

Colorado River Water Impact to Society

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Introduction

This research examines waterborne contaminants (chemicals) in the Colorado River and the societal effects contamination has on the surrounding neighboring communities of the Colorado River. Current literature does not examine societal perspectives over water toxicity issues, specifically those living near the Colorado River. Previous studies have documented that waterways are becoming increasingly toxic as result of runoff coming from urban cities and the agricultural use of pesticides/herbicides affecting the environment and society.

Background

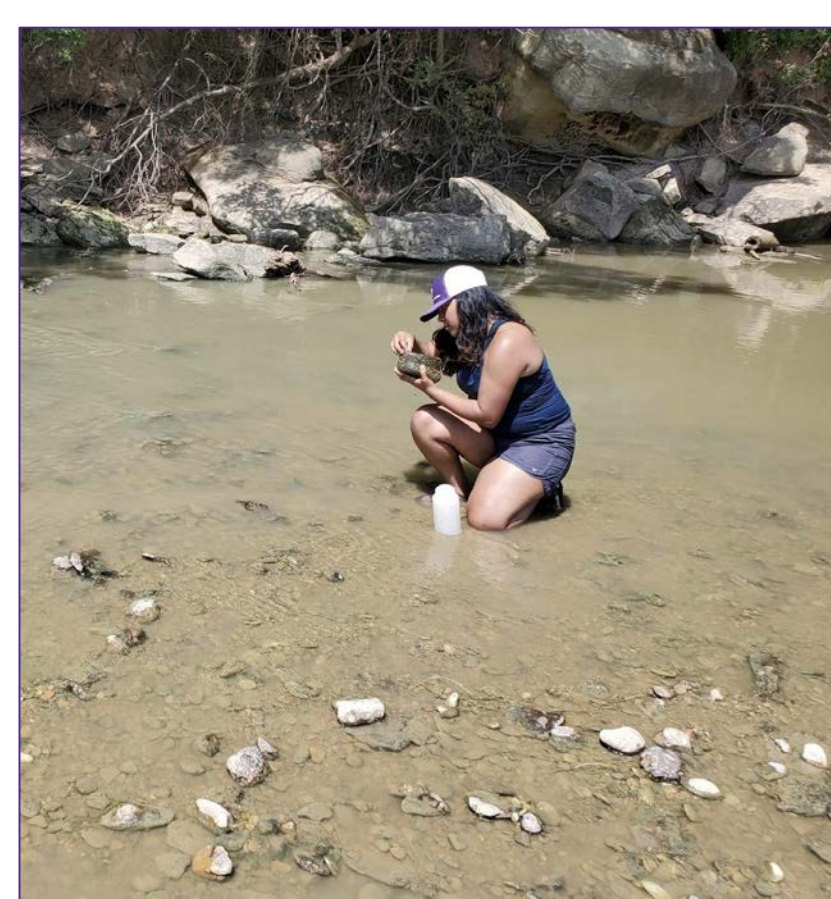
The study gained insight on the perspectives and opinions of the people on waterborne contaminants affecting nearby communities and the environmental effects that are being imposed on society. The experiment consisted of a mixed methods study. First, the surveys collected the sociological perspectives of people living in the communities surrounding the Colorado River. Statistical analysis of the surveys will aid in identifying waterborne contaminants of concern in the Colorado River.



The picture taken above is of fellow cohorts D'Metrie(left) and Ana (middle), helping me participate in the survey station in the San Saba location during a Farmers market event.

Environmental Findings

Waterborne containment samples that have been collected at the Timberlake Biological Field Station will be used within this experimental design. This will help the research being conducted conclude the contaminants found in the Colorado river and how it has been affecting the surrounding communities municipal and other uses.

