

A company claims that their new energy drink, "PowerBoost," increases reaction time by an average of 50 milliseconds (ms). To test this claim, a researcher recruits 25 participants and measures their reaction times before and after consuming the energy drink. The data is stored in a CSV file named "reaction_times.csv" with columns "ParticipantID," "BeforeTime," and "AfterTime."

- Load the data into R and perform a 1-sample t-test to determine if the mean increase in reaction time is significantly different from the claimed 50 ms. Use $\alpha = 0.05$.
- Calculate the power of the 1-sample t-test using the given data and the calculated effect size (Cohen's d). Use the `pwr.t.test()` function from the `pwr` package to compute the power.
- The researcher also wants to compare the reaction times of male and female participants after consuming the energy drink. There are 12 male and 13 female participants. Perform a 2-sample t-test to determine if there is a significant difference in mean reaction times between males and females. Use $\alpha = 0.05$.
- Calculate the power of the 2-sample t-test using the given data and the calculated effect size (Cohen's d). Use the `pwr.t.test()` function from the `pwr` package to compute the power