

The Effects of Pollutants on Snow Density

Noah McKenna
Moe Goldfarb-Brown
Alex Weeks
Noah Hospodarsky

Introduction

- The goal of our project was to investigate the effects that levels of pollutants have on snow density.

Hypothesis

- Hypothesis: We predicted that the more pollutants by weight a sample of snow has, the more dense it will be.



More Dense



Less Dense

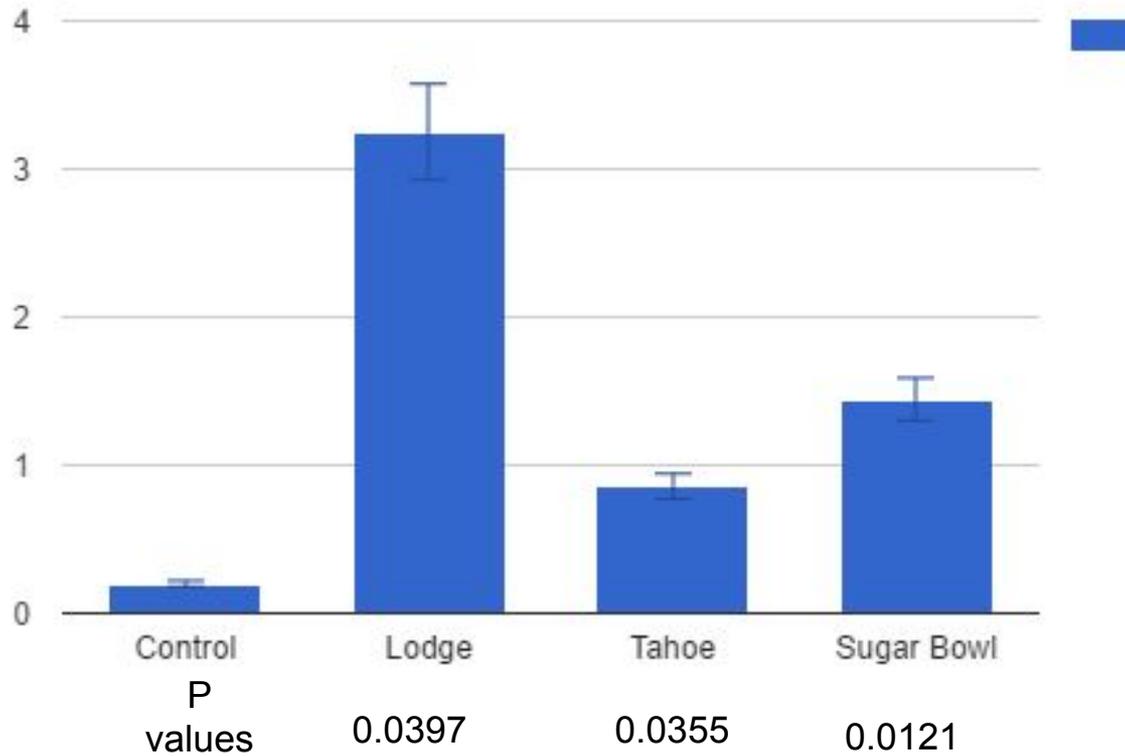
Methods

- We took 10 snow samples at three locations that appeared to be polluted and compared them to a control sample of clean snow
- sample size: 1.5 cups 
- Snow was boiled to evaporate water, then mass difference was calculated to find what mass was left behind in the boiling process.

