Dots Across Body Weight

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Background

As a B.S. Mathematics student with over 120 completed credits and a current M.A. Statistics student, I have gained experience in various quantitative methods, including hypothesis testing and data analysis. These experiences have equipped me with the necessary skills to take on the present study effectively. My proficiency in statistical techniques positions me to contribute valuable insights to the investigation of differences in dot performance across weight categories.

Abstract

This study investigates the difference in dots between individuals with "lighter" and "heavier" body weights, hoping to resolve an ongoing debate regarding favoritism for lighter lifters. Data analysis involved calculating group averages, standard deviations, and sample sizes using Excel and conducting a two-sample t-test in R. The analysis revealed a super significant difference (p ¡ 0.001), indicating that body weight significantly influences dots. Therefore, consideration for a formula adjustment is justified to ensure equitable assessment across weight categories.

1 Introduction

The objective of this paper is to investigate potential differences in dots across different body weights. Specifically, the study will focus on conducting statistical analyses to see whether body weight influences dots. The paper will go into the methods used for data collection, calculation of descriptive statistics for each group, implementation of the t-test, and interpretation of the results.

To begin, I will outline the process of data collection and provide a comprehensive overview of the descriptive statistics computed for each group categorized by body weight. Next, the paper will detail the application of a t-test to examine the significance of the observed differences between the groups. With a detailed explanation of the statistical analysis, I aim to clear up the final results.

2 Data Set

The data set I used was the full open powerlifting data set on https://openpowerlifting.gitlab.io/opl-csv/bulk-csv.html. This data set has over 1 million entries. I downloaded the file into Excel and proceeded to format all the data as a table for easier cleaning. Then it was cleaned to filter out blank dots such as DQs. Since this is for Raw lifters I removed everything that wasn't Raw. Then I removed the super low weight classes because they are not relevant to the discussion so I filtered it to be 66kg+. The division for the groups I chose to use is 66kg to 100kg not including 100. Then 100kg+ for the second group.

3 Calculations

6 calculations had to be done. 3 for each group, being average, standard deviation and group size. I used the COUNTIFS function to get both group sizes the lighter group having 324847 lifters and the heavier group having 111479 lifters. Then the AVERAGEIFS function was used to calculate the average dots of both groups, 268.0539 and 258.3207 respectively. Then the standard deviations were calculated using the STDEV.S function with IFS inside of it the values are 139.3265 and 136.4557 respectively.

Now that these values are collected we can continue to do the 2 mean t-test. Using R and the "BSDA" library I used the function tsum.test, with the alternative being "greater" and the x group being the lighter one. With this function, I was given a p-value of ¡2.2e-16 which is extremely small.

4 Results

As stated using the 2 mean t-test the p-value collected was ¡2.2e-16. With his being significantly small. We have extremely strong evidence to say that the mean dots for lifters in the raw class from 66kg to 100kg are significantly greater than the mean dots for raw lifters in the 100kg+ weight classes. This shows that lighter weight classes have a better dots score on average, and since the formula should not should bias it should be revamped and take these findings into consideration.