



# Effectiveness of Trailhead Signs

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## Intro

### History

Millions of people hike on trails annually, and in 2020, a reported 57 million individuals did so in the U.S. (Outdoor Foundation 2021). In Redwood National Forest alone, around 504,000 people visited in 2019 (National Parked 2021). With all of these hikers, how many of them read trailhead signs for important information?

### Context

After regularly hiking throughout the years, I have grown accustomed to glancing at trailhead signs to view the trail map. Personally I never read the paragraph-filled signs, since I didn't come to a trail to read. I think this is an issue, since many signs mention the presence of endangered species, and how to properly act around these species to prevent further harm.

### Hypothesis

How effective are trailhead signs at conveying map, history, and conservation information of the trail? I hypothesized that the majority of visitors would not read the sign. I also hypothesized that most of the visitors who did read the signs would only be able to answer the map question correctly.

## Methods

### Data Collection

I drove to trailheads on Saturdays and recorded the number of visitors for an hour. I also recorded the number of people who read the signs, and would proceed to ask them questions about the sign, to see what information they retained (Table 1).

### Data Interpretation

After collecting these data, I transferred it to an excel sheet and compiled it to see the sum of correct and incorrect answers for each topic, as well as the percentage of visitors that read the signs, and the proportion of correct answers for each site. I tested for differences in each question category using a chi-squared contingency test.

Elk River Trail	Prairie Creek Trail	Lady Bird Johnson Trail
How many miles is this trail loop?	How many miles is the network of trails here?	How many miles is this trail loop?
When was Headwaters Reserve established?	When did conservationists begin preserving this prairie?	When did Lady Bird Johnson first visit this grove?
What is one threatened species found in this area?	What is the endangered seabird that nests here?	What is the endangered seabird that nests here?

Table 1: List of trails visited and questions asked in reference to the trailhead signs.

## Acknowledgements

I would like to acknowledge the National Park Service for their cooperation and assistance in my research. The workers I spoke with were very friendly and excited to hear about this project. I would also like to acknowledge Sean Mahoney assisting in the data analysis. Lastly, the faculty of Cal Poly Humboldt, notably the wildlife department, has been a defining part of my past four years of college.

