

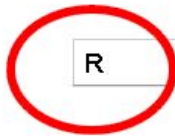
Dlaczego R?

Rafał Kucharski

kucharski@math.us.edu.pl

Letnia Szkoła IM UŚ, Wisła 2010

Google



R

[Advanced Search](#)
[Language Tools](#)

Google Search

I'm Feeling Lucky

[Advertising Programs](#)

[Business Solutions](#)

[About Google](#)

[Go to Google Polska](#)

© 2010 - [Privacy](#)



R Search

Instant is off

About 10,450,000,000 results (0.15 seconds)

Advanced search

Everything

More

Any time

Past week

More search tools



the molar gas constant = $8.314472 \text{ m}^2 \text{ kg s}^{-2} \text{ K}^{-1} \text{ mol}^{-1}$

[More about calculator.](#)

The R Project for Statistical Computing

R, also called GNU S, is a strongly functional language and environment to statistically explore data sets, make many graphical displays of data from custom ...

www.r-project.org/ - Cached - Similar

Manuals

Books

Mirrors

FAQs

Search

Developer Page

The Comprehensive R Archive Network

The R Journal

[More results from r-project.org >](#)

[R \(programming language\) - Wikipedia, the free encyclopedia](#)

In computing, R is a programming language and software environment for statistical computing and graphics. R is an implementation of the S programming ...

[en.wikipedia.org/wiki/R_\(programming_language\)](http://en.wikipedia.org/wiki/R_(programming_language)) - Cached - Similar

[R - Wikipedia, the free encyclopedia](#)

R 1] is the eighteenth letter of the basic modern Latin alphabet. Contents. 1 History; 2 Usage. 2.1 Dog's Letter. 3 Codes for computing; 4 See also ...

en.wikipedia.org/wiki/R - Cached - Similar

[+ Show more results from en.wikipedia.org](#)

[The Comprehensive R Archive Network](#)

Network of FTP and Web servers around the world that store identical, up-to-date, versions of R code, documentation.

cran.r-project.org/ - Cached - Similar

[Rex Hammock \(r\) on Twitter](#)

founder/ceo of media and content marketing firm Hammock Inc. (hammock.com) and wiki-wrangler of SmallBusiness.com. Lover of family, dogs, ...

twitter.com/R - Cached - Similar

[/r/ - Request](#)

r/ is 4chan's imageboard dedicated to fulfilling all types of user requests.

[boards.4chan.org/r/](#) - Similar



The R Project for Statistical Computing

About R

- [What is R?](#)
- [Contributors](#)
- [Screenshots](#)
- [What's new?](#)

Download, Packages

[CRAN](#)

R Project

- [Foundation](#)
- [Members & Donors](#)
- [Mailing Lists](#)
- [Bug Tracking](#)
- [Developer Page](#)
- [Conferences](#)
- [Search](#)

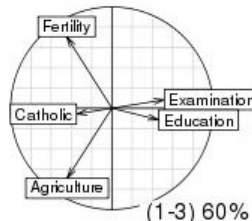
Documentation

- [Manuals](#)
- [FAQs](#)
- [The R Journal](#)
- [Wiki](#)
- [Books](#)
- [Certification](#)
- [Other](#)

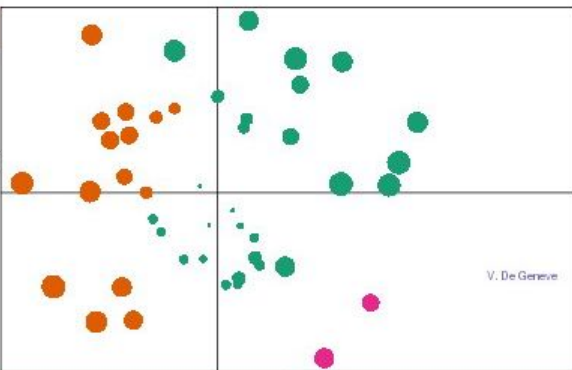
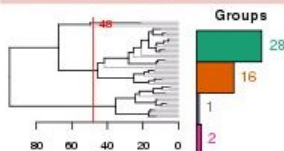
Misc

- [Bioconductor](#)
- [Related Projects](#)
- [User Groups](#)
- [Links](#)

PCA 5 vars
`prcomp(x = data, cor = cor)`

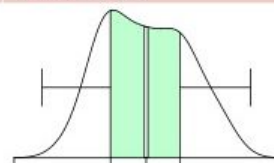
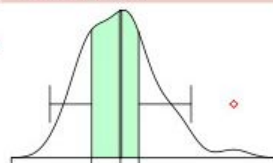


Clustering 4 groups



Factor 1 [41%]

Factor 3 [19%]



Getting Started:

- R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and MacOS. To [download R](#), please choose your preferred [CRAN mirror](#).
- If you have questions about R like how to download and install the software, or what the license terms are, please read our [answers to frequently asked questions](#) before you send an email.