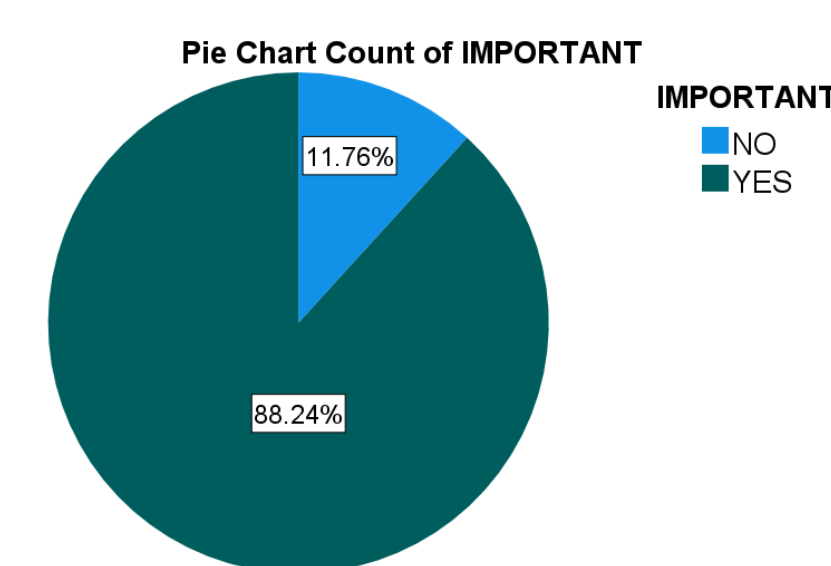


the pictures above me(left image) and my Cohorts Hailey(right) and Nicole (left) are collecting water samples from the Colorado river located in the Timberlake Biological field station. As my research consists of the sociological aspects of water pollution, my Cohorts Hailey is researching for the presence of Microplastics, and Nicole research consists of looking into harmful contaminants that affect the ecosystem.

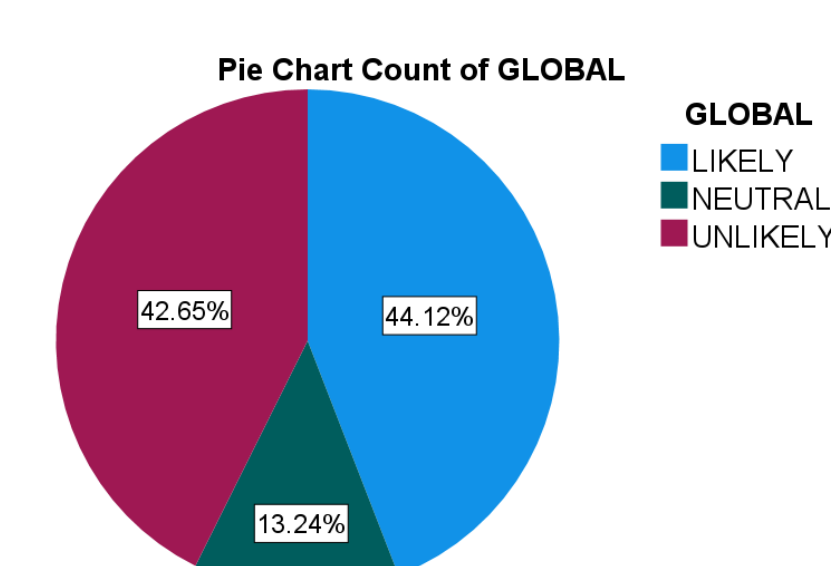
Statistical Survey Results

Are Locals Contradicting Themselves Pertaining to Environmental Issues ?

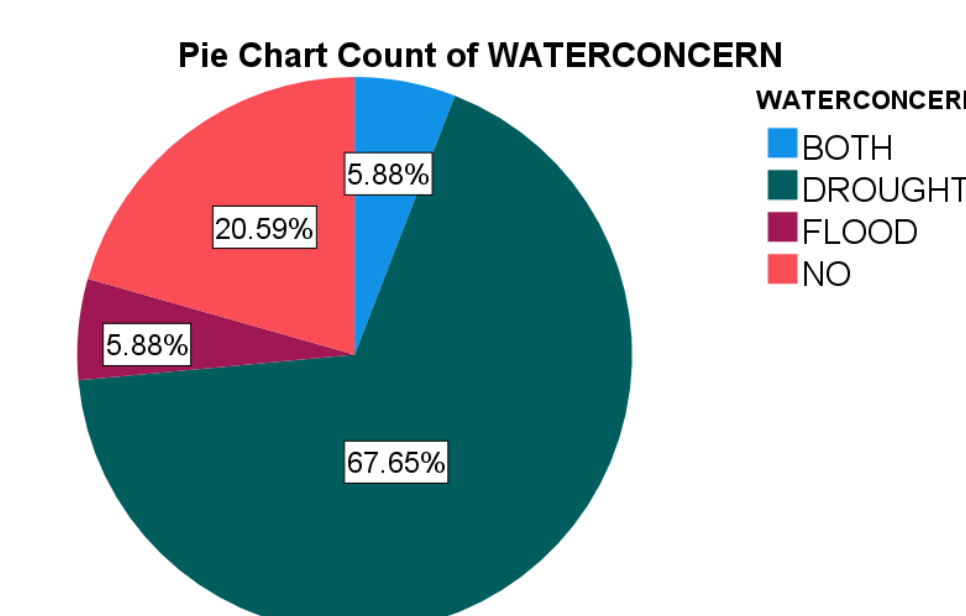
IMPORTANT * POLITICAL * RACE Crosstabulation		POLITICAL			Total
RACE	IMPORTANT	DEM	NONE	REP	
OTHER	NO	Count	1	0	3
		% within POLITICAL	33.3%	0.0%	37.5%
	YES	Count	2	2	5
		% within POLITICAL	66.7%	100.0%	62.5%
Total		Count	3	2	8
		% within POLITICAL	100.0%	100.0%	100.0%
WHITE	NO	Count	0	0	4
		% within POLITICAL	0.0%	0.0%	10.3%
	YES	Count	5	11	35
		% within POLITICAL	100.0%	100.0%	89.7%
Total		Count	5	11	39
		% within POLITICAL	100.0%	100.0%	100.0%
Total	NO	Count	1	0	7
		% within POLITICAL	12.5%	0.0%	14.9%
	YES	Count	7	13	40
		% within POLITICAL	87.5%	100.0%	85.1%
Total		Count	8	13	47
		% within POLITICAL	100.0%	100.0%	100.0%



