Case: Calcium

Story

Does increasing calcium intake reduce blood pressure? Observational studies suggest that there is a link, and that it is strongest in African-American men. Twenty-one African-American men participated in an experiment to test this hypothesis. Ten of the men took a calcium supplement for 12 weeks while the remaining 11 men received a placebo. Researchers measured the blood pressure of each subject before and after the 12-week period. The experiment was double-blind. The dataset *calcium* contains data from the experiment.

Variables

variable name	description
treatment	whether subject received calcium or placebo
begin	aseated systolic blood pressure before treatment
end	aseated systolic blood pressure after treatment
decrease	decrease in blood pressure (begin-end)

Exercise

1. What statistical test is appropriate for comparing the change in blood pressure between the treatment and placebo groups?
2. May the data in each group be considered as being normally distributed?
3. Test whether the variance in each group can be assumed to be the same
4. Make a graphical comparison of the treatment means
5. Make the statistical test for comparing the change in blood pressure between the treatment and placebo groups. What is your conclusion? What is the p-value of the test?
6. Which non-parametric test could be used if data cannot be assumed to be normally distributed?
7. Save the results of your analysis in a text document (e.g. latex, word or star-office)

Hints

To perform the test in 3) you have to write some code. To figure out how, you can look up in the help menu for the appropriate test

```
?var.test
```

To create the vectors x and y do the following

```
x<-calcium$End[calcium$Treatment=='Calcium']
```

```
y<-calcium$End[calcium$Treatment=='Placebo']
```

```
var.test(x,y)
```