News:

- [R 2.12.0 prerelease versions](#) will appear starting September 17. Final release is scheduled for October 15, 2010.
- [The R Journal](#) Vol.2/1 is available
- [useR! 2010](#), the R user conference, has been held at NIST, Gaithersburg, Maryland, USA, July 21-23, 2010.
- [useR! 2011](#), will take place at the University of Warwick, Coventry, UK, August 16-18, 2011.



About R

- [What is R?](#)
- [Contributors](#)
- [Screenshots](#)
- [What's new?](#)

Download, Packages

[CRAN](#)

R Project

- [Foundation](#)
- [Members & Donors](#)
- [Mailing Lists](#)
- [Bug Tracking](#)
- [Developer Page](#)
- [Conferences](#)
- [Search](#)

Documentation

- [Manuals](#)
- [FAQs](#)
- [The R Journal](#)
- [Wiki](#)
- [Books](#)
- [Certification](#)
- [Other](#)

Misc

- [Bioconductor](#)
- [Related Projects](#)
- [User Groups](#)
- [Links](#)

<http://fm.mirror.garr.it/mirrors/CRAN/>

<http://cran.stat.unipd.it/>

<http://dssm.unipa.it/CRAN/>

Japan

<http://essrc.hyogo-u.ac.jp/cran/>

<http://cran.md.tsukuba.ac.jp/>

Korea

<http://bibs.snu.ac.kr/R/>

Netherlands

<http://cran.xl-mirror.nl/>

<http://cran-mirror.cs.uu.nl/>

New Zealand

<http://cran.stat.auckland.ac.nz/>

Norway

<http://cran.uib.no/>

Poland

<http://piotrkosoft.net/pub/mirrors/CRAN/>

<http://r.meteo.uni.wroc.pl/>

Portugal

<http://neacm.fe.up.pt/CRAN/>

Russia

<http://cran.gis-lab.info/>

Singapore

<http://cran.stat.nus.edu.sg/>

Slovakia

<http://cran.fyxm.net/>

<http://cran.phphosts.org/>

South Africa

<http://cran.ru.ac.za/>

Spain

<http://cran.es.r-project.org/>

Sweden

<http://fm.mirror.garr.it/mirrors/CRAN/>

Garr Mirror, Milano

University of Padua

Universita degli Studi di Palermo

Hyogo University of Teacher Education

University of Tsukuba

Seoul National University

XL-Data, Amsterdam

Utrecht University

University of Auckland

University of Bergen

Piotrkosoft - Data Storage Center

University of Wroclaw

Universidade do Porto

GIS-Lab.info

National University of Singapore

FYXM.net, Bratislava

phphosts.org, Bratislava

Rhodes University

Spanish National Research Network, Madrid

Swedish University Computer Network, Uppsala



Frequently used pages

CRAN

[Mirrors](#)

[What's new?](#)

[Task Views](#)

[Search](#)

About R

[R Homepage](#)

[The R Journal](#)

Software

[R Sources](#)

[R Binaries](#)

[Packages](#)

[Other](#)

Documentation

[Manuals](#)

[FAQs](#)

[Contributed](#)

Download and Install R

Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- [Linux](#)
- [MacOS X](#)
- [Windows](#)

Source Code for all Platforms

Windows and Mac users most likely want the precompiled binaries listed in the upper box, not the source code. The sources have to be compiled before you can use them. If you do not know what this means, you probably do not want to do it!

- **The latest release** (2010-05-31): [R-2.11.1.tar.gz](#) (read [what's new](#) in the latest version).
- Sources of [R alpha and beta releases](#) (daily snapshots, created only in time periods before a planned release).
- Daily snapshots of current patched and development versions are [available here](#). Please read about [new features and bug fixes](#) before filing corresponding feature requests or bug reports.
- Source code of older versions of R is [available here](#).
- Contributed extension [packages](#)

Questions About R

- If you have questions about R like how to download and install the software, or what the license terms are, please read our [answers to frequently asked questions](#) before you send an email.