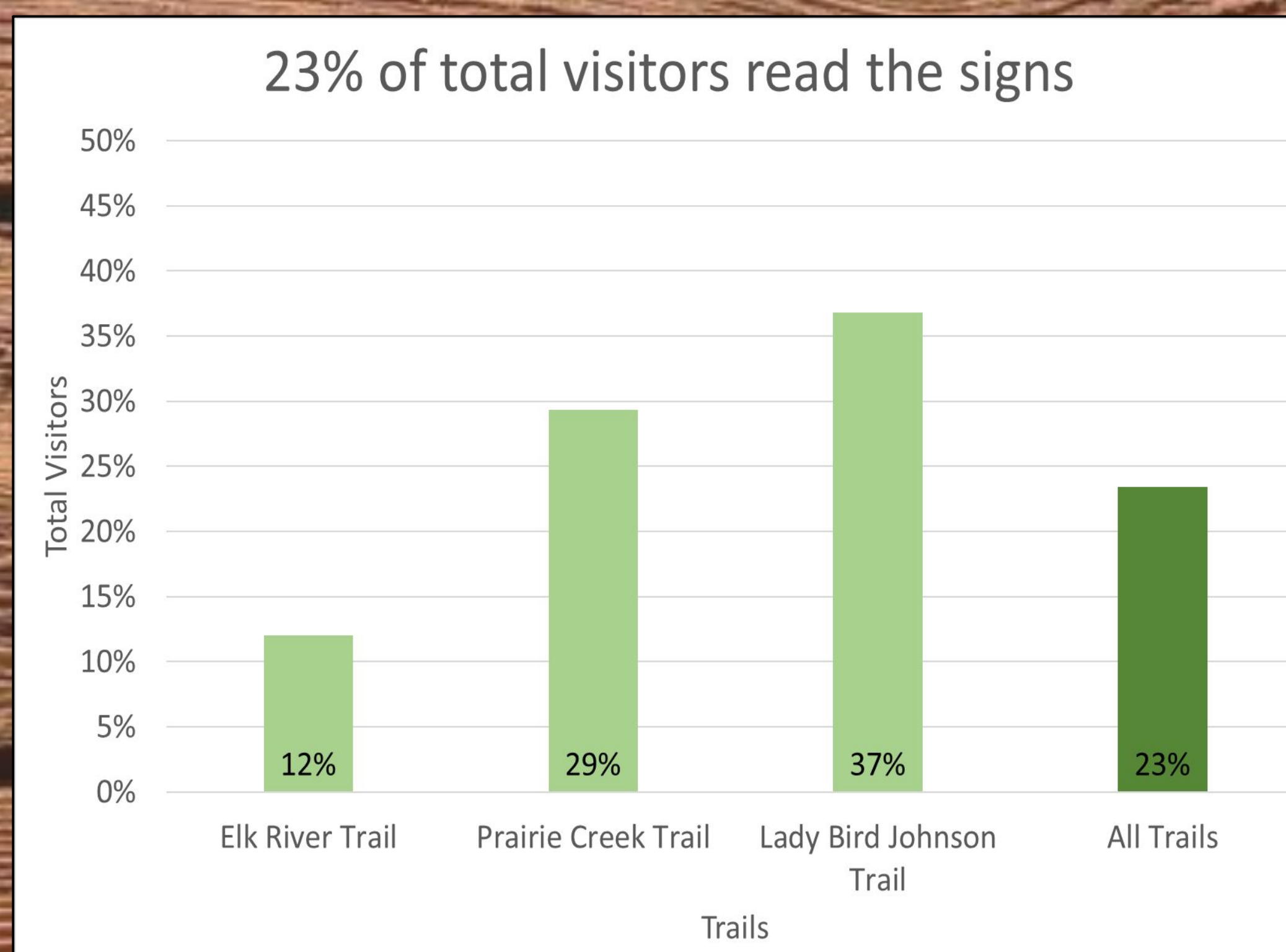


Figure 1: Total visitors that read the signs at different trails. The number of visitors was 329 individuals throughout 12 hours of data collection.

