

# Análise de experimentos de longa duração

Éder David Borges da Silva  
Renato Gonçalves de Oliveira

# Introdução ao Software R

Estrutura e funcionamento do Software R

# Introdução ao Software

The screenshot displays the R Project website with various statistical analysis outputs. The main content area is titled "The R Project for Statistical Computing" and features several plots:

- PCA 5 vars**: A biplot showing the relationship between variables (Fertility, Examination, Education, Catholic, Agriculture) and principal components. A bar chart below indicates that the first three principal components account for 60% of the variance.
- Clustering 4 groups**: A dendrogram showing hierarchical clustering of data points into four groups.
- Factor 1 [41%]** and **Factor 3 [19%]**: Histograms showing the distribution of data points along the first and third principal components.

On the left side of the website, there is a navigation menu with links for:

- 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

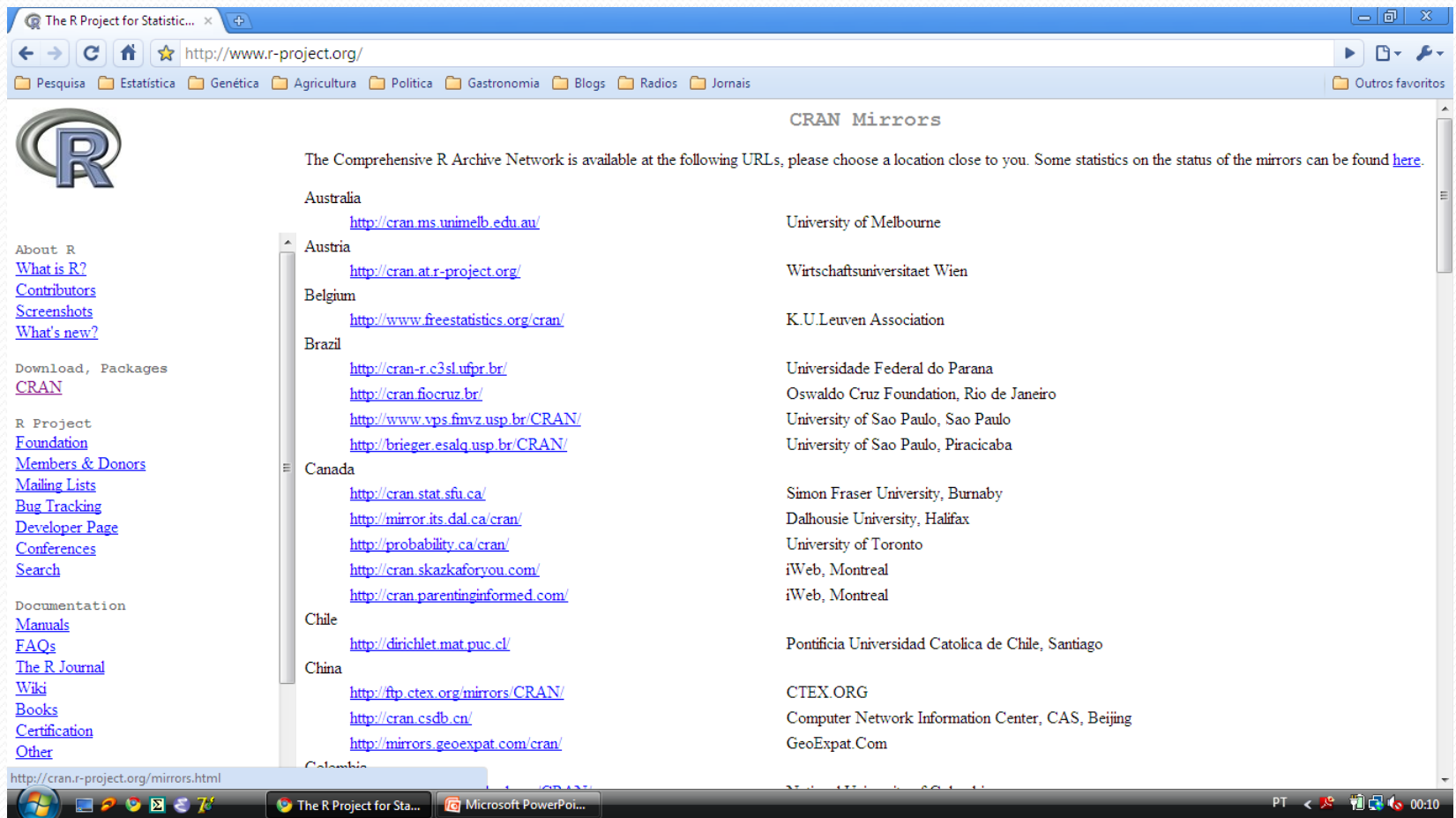
At the bottom of the page, there is a "Getting Started:" section with the following text:

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.

Below this, there is a "News:" section with a link: "The R Journal Vol 2/1 is available".

# Introdução ao Software



The screenshot shows a web browser window displaying the CRAN Mirrors page. The browser's address bar shows the URL <http://www.r-project.org/>. The page content includes the CRAN logo, a navigation menu on the left, and a list of mirrors organized by country. The text on the page reads: "The Comprehensive R Archive Network is available at the following URLs, please choose a location close to you. Some statistics on the status of the mirrors can be found [here](#)."

**CRAN Mirrors**

The Comprehensive R Archive Network is available at the following URLs, please choose a location close to you. Some statistics on the status of the mirrors can be found [here](#).

**Australia**  
<http://cran.ms.unimelb.edu.au/>  
University of Melbourne

**Austria**  
<http://cran.at.r-project.org/>  
Wirtschaftsuniversitaet Wien

**Belgium**  
<http://www.freeststatistics.org/cran/>  
K.U.Leuven Association

**Brazil**  
<http://cran-r.c3sl.ufpr.br/>  
<http://cran.fiocruz.br/>  
<http://www.vps.fmvz.usp.br/CRAN/>  
<http://brieger.esalq.usp.br/CRAN/>  
Universidade Federal do Parana  
Oswaldo Cruz Foundation, Rio de Janeiro  
University of Sao Paulo, Sao Paulo  
University of Sao Paulo, Piracicaba

**Canada**  
<http://cran.stat.sfu.ca/>  
<http://mirror.its.dal.ca/cran/>  
<http://probability.ca/cran/>  
<http://cran.skazkaforyou.com/>  
<http://cran.parentinginformed.com/>  
Simon Fraser University, Burnaby  
Dalhousie University, Halifax  
University of Toronto  
iWeb, Montreal  
iWeb, Montreal

