

## **R reference card**, by Jonathan Baron

Parentheses are for functions, brackets are for indicating the position of items in a vector or matrix. (Here, items with numbers like x1 are user-supplied variables.)

### **Miscellaneous**

q(): quit  
<-: assign  
install.packages("package1"): install package1  
m1[,2]: column 2 of matrix m1  
m1[,2:5] or m1[,c(2,3,4,5)]: columns 2-5  
m1\$a1: variable a1 in data frame m1  
NA: missing data  
is.na: true if data missing  
library(mva): load (e.g.) the mva package

### **Help**

help(command1): get help with command1 (NOTE: USE THIS FOR MORE DETAIL THAN THIS CARD CAN PROVIDE.)  
help.start(): start browser help  
help(package=mva): help with (e.g.) package mva  
apropos("topic1") and help.search("topic1"): commands relevant to topic1  
example(command1): examples of command1

### **Input and output**

source("file1"): run the commands in file1.  
read.table("file1"): read in data from file1  
scan(x1): read a vector x1  
download.file("url1"): from internet  
url.show("url1"), read.table.url("url1"): remote input  
sink("file1"): output to file1, until sink()  
write(object1, "file1"): writes object1 to file1  
write.table(dataframe1, "file1"): writes a table

### **Managing variables and objects**

attach(x1) detach(x1): put (remove) x1 in search path  
ls(): lists all the active objects.  
str(object1): print useful information about object1  
rm(object1): remove object1  
dim(matrix1): dimensions of matrix1  
dimnames(x1): names of dimensions of x1  
length(vector1): length of vector1  
1:3: the vector 1,2,3  
c(1,2,3): creates the same vector  
rep(x1,n1): repeats the vector x1 n1 times  
cbind(a1,b1,c1), rbind(a1,b1,c1): binds columns or rows into a matrix  
merge(df1,df2): merge data frames  
matrix(vector1,r1,c1): make vector1 into a matrix with r1 rows and c1 columns

data.frame(v1,v2): make a data frame from vectors v1 and v2  
as.factor(), as.matrix(), as.vector(): conversion  
is.factor(), is.matrix(), is.vector(): what it is  
t(): switch rows and columns  
which(x1==a1): returns indices of x1 where x1==a1

### **Control flow**

for (i1 in vector1): repeat what follows  
if (condition1) ...else ...: conditional

### **Arithmetic**

%\*%: matrix multiplication  
%/%, ^, %%, sqrt(): integer division, power, modulus, square root

### **Statistics**

max(), min(), mean(), median(), sum(), var(): as named  
summary(data.frame): prints statistics  
rank(), sort() rank and sort  
ave(x1,y1): averages of x1 grouped by factor y1  
by(): apply function to data frame by factor  
apply(x1,n1,function1): apply function1 (e.g. mean) to x by rows (n1=1) or columns (n2=2)  
tapply(x1,list1,function1): apply function to x1 by list1  
table(): make a table  
tabulate(): tabulate a vector

### **basic statistical analysis**

aov(), anova(), lm(), glm(): (generalized) linear models, anova  
t.test(): t test  
prop.test(), binom.test(): sign test  
chisq.test(x1): chi-square test on matrix x1  
fisher.test(): Fisher exact test  
cor(a): show correlations  
cor.test(a,b): test correlation  
friedman.test(): Friedman test  
prcomp(): principal components  
kmeans(): kmeans cluster analysis  
factanal(): factor analysis  
cancor(): canonical correlation

### **Graphics**

plot(), barplot(), boxplot(), stem(), hist(): basic plots  
matplot(): matrix plot  
pairs(matrix): scatterplots  
coplot(): conditional plot  
stripplot(): strip plot  
qqplot(): quantile-quantile plot  
qqnorm(), qqline(): fit normal distribution