What are R and CRAN?

R is 'GNU S', a freely available language and environment for statistical computing and graphics which provides a wide variety of statistical and graphical techniques, including linear and nonlinear modeling, matrix computation, data manipulation, simulation, and financial modeling.



This directory contains 32-bit binaries for a base distribution and packages to run on i386/x64 Windows.

See [here](#) for a 64-bit Windows port.

Note: CRAN does not have Windows systems and cannot check these binaries for viruses. Use the normal precautions with downloaded executables.

Subdirectories:

[base](#) Binaries for base distribution (managed by Duncan Murdoch)

[contrib](#) Binaries of contributed packages (managed by Uwe Ligges)

Please do not submit binaries to CRAN. Package developers might want to contact Duncan Murdoch or Uwe Ligges directly in case of questions / suggestions related to Windows binaries.

You may also want to read the [R FAQ](#) and [R for Windows FAQ](#).

Last modified: April 4, 2004, by Friedrich Leisch

CRAN

[Mirrors](#)

[What's new?](#)

[Task Views](#)

[Search](#)

About R

[R Homepage](#)

[The R Journal](#)

Software

[R Sources](#)

[R Binaries](#)

[Packages](#)

[Other](#)

Documentation

[Manuals](#)

[FAQs](#)

[Contributed](#)

[Download R 2.11.1 for Windows](#) (33 megabytes, 32 bits)[Installation and other instructions](#)New features in this version: [Windows specific](#), [all platforms](#).

If you want to double-check that the package you have downloaded exactly matches the package distributed by R, you can compare the [md5sum](#) of the .exe to the [true fingerprint](#). You will need a version of md5sum for windows: both [graphical](#) and [command line versions](#) are available.

Frequently asked questions

- [How do I install R when using Windows Vista?](#)
- [How do I update packages in my previous version of R?](#)
- [Should I run 32-bit or 64-bit R?](#)

Please see the [R FAQ](#) for general information about R and the [R Windows FAQ](#) for Windows-specific information.

Other builds

- Patches to this release are incorporated in the [r-patched snapshot build](#).
- A build of the development version (which will eventually become the next major release of R) is available in the [r-devel snapshot build](#).
- [64 bit builds for Windows](#) are also available.
- [Previous releases](#)

Note to webmasters: A stable link which will redirect to the current Windows 32 bit binary release is <CRAN MIRROR>/bin/windows/base/release.htm.

Last change: 2010-05-31, by Duncan Murdoch

CRAN

[Mirrors](#)[What's new?](#)[Task Views](#)[Search](#)

About R

[R Homepage](#)[The R Journal](#)

Software

[R Sources](#)[R Binaries](#)[Packages](#)[Other](#)

Documentation

[Manuals](#)[FAQs](#)[Contributed](#)

”R is a free software environment for statistical computing and graphics”

”R is a free software environment for statistical computing and graphics”

Z listy dyskusyjnej R-Help:

- I would like to know if I can (...)
- This is R. There is no if. Only how.

R to zarówno:

- język programowania,
- platforma programistyczna wyposażona w jego interpretator,
- projekt rozwijający język i środowisko,

- autorzy: Robert Gentleman i Ross Ihake – statystycy
Auckland University,
- wzorowany na języku S, opracowanym w Bell Lab,
- **darmowy** (licencja GNU GPL), tak jak dodatkowe pakiety.



Available Packages

Currently, the CRAN package repository features 2521 available packages.

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

CRAN

[Mirrors](#)

[What's new?](#)

[Task Views](#)

[Search](#)

About R

[R Homepage](#)

[The R Journal](#)

Software

[R Sources](#)

[R Binaries](#)

[Packages](#)

[Other](#)

Documentation

[Manuals](#)

[FAQs](#)

[Contributed](#)

[ACCLMA](#)

ACC & LMA Graph Plotting

[ADGofTest](#)

Anderson-Darling GoF test

[ADaCGH](#)

Analysis of data from aCGH experiments

[AER](#)

Applied Econometrics with R

[AGSDest](#)

Estimation in adaptive group sequential trials

[AICcmodavg](#)

Model selection and multimodel inference based on (Q)AIC(c)

