

Slopes Survey Analysis

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ABSTRACT

The overarching representation of individuals who inaccurately estimate slope angles in mountain environments is very high. Past data has shown that on average individuals overestimate slope at an alarming rate. Even estimating the angle to be 100% over what the actual is. In this study I used the tool that I built to have users estimate the slope of mountain environments based on images taken in the field. Through this study the results that I collected show a common trend to this data.

Hypothesis

Hypothesis: People often overestimate the angle of mountain slopes based on images.

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INTRODUCTION

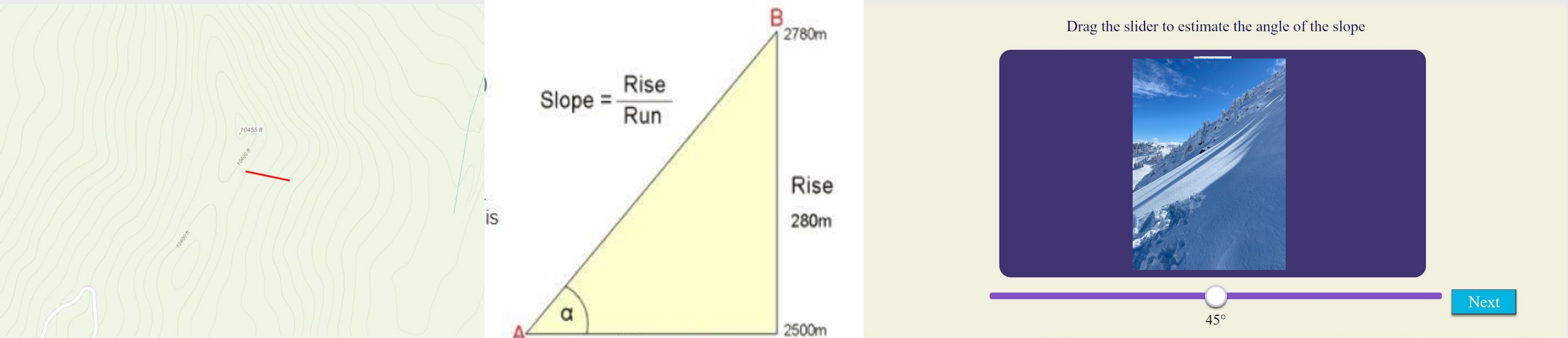
Before starting analysis, I decided to use a project that I was building in my other class. This study was built in my web applications class with the collaboration of 2 designers and 3 other developers. Throughout this study I have used my interactive tool to gain results from users. This is a study with a small sample size of 17, so the data I have collected is somewhat not representative of a large group, but I have still gained enough information to make some assumptions on the data. Each user is shown a set of 4 images and is asked to estimate the slope angle of each image shown.

METHODS AND MATERIALS

This study shows the users a set of 4 images that were taken in Little Cottonwood Canyon. The users are asked to estimate the slope angle of each image using the slider bar. The images in this study were taken on iPhone and the angles were found using topographical maps of specific locations. I then did some simple trigonometry to calculate the slope angle using arctan of OP/ADJ.

RESULTS

I was able to export all my data into a csv file and implement it into R. I then ran a T test to help understand the meaning behind the data. Observing the actual slope angle vs the user's response I was able to find the following. The P value was 2.650979e-09 which is very small. The confidence interval was between 9.1 and 16.9. The statistic was 6.59.



DISCUSSION

I am 95% confident based on the confidence interval that majority of the time individuals overestimate the slope angle of an image 9.1 to 16.9 degrees over the actual angle.

CONCLUSIONS

Based on the information collected, the very low P value and very high confidence interval makes it is safe to conclude that people overestimate mountain slope angles.