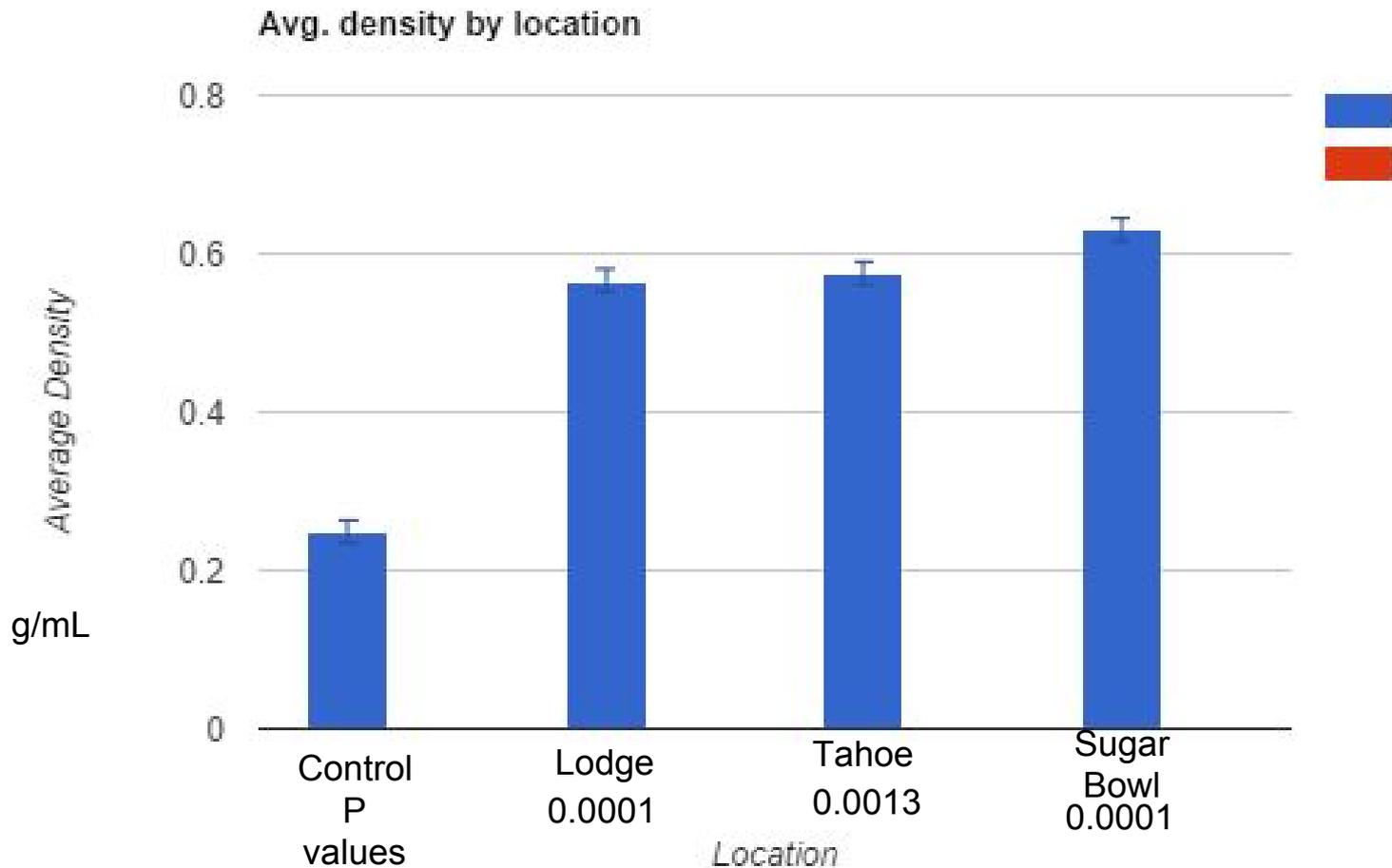
T-Test

- A t-test is a statistical method of investigating two sets of data averages.
- In this case, we used t-tests to measure the densities of the polluted snow compared to our control sample.

Average weight of pollutants



Average Snow Sample Densities



Discussion

- Although polluted snow may sound unimportant, it can have serious effects.
- For instance, denser snow melts at a slower rate, this means there is less water to grow food.
- It also has negative effects on animal populations.

Discussion

- Things to do next time:
 - More precision in sample measurements
 - Making sure containers are clean
 - Being more careful with obtained samples
- How we could expand our project:
 - Focus more on environmental impacts
 - Focus more on economic impacts
 - Using other types of pollutants (such as organic ones)
 - Look at why sugar bowl snow had a higher density when it had a lower pollutant mass

Discussion

- Performing t-tests on pollutant weight and density data shows that the information collected is statistically significant
- This means that there is a significant difference between our control group data and the polluted snow data collected in different areas