[AIGIS](#)

Areal Interpolation for GIS data

[AIM](#)

AIM: adaptive index model

[ALS](#)

multivariate curve resolution alternating least squares (MCR-ALS)

[AMORE](#)

A MORE flexible neural network package

[AcceptanceSampling](#)

Creation and evaluation of Acceptance Sampling Plans

[AdMit](#)

Adaptive Mixture of Student-t distributions

[AdaptFit](#)

Adaptive Semiparametric Regression

[AlgDesign](#)

Algorithmic Experimental Design

[Amelia](#)

Amelia II: A Program for Missing Data

[AnalyzefMRI](#)

Functions for analysis of fMRI datasets stored in the ANALYZE or NIFTI format

[Animal](#)

Analyze time-coded animal behavior data

[AquaEnv](#)

AquaEnv - an integrated development toolbox for aquatic chemical model generation

[ArDec](#)

Time series autoregressive-based decomposition

[aCGH.Spline](#)

Robust spline interpolation for dual color array comparative genomic hybridisation data

[abind](#)

Combine multi-dimensional arrays

[accuracy](#)

Tools for testing and improving accuracy of statistical results

[acepack](#)

ace() and avas() for selecting regression transformations

[actuar](#)

Actuarial functions

[ada](#)

ada: an R package for stochastic boosting

[adabag](#)

Applies Adaboost.M1 and Bagging



CRAN Task Views

CRAN

[Mirrors](#)

[What's new?](#)

[Task Views](#)

[Search](#)

About R

[R Homepage](#)

[The R Journal](#)

Software

[R Sources](#)

[R Binaries](#)

[Packages](#)

[Other](#)

Documentation

[Manuals](#)

[FAQs](#)

[Contributed](#)

[Bayesian](#)

[ChemPhys](#)

[ClinicalTrials](#)

[Cluster](#)

[Distributions](#)

[Econometrics](#)

[Environmetrics](#)

[ExperimentalDesign](#)

[Finance](#)

[Genetics](#)

[Graphics](#)

[gR](#)

[HighPerformanceComputing](#)

[MachineLearning](#)

[MedicalImaging](#)

[Multivariate](#)

[NaturalLanguageProcessing](#)

[OfficialStatistics](#)

[Optimization](#)

[Pharmacokinetics](#)

[Phylogenetics](#)

[Psychometrics](#)

[ReproducibleResearch](#)

[Robust](#)

[SocialSciences](#)

[Spatial](#)

[Survival](#)

[TimeSeries](#)

Bayesian Inference

Chemometrics and Computational Physics

Clinical Trial Design, Monitoring, and Analysis

Cluster Analysis & Finite Mixture Models

Probability Distributions

Computational Econometrics

Analysis of Ecological and Environmental Data

Design of Experiments (DoE) & Analysis of Experimental Data

Empirical Finance

Statistical Genetics

Graphic Displays & Dynamic Graphics & Graphic Devices & Visualization

gRaphical Models in R

High-Performance and Parallel Computing with R

Machine Learning & Statistical Learning

Medical Image Analysis

Multivariate Statistics

Natural Language Processing

Official Statistics & Survey Methodology

Optimization and Mathematical Programming

Analysis of Pharmacokinetic Data

Phylogenetics, Especially Comparative Methods

Psychometric Models and Methods

Reproducible Research

Robust Statistical Methods

Statistics for the Social Sciences

Analysis of Spatial Data

Survival Analysis

Time Series Analysis



Finance

CRAN

[Mirrors](#)

[What's new?](#)

[Task Views](#)

[Search](#)

About R

[R Homepage](#)

[The R Journal](#)

Software

[R Sources](#)

[R Binaries](#)

[Packages](#)

[Other](#)

Documentation

[Manuals](#)

[FAQs](#)

[Contributed](#)

• The [tsa](#) package provides functions for time series factor analysis.

