[This is ok. It has all of the required components, but there needs to be more explanation in the inference toolbox sections. The introduction and conclusion are nice and they had fun with the context. Would have been more straightforward to do a test rather than use a confidence interval. The graph is in an odd placement and is not too helpful, should probably be done differently.]

A Study on the Opinions of a Hypothetical Badger vs. Human Cage Match Scenario

Introduction

Every person, at some point in there lives has asked themselves the question: "In a fight between an adult human and a swarm of hungry badgers, with no weapons or outside factors, who would win in a fight?" While this problem has plagued scientists for centuries, I wanted to find out more. Specifically, I was interested to see if animal lovers would be more prone to vote for the badgers, given their preferences towards animals, rather than human beings. To do so, I will conduct a 2 proportion z-interval, asking residents of Sonoma County if they believed that, in a cage match scenario between an unarmed man and a pack of hungry badgers, that the badgers would win in the end.

Sampling Method

To begin with, I will take a random sample of Sonoma County Citizens using the yellow pages, by taking groups of one digit from the table. For each number, I move forward in the list that many names, and call that individual. I will also ask the called participants if they would

describe themselves as an animal lover. I repeat this process until I receive 300 answers for both the animal lovers, and the non-animal lovers. The proportion of people who vote for the badger will be taken as the Proportion. I will then conduct the 2-proportion z-interval.

Data

Type of Person	Human	Badger	Total
Non-Animal Lover	200	100	300
Animal Lover	110	190	300

Conducting the Interval

The populations of interest are residents of Sonoma County and animal lovers in Sonoma County. The parameter of interest is the difference in proportions ($p_{hatnonlover} - p_{hatalover}$).

For both populations, there is a simple random sample, so the sample results will generalize to the populations of interest. There are certainly more than 3000 animal lovers and non animal lovers in Sonoma County, so the sampling is approximately independent. $N_1P_{hat1} > 5$ and $N_2P_{hat2} > 5$. $N_1(1-P_{hat1}) > 5$, and $N_2(1-P_{hat2}) > 5$, so sampling is approximately normal and our calculations will be accurate.

Calculations

$(p_{hatlover} - p_{hatnonlover}) \pm Z^{star}(\sqrt{((p_{hatnonlover} - (1 - p_{hatnonlover}))/300) + ((p_{hatlover} - (1 - p_{hatnonlover}))/300)})$

At 95% confidence:

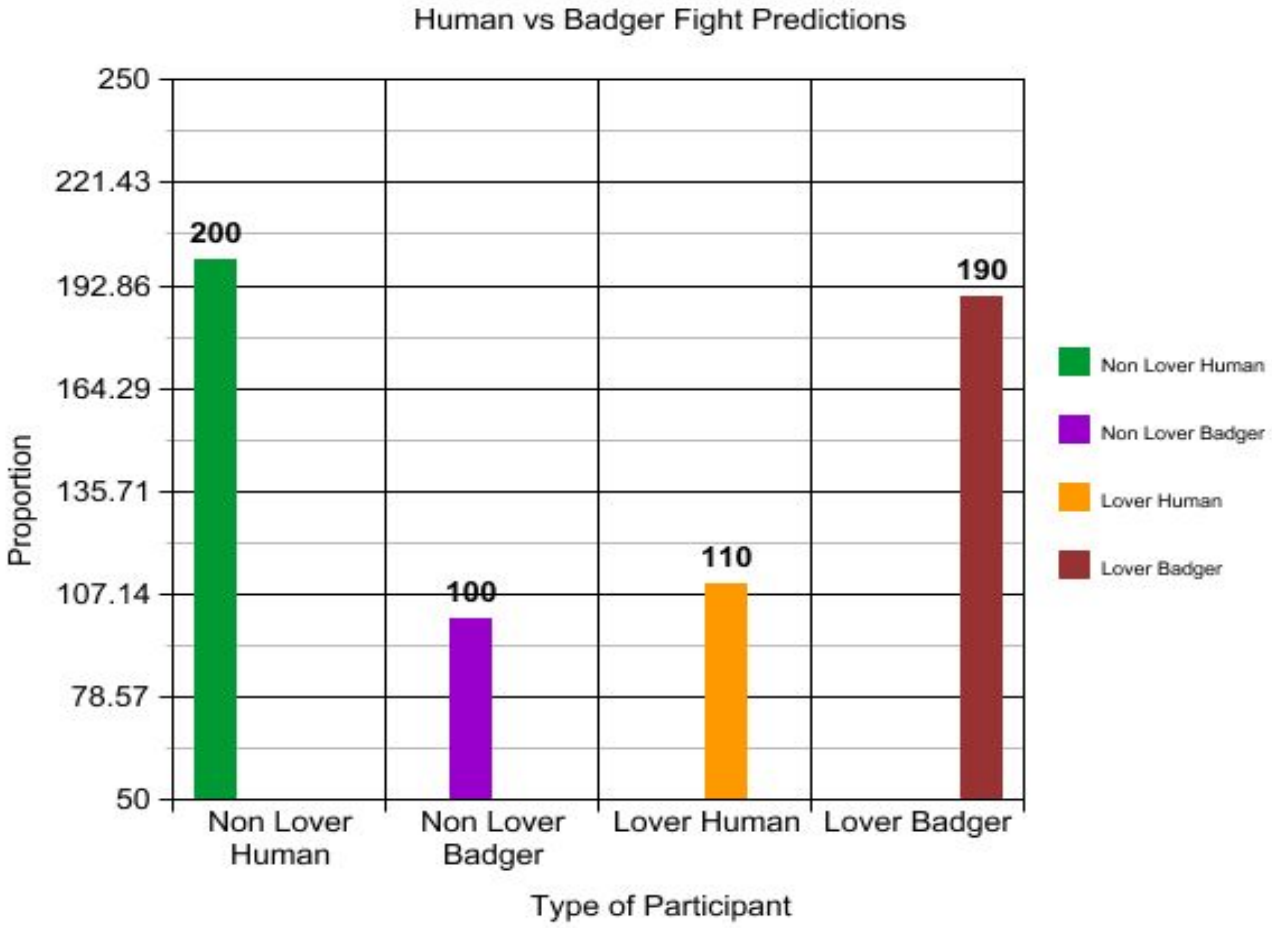
((190/300) - (100/300)) ± 1.96 (√((100/300) - (200/300))/300) + (((190/300) - (110/300))/300)

Interval is (.22372, .37628).

Findings

Since the interval does not contain zero, and is solely positive, we can conclude that there is a difference in the proportion of people who believe a group of badgers will win in a fight against a human, and naturalists of the same belief.

I find these results extremely interesting. I have always pondered to myself whether or not a human could take on a group of ravenous badgers, especially in cage match scenarios and the like. I have come to the conclusion that the relative softness of human flesh would leave the person open to biting attacks, which would prove to be their downfall against the starving pack. It seems that the naturalists agree with my opinion, or at least my conclusion. However, it has to be noted that the average person believes that the human would win in a fight. This might be due to ignorance and improper education. To put a stop to this, I believe the next step is to have a government mandated class that will teach the average person the true power of the badger, which would help educate the populace about the dangers of badger fighting.


Human vs Badger Fight Predictions
250
221.43
192.86
164.29
135.71
107.14
78.57
50
Proportion
200
100
110
190
Non Lover Human
Non Lover Badger
Lover Human
Lover Badger
Type of Participant
Non Lover Human
Non Lover Badger
Lover Human
Lover Badger