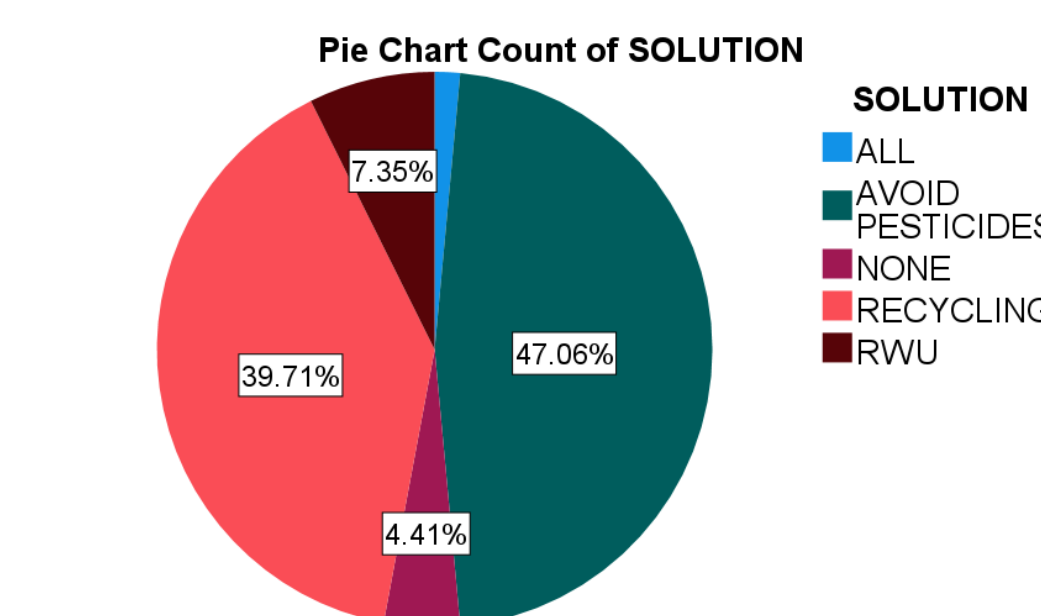
GLOBAL * POLITICAL * RACE Crosstabulation		POLITICAL			Total
RACE	GLOBAL	DEM	NONE	REP	
OTHER	LIKELY	Count	3	2	4
		% within POLITICAL	100.0%	100.0%	50.0%
	UNLIKELY	Count	0	0	4
		% within POLITICAL	0.0%	0.0%	50.0%
Total		Count	3	2	8
		% within POLITICAL	100.0%	100.0%	100.0%
WHITE	LIKELY	Count	2	6	13
		% within POLITICAL	40.0%	54.5%	33.3%
	NEUTRAL	Count	0	1	8
		% within POLITICAL	0.0%	9.1%	20.5%
Total		Count	3	4	18
		% within POLITICAL	60.0%	36.4%	46.2%
Total	LIKELY	Count	5	11	39
		% within POLITICAL	100.0%	100.0%	100.0%
	NEUTRAL	Count	0	1	8
		% within POLITICAL	0.0%	7.7%	17.0%
Total		Count	3	4	22
		% within POLITICAL	37.5%	30.8%	46.8%
Total	LIKELY	Count	8	13	47
		% within POLITICAL	100.0%	100.0%	100.0%
	NEUTRAL	Count	0	1	8
		% within POLITICAL	0.0%	7.7%	17.0%
Total		Count	8	13	47
		% within POLITICAL	100.0%	100.0%	100.0%



