0.22*	60.2	-3.30	0.15
Income by State Immi	igrant			-0.39	5.31
Liberal by Tenure		-0.95*	11.1		
Outside Inner City by	Tenure	-0.22*	0.020		
Male by Income				1.71	0.73
Male by Education		-2.32**	77.5		
	- CONTROL CO	M	odel Fit		Interestation (
Log Likelihood	-29.35		Log Likelihood		-28.34
LR X2 (14)	44.27		LR X ² (14)		45.03
Prob > X ²	0.0001***		Prob > X ²		0.0000***
Pseudo R ²	0.4299		Pseudo R ² coefficients without an *** indica		0.4427

Discussion

We found that non-whites report lower water quality, which supports environmental justice literature^{2,3}. Interestinaly. respondents living in the inner city, typically with higher concentrations of non-whites², reported higher water quality perceptions. In addition, we found support for the hypothesis that women have greater environmental concern than men4, yet women were not more likely to purchase bottled water. We found that state immigrants were more likely to have higher perceptions of water quality, yet were also more likely to drink bottled water. While we hypothesized that most socio-demographic factors would not influence bottled water consumption, bottled water consumption was related to liberal political views and state immigrants, in addition to water quality perceptions. Thus the relationships between demographics, water quality perceptions, and bottled water consumption are more complex than hypothesized, as many results both support and contradict hypotheses within the environmental studies literature. Future studies will focus on the spatial dynamics of these relationships providing further insight into the citizen's perspectives on water.