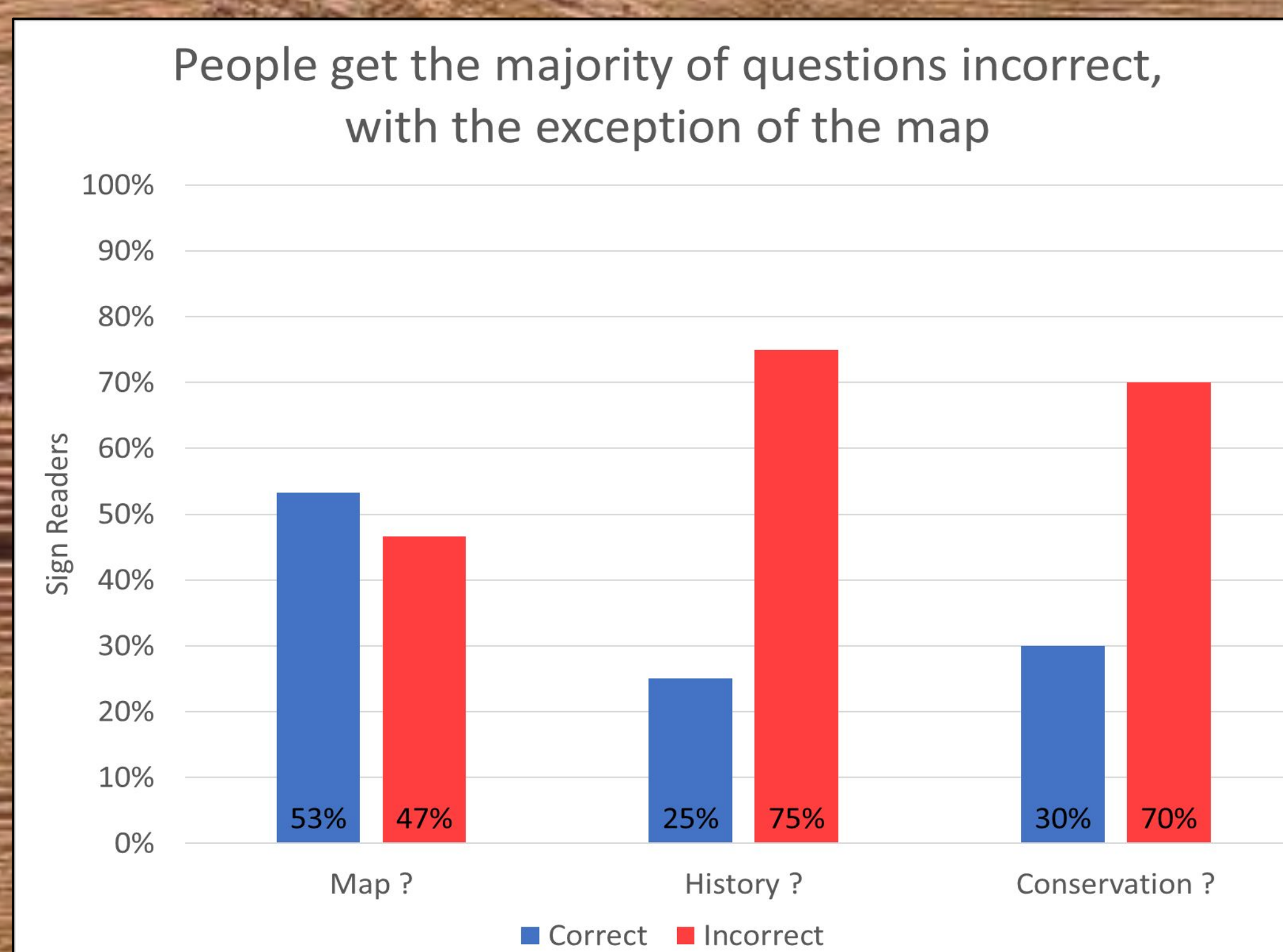


Figure 2: The percentage of correct and incorrect answers to the different questions asked. 60 Individuals answered questions.