WATERCONCERN * POLITICAL * RACE Crosstabulation		POLITICAL			Total
RACE	WATERCONCERN	DEM	NONE	REP	
OTHER	DROUGHT	Count	1	2	6
		% within POLITICAL	33.3%	100.0%	75.0%
	FLOOD	Count	1	0	1
		% within POLITICAL	33.3%	0.0%	12.5%
Total		Count	3	2	8
		% within POLITICAL	100.0%	100.0%	100.0%
WHITE	BOTH	Count	0	0	4
		% within POLITICAL	0.0%	0.0%	10.3%
	DROUGHT	Count	5	8	24
		% within POLITICAL	100.0%	72.7%	61.5%
Total		Count	5	11	39
		% within POLITICAL	100.0%	100.0%	100.0%
Total	BOTH	Count	0	0	4
		% within POLITICAL	0.0%	0.0%	8.5%
	DROUGHT	Count	6	10	30
		% within POLITICAL	75.0%	76.9%	63.8%
Total		Count	1	0	3
		% within POLITICAL	12.5%	0.0%	6.4%
Total	NO	Count	1	3	10
		% within POLITICAL	12.5%	23.1%	21.3%
	Total	Count	8	13	47
		% within POLITICAL	100.0%	100.0%	100.0%



SOLUTION * POLITICAL * RACE Crosstabulation		POLITICAL			Total
RACE	SOLUTION	DEM	NONE	REP	
OTHER	ALL	Count	0	0	1
		% within POLITICAL	0.0%	0.0%	12.5%
	AVOID PESTICIDES	Count	1	1	2
		% within POLITICAL	33.3%	50.0%	25.0%
Total		Count	2	1	3
		% within POLITICAL	66.7%	50.0%	37.5%
WHITE	ALL	Count	0	0	2
		% within POLITICAL	0.0%	0.0%	5.1%
	AVOID PESTICIDES	Count	3	2	8
		% within POLITICAL	100.0%	100.0%	100.0%
Total		Count	3	3	22
		% within POLITICAL	60.0%	27.3%	56.4%
Total	ALL	Count	1	1	3
		% within POLITICAL	20.0%	9.1%	2.6%
	AVOID PESTICIDES	Count	0	7	14
		% within POLITICAL	0.0%	63.6%	35.9%
Total		Count	1	0	2
		% within POLITICAL	20.0%	0.0%	5.1%
Total	ALL	Count	5	11	39
		% within POLITICAL	100.0%	100.0%	100.0%
	AVOID PESTICIDES	Count	4	4	24
		% within POLITICAL	50.0%	30.8%	51.1%
Total		Count	1	1	3
		% within POLITICAL	12.5%	7.7%	2.1%
Total	ALL	Count	2	9	17
		% within POLITICAL	25.0%	61.5%	36.2%
	AVOID PESTICIDES	Count	1	0	4
		% within POLITICAL	12.5%	0.0%	8.5%
Total		Count	8	13	47
		% within POLITICAL	100.0%	100.0%	100.0%



key

VARIABLES	QUESTIONS
IMPORTANT	Do you think the Colorado river is an important factor and or producer of water for you?
GLOBAL	Do you believe the effects of global warming are a contributor to the ongoing flooding and/or droughts that are causing toxicities within the water?
WATERCONCERN	What are you most worried about as of currently with the Colorado River?
SOLUTION	What do you think would be the best contributor/solution to reducing contaminants in our water?

Results

The Sociological Findings

The sociological research revealed that the Colorado River is important producer to the local community. In addition, people believed that pesticide use, and drought were the biggest environmental issues that plagued the Colorado River. Yet, when asked about global warming which has contributed to the increase in temperature rises that has led to ongoing droughts, residents were hesitated to say that global warming was the cause of the droughts that have plagued the Colorado River over the recent years. Residents seem to contradict themselves, as they believe in drought yet don't believe in global warming issues (aka droughts).

Conclusion and Future Work

Sixty-eight surveys were collected during a five a day period, residents do value and see the Colorado River as main producer for the local community. While some residents do acknowledge that there are certain issues that plague the Colorado River, they refuse to acknowledge any of these issues are a direct result of climate change.

Future research is needed to help further understand the sociological aspects of the surrounding community and their concerns on the water contaminants and pollution that affect the Colorado River. Further collection of data and surveys need to be done in order to obtain a higher population that will yield a higher statistical outcome.

References

Story map Journal. arcgis.com. (n.d.), "Water pollution in Texas rivers: A Large State with A Large Amount of Water Pollution" <https://www.arcgis.com/apps/MapJournal/index.html?appid=8ab1ab5d352a4e5898d253b1a83b58b2>.

About the river. Colorado River Alliance. (2021, January 8). <https://coloradoriver.org/about-the-river/>.

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