



Correlations in R

Investigating Relationships

Lauren Kennedy

School of Psychology, University of Adelaide

2016-Version 1.1

1 Assumed knowledge

This guide specifically teaches you how to calculate a correlation and do a correlation test in R. Correlations are used to describe and test the relationship between two variables. To learn more about correlations, refer to the Descriptive Statistics chapter in Learning Statistics with R. This guide assumes that you have installed R and R Studio, have looked at the Getting Started Guide and downloaded your practical data. You should know how to use functions (see the guide titled "Fun with Functions"). We will use the *lsr* package in this guide. If you're not sure how to access the *lsr* package, see the Getting Started in R help guide.

2 The data

The data we are using for this guide is already pre loaded in R. You won't see it in your environment panel, but it's there. For this guide we are going to use a data frame called *trees*. It contains the height (measured in feet), Girth(measured in inches) and Volume(measured in cubic feet) of 31 felled black cherry trees. We're going to use this data set to calculate the correlation between height and girth of the trees, the correlation matrix of height, girth and volume, and conduct a test to see if the correlation between height and girth is significantly different from zero. If you type the following you will see the full data set.

```
View(trees)
```

3 Calculating Correlations

3.1 Calculating a single correlation

The first thing that we'd like to do is calculate the correlation between tree height and tree girth. To do this we are going to use the *correlate* function. This function takes two *vectors*, which are a collection of numbers that have an order. The two vectors we are going to use are the columns *Height* and *Girth*. To get those columns from the dataframe *trees*, we use the *\$* operator. *trees\$Height* and *trees\$Girth* select the Height and Girth columns respectively. If we combine this with the *correlate* function we get the following code, which tells us the correlation is .52.