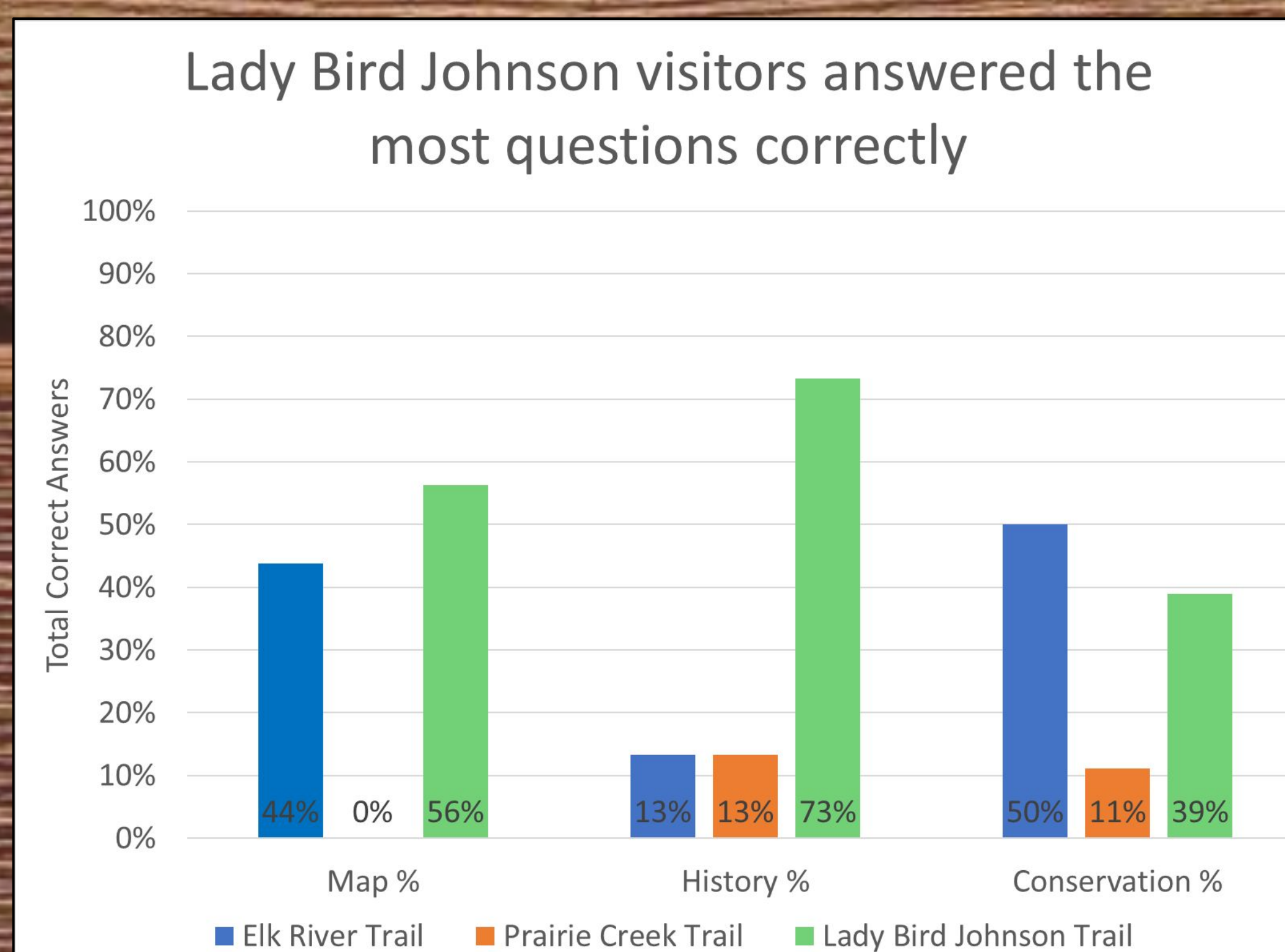


Figure 3: The percentage of correct answers compared to the different trails.

## Results

### Quantitative

Of the 329 visitors, only 77 people read the signs during my data collection (Figure 1). Out of the three question topics, the map question was answered most correctly (Figure 2,  $\chi^2 = 7.6$ ,  $df = 2$ ,  $P < 0.05$ ). Overall, there were more correct answers at the Lady Bird Johnson Trail (Figure 3,  $\chi^2 = 18.55$ ,  $df = 2$ ,  $P < 0.05$ ,  $\chi^2 = 6.26$ ,  $df = 2$ ,  $P < 0.05$ ,  $\chi^2 = 8.45$ ,  $df = 2$ ,  $P < 0.05$ ).

### Qualitative

Since less than a quarter of visitors read the signs, and the majority of questions were answered incorrectly, we can conclude that trailhead signs could be improved for better visitor engagement.

## Discussion

### Why is this important?

Trailhead signs can contain extremely important information, such as conservation and safety information that visitors should know. One example of this is the implementation of a sign after 56 visitors drowned in the Potomac River Gorge within the span of 43 years. Once a safety sign was added to deter people from entering the river, there was a significant decrease in the amount of people getting into the river (Girasek 2019). Many of the signs around Humboldt County list the presence of the Marbled Murrelet. The Marbled Murrelet is an endangered seabird that nests in old growth forests in the Pacific Northwest, and is victim to high nest predation (Peery et al. 2004). The goal of many of these signs is to warn people not to attract predators by leaving food on the trail. Although, this section is very small and easy to miss. With many people not reading this information, there is a disconnect between conservation actions and public knowledge.

### How do we fix it?

There is plenty of literature on best practice principles for signs, such as an article about the four principles that should be followed; noticeability, encoding, comprehension, and compliance (Saunders et al. 2019). Using this information, as well as public input received throughout this project, I believe the current signs are information overload, and the majority of visitors will not read paragraphs of information before a hike. I propose that the trailhead signs in this experiment should be remade and consolidated into 1-2 boards consisting mainly of figures and images, with eye-catching captions, that consist of no more than two sentences (see Handout/QR Code).

## Literature Cited

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