

Contents

1	Introduction to R	1
1.1	Why Command Lines and Scripts?	1
1.1.1	The R Console	2
1.1.2	Variables	3
1.1.3	Functions	3
1.2	Finding Functions and Getting Help	5
1.2.1	Libraries	5
1.2.2	Packages	5
1.2.3	Finding Functions	6
1.2.4	Getting Help	6
1.3	R Projects	9
1.3.1	Saving Your Session	9
1.3.2	Scripts	10
2	Data Structures	11
2.1	Data Structures	11
2.1.1	Vectors, Matrices, and Arrays	11
2.1.2	Data Frames and Lists	12
2.1.3	Creating Data	13
2.1.4	Sampling Data	16
2.1.5	Reading Data	17
2.2	Operations on Vectors and Matrices	19
2.2.1	Arithmetic Functions	19
2.2.2	Descriptive Functions	19
2.2.3	Operators and Expressions	20
2.3	Factors	24
2.3.1	Making Factors	25
2.3.2	Operations on Factors	26
2.3.3	Re-ordering and Re-labelling	27

2.4	Indexing	27
2.4.1	Indexing by Name.	28
2.4.2	Indexing by Number	29
2.4.3	Inserting and Deleting Rows or Columns.	30
2.4.4	Indexing with Factors	31
2.4.5	Conditional Indexing.	31
2.4.6	Sorting.	32
2.5	Reshaping.	33
2.5.1	Stacking and Unstacking	34
2.5.2	Reshaping: Wide and Long	34
2.5.3	Merging.	35
2.6	Missing Values	36
2.6.1	Recoding Missing Values.	36
2.6.2	Operations with Missing Values	36
2.6.3	Counting and Sorting Missing Values	37
2.6.4	Handling Missing Values.	37
2.7	Mapping Functions	38
2.7.1	Repeated Evaluation	39
2.7.2	Applying Functions.	39
2.8	Writing Functions	40
2.8.1	Anonymous Functions	41
2.8.2	Optional Arguments	41
3	Tables and Graphs.	43
3.1	Tables	43
3.1.1	Frequency Tables	44
3.1.2	Tables of Cell Means and Other Summaries.	46
3.1.3	Saving Tables.	47
3.2	Graphs	48
3.2.1	Base Graphics	48
3.2.2	Lattice Graphics	54
3.2.3	Multiple Plot Layout	55
3.2.4	Saving Graphics	57
4	Hypothesis Tests	59
4.1	Probability Distributions.	59
4.2	Hypothesis Tests	60
4.2.1	How to Run a t test.	60
5	Linear Models	63
5.1	Model Formulas	63
5.1.1	Formula and Data Frame	65
5.1.2	Updating Model Fits	65

5.2	General Linear Models.	66
5.2.1	Regression Diagnostics	67
5.2.2	Testing the Regression Coefficients.	67
5.2.3	Prediction.	68
5.2.4	Stepwise Regression	68
5.2.5	Extracting Information from the Fit Object	69
5.2.6	Residualizing	69
5.3	ANOVA.	70
5.3.1	ANOVA Tables	71
5.3.2	Comparisons.	74
5.4	Learning R	80
Index	81

A Tiny Handbook of R

Allerhand, M.

2011, IX, 83 p. 10 illus., Softcover

ISBN: 978-3-642-17979-2