



Effect of Contaminants on SSU Water Flavor

Nicholas Ivanov, Caitlyn Helweg, Georgio Errico

Department of Science and Technology, Sonoma State University, Rohnert Park, CA 94928,

Email: Errico@sonoma.edu



Introduction

The importance of our research is to get quantitative data about the water quality at Sonoma State University and to determine whether students are able to taste differences in water that might relate to contaminants in the tap water provided in campus dorms and buildings. We want to see whether water contaminants affect the flavor. We plan on sampling of tap water in all of first-year housing communities and two academic buildings (Stevenson and the Student Center). We will analyze the water samples for chemicals such as lead and chlorine. We will compare these data to the results of the blind taste test.

Methods

Our samples were collected from different first-year housing communities and two academic buildings to compare the taste of tap water. Then, we will conduct a blind taste test with 10 subjects and have them rank their preferences.

The materials used in our research project are:

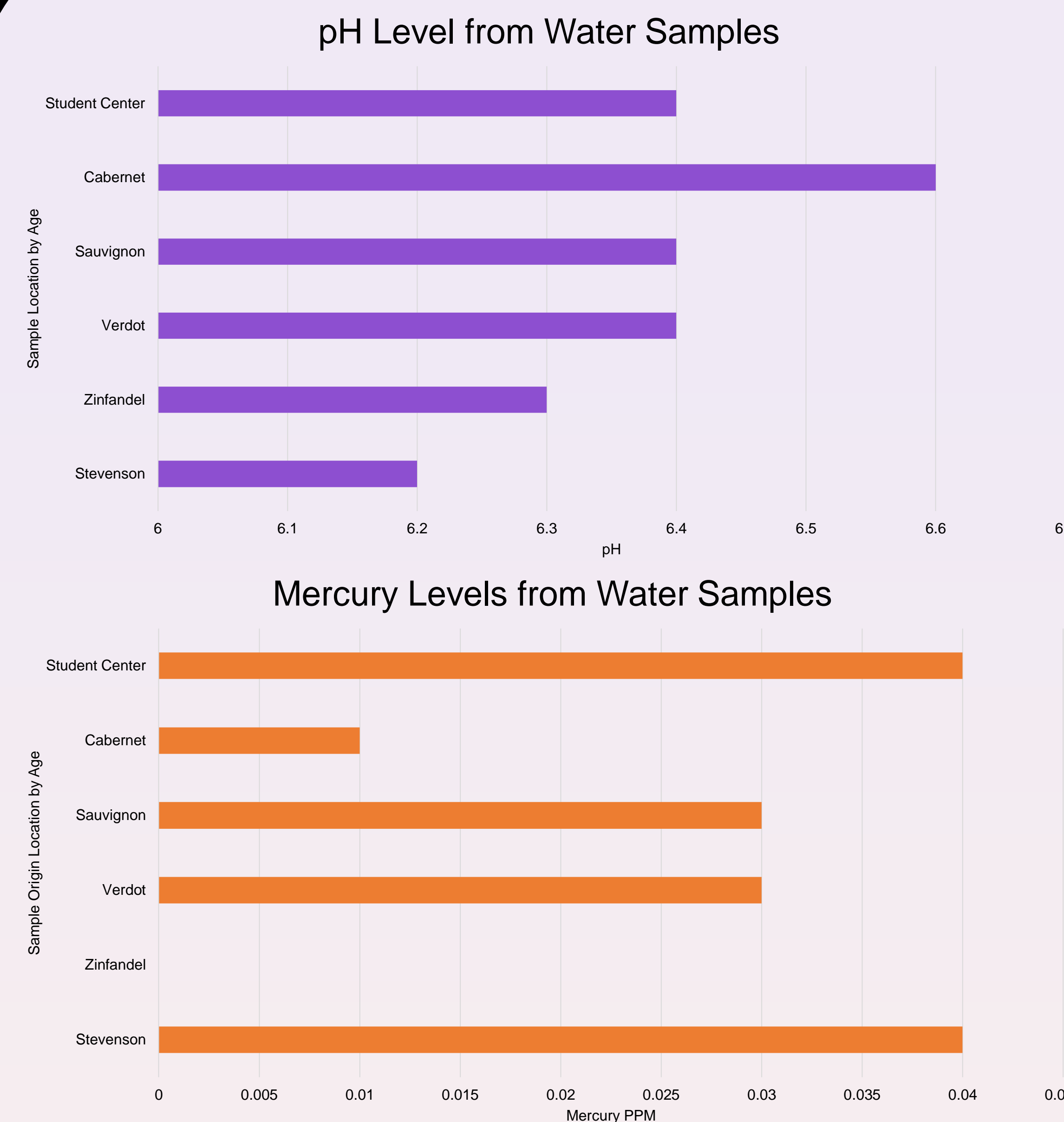
1. Jars for collecting water samples
2. Water contaminant test strips
3. Plastic cups



The six samples of water were then analyzed using the contaminant testing strips, and we recorded all variables:

- Total alkalinity
- pH
- Total hardness
- Iron
- Copper
- Lead
- Fluoride
- Mercury
- Nitrate
- Nitrite
- Chromium
- Bromine
- Residual Chlorine
- Sulfate

Figure 2: Possible significance



Results

There is little correlation between any of the contaminants and the accumulation of the blind taste test. The two values whose correlation coefficient was calculated:

- pH ($r = -0.05$)
- Mercury ($r = -0.5$)

There is no correlation between pH and the accumulation of the blind taste test. There is a slight negative correlation between the Mercury level and the accumulation of the blind taste test.

The following contaminants were not found in any of the samples:

- Hardness
- Iron
- Lead
- Fluoride
- Nitrate
- Nitrite
- Chromium
- Bromine
- Residual Chlorine
- Sulfate

Figure 4: Significant Contaminant Values

Name	Total Alkalinity	Ph	Copper	Mercury
Stevenson	70	6.2	0	0.04
Zinfandel	70	6.3	0.01	0
Verdot	70	6.4	0	0.03
Sauvignon	70	6.4	0	0.03
Cabernet	70	6.6	0	0.01
Student Center	70	6.4	0	0.04

Figure 1: Average accumulation of taste test ranks



#1



#2



#3



#4



#5



#6

Acknowledgements

Professor Nathan Rank, Dr. Martha Shott and Dr. Robin Glas, Peer Mentor Marianne Meija

Discussion

Based off of our results, it appears that there is no significant correlation between any of the contaminants that we tested for and the flavor rating. During analysis, it was interesting to see how the preference of water was so different and it was not based off the age of the buildings. There was no correlation with age of the building as well. Therefore, many of the concerns that existed before testing have now been evaporated. The contaminants that did appear were so small that the data is considered insignificant to the water flavor. This information is pertinent to Sonoma State faculty, and students alike, because of their concerns about the tap water tasting not up to standard. In conclusion, everyone has their own preference for water flavors and the contaminants found are not significant to change the water flavor.

References

- Gilliom, R. J., Barbash, J. E., Kolpin, D. W., & Larson, S. J. (1999). Peer reviewed: testing water quality for pesticide pollution. *Environmental science & technology*, 164A-169A.
- Jing L., Kong J., Wang Q., and Yao Y. (2018). An Improved Contaminant Source Identification Method for Sudden Water Pollution Accident in Coaster Estuaries. *Journal of Coastal Research* 85, 946-950