- The Rmetrics suite of packages comprises [fArma](#), [fAsianOptions](#), [fAssets](#), [fBasics](#), [fBonds](#), [timeDate](#) (formerly: [fCalendar](#)), [fCopulae](#), [fEcofin](#), [fExoticOptions](#), [fExtremes](#), [fGarch](#), [fImport](#), [fMultivar](#), [fNonlinear](#), [fOptions](#), [fPortfolio](#), [fRegression](#), [timeSeries](#) (formerly: [fSeries](#)), [fTrading](#), [fUnitRoots](#) and [fUtilities](#) packages contain a very large number of relevant functions for different aspect of empirical and computational finance.
- The [RQuantLib](#) package provides several option-pricing functions as well as some fixed-income functionality from the QuantLib project to R.
- The [quantmod](#) package offers a number of functions for quantitative modelling in finance as well as data acquisition, plotting and other utilities.
- The [portfolio](#) package contains classes for equity portfolio management, the [portfolioSim](#) builds a related simulation framework and [tradeCosts](#) estimates the potential impact of trades on the prevalent market prices. The [backtest](#) offers tools to explore portfolio-based hypotheses about financial instruments. The [stockPortfolio](#) packages provides functions for single index, constant correlation and multigroup models.
- The [PerformanceAnalytics](#) package contains a large number of functions for portfolio performance calculations and risk management.
- The [TTR](#) contains functions to construct technical trading rules in R. The [trrTests](#) package contains several test statistics for assessing the efficacy of such rules, and the [atrni](#) package contains functions to analyse and use such trading rules.
- The [financial](#) package can compute present values, cash flows and other simple finance calculations.
- The [sde](#) package provides simulation and inference functionality for stochastic differential equations.
- The [termstrc](#) and [YieldCurve](#) packages contain methods for the estimation of zero-coupon yield curves and spread curves based the parametric Nelson and Siegel (1987) method with the Svensson (1994) extension. The former package adds the McCulloch (1975) cubic splines approach, the latter package adds the Diebold and Li approach.
- The [vrtest](#) package contains a number of variance ratio tests for the weak-form of the efficient markets hypothesis.
- The [BLCOP](#) package provides implementation of the Black-Litterman portfolio model as well other copula-opinion pooling frameworks.
- The [gmm](#) package provides generalized method of moments (GMM) estimations function that are often used when estimating the parameters of the moment conditions implied by an asset pricing model.
- The [tawny](#) package contains estimator based on random matrix theory as well as shrinkage methods to remove sampling noise when estimating sample covariance matrices.
- The [SV](#) package uses indirect inference to estimate non-Gaussian stochastic volatility models.
- The [orderbook](#) package can be used to analyses market microstructure effects and changes in the (limit-) order books.
- The [schwartz97](#) package can be used to model the Schwartz (1997) two-factor model for commodities markets.

Risk management

- Several packages provide functionality for Extreme Value Theory models: [evd](#), [evdbayes](#), [evir](#), [extRremes](#), [ismev](#), [POT](#)

Dokumentacja

- system pomocy w programie,
- wprowadzenia i instrukcje na stronie projektu,
- źródła!
- długa lista pozycji książkowych (m.in. Springer UseR! Series),
- R Journal.

Język R

- prosta składnia,
- język interpretowany,
- istnieje możliwość korzystania z bibliotek C, Fortran, ...
- z funkcji R można korzystać w C, Javie, ...

Wyposażenie standardowe

- „wypasiony” kalkulator
- operacje na wektorach i macierzach,
- operacje dyskowe, konwersja wielu formatów danych, internet,
- funkcje tekstowe,
- bogata biblioteka rozkładów probabilistycznych,
- uruchamianie poleceń systemowych,
- możliwość definiowania własnych operatorów,
- przeciążanie funkcji, funkcje wyższego rzędu,

$$\text{Sweave} = \text{L}^{\text{A}}\text{T}_{\text{E}}\text{X} \cdot \text{R}^2$$

- tworzymy plik $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ -owy z wstawkami kodu R,
- zapisujemy jako plik `.Rnw`,
- przetwarzamy w R poleceniem `Sweave`,
- R wykonuje obliczenia, pomija kod $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ -a,
- generuje plik `.tex` wraz z wynikami, pliki z rysunkami,
- otrzymany plik `.tex` „normalnie” $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ -ujemy.

Dlaczego nie R?

- nie zrobi kawy, nie potrzyzyma za rekę, nie pójdzie na spacer,
- za dużo możliwości,
- dokumentacja niektórych pakietów jest niejasna,
- pakiety są dostarczane przez użytkowników –
 - wyniki uzyskiwane z ich pomocą mogą być niewiarygodne,
- nie ma gwarancji, że jest wart więcej niż za niego płacisz.

Takie rzeczy to tylko w e-R-ze