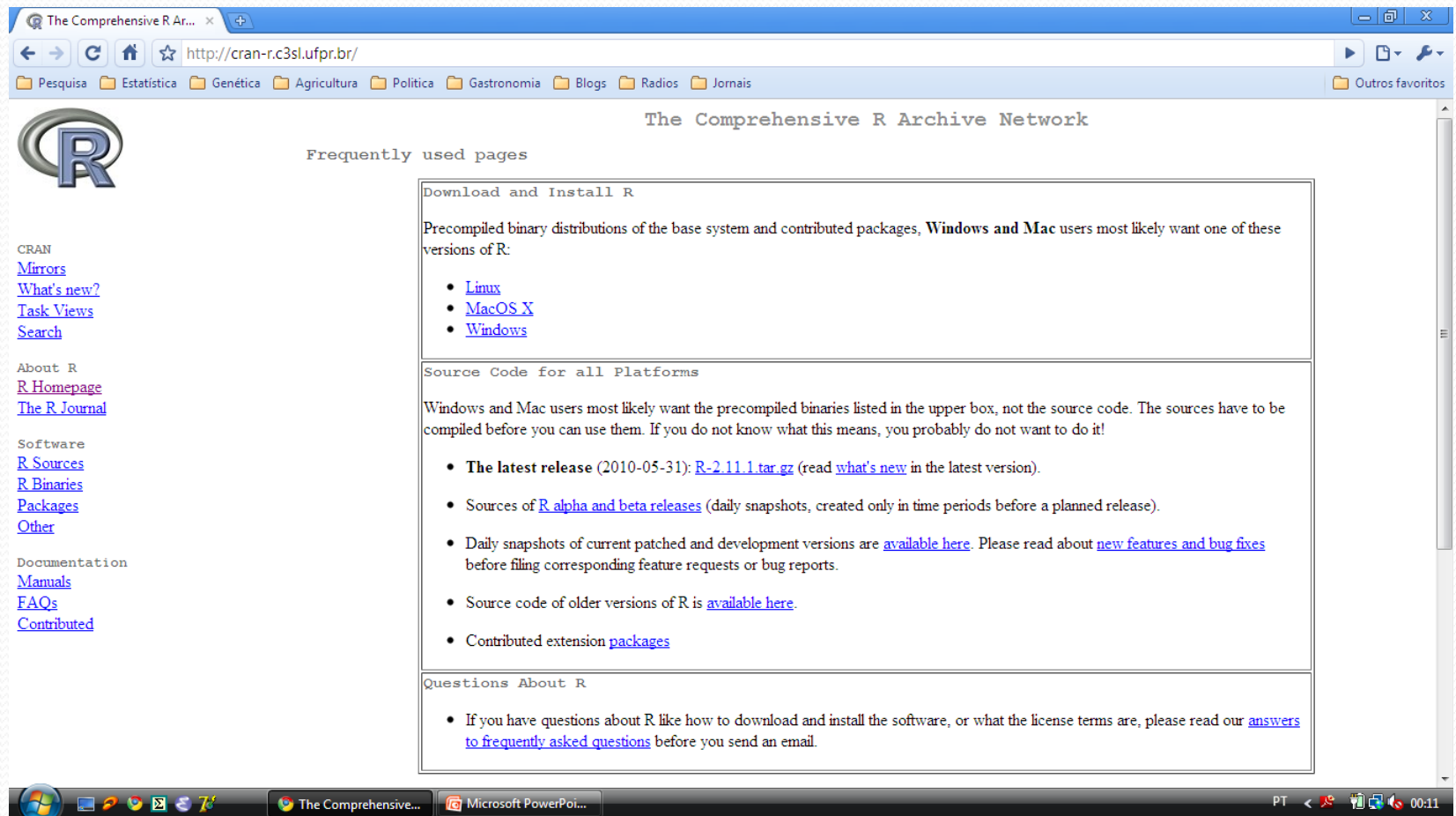
**Chile**  
<http://dirichlet.mat.puc.cl/>  
Pontificia Universidad Catolica de Chile, Santiago

**China**  
<http://ftp.ctex.org/mirrors/CRAN/>  
<http://cran.csdb.cn/>  
<http://mirrors.geoexpat.com/cran/>  
CTEX.ORG  
Computer Network Information Center, CAS, Beijing  
GeoExpat.Com

**Colombia**

**Navigation Menu:**  
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](#)

# Introdução ao Software



The screenshot shows a web browser window displaying the CRAN website. The address bar shows the URL <http://cran-r.c3sl.ufpr.br/>. The page title is "The Comprehensive R Archive Network". The main content area is titled "Frequently used pages" and contains three sections:

- 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**

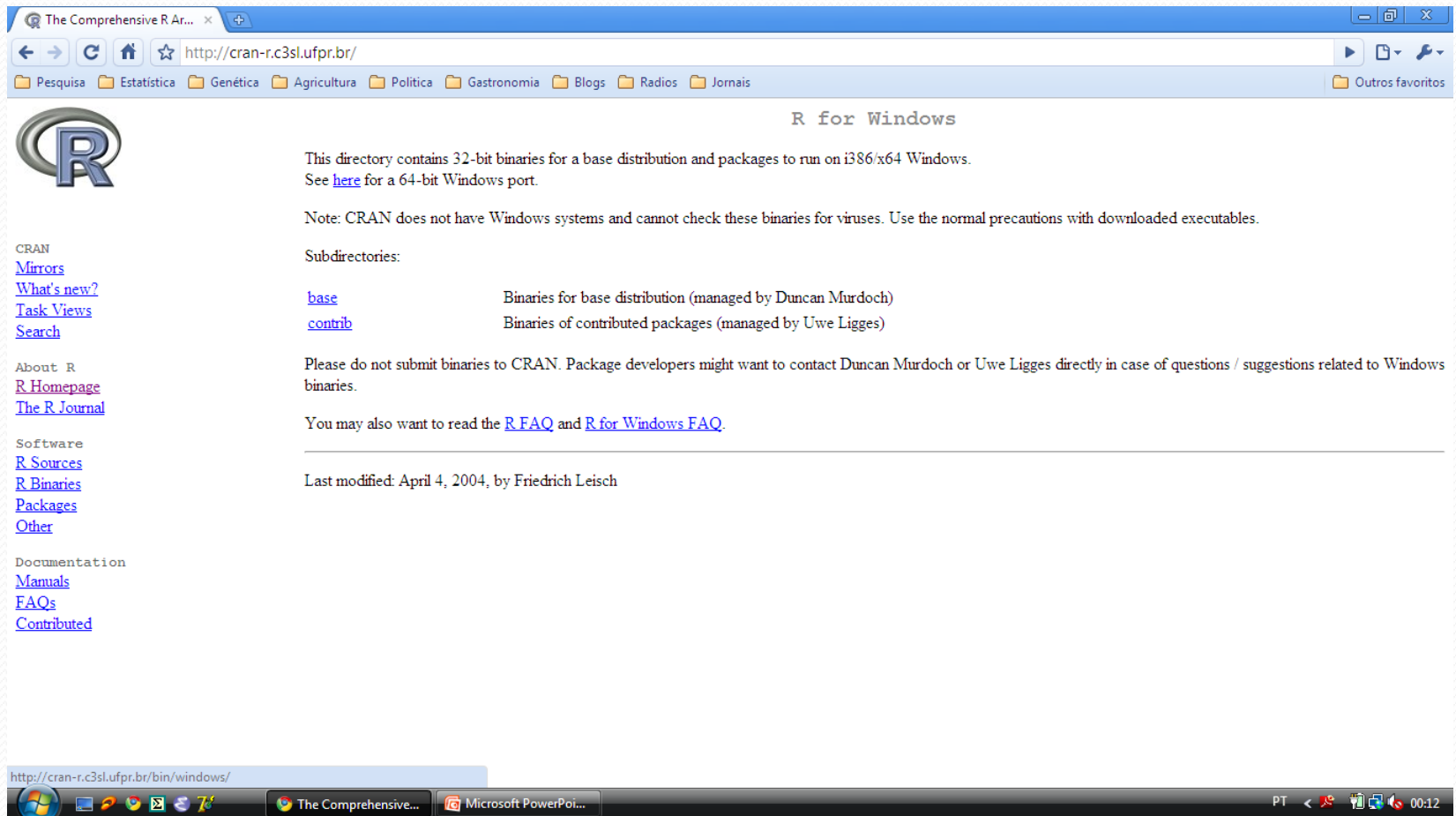
Windows and Mac users most likely want the precompiled binaries listed in the upper box, not the source code. The sources have to be compiled before you can use them. If you do not know what this means, you probably do not want to do it!

  - **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.

The left sidebar contains navigation links: 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 Windows taskbar at the bottom shows the Start button, several application icons, and the system tray with the date and time (00:11).

# Introdução ao Software



The screenshot shows a web browser window with the address bar containing <http://cran-r.c3sl.ufpr.br/>. The page title is "The Comprehensive R Ar...". The browser's address bar shows a search bar and several folders: Pesquisa, Estatística, Genética, Agricultura, Política, Gastronomia, Blogs, Radios, Jornais, and Outros favoritos.

The main content of the page is titled "R for Windows". It contains the following text:

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:

<a href="#">base</a>	Binaries for base distribution (managed by Duncan Murdoch)
<a href="#">contrib</a>	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](#).

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Last modified: April 4, 2004, by Friedrich Leisch

The left sidebar contains the following links:

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- [The R Journal](#)
- Software
- [R Sources](#)
- [R Binaries](#)
- [Packages](#)
- [Other](#)
- Documentation
- [Manuals](#)
- [FAQs](#)
- [Contributed](#)

The bottom of the browser window shows the address bar with <http://cran-r.c3sl.ufpr.br/bin/windows/> and the Windows taskbar with several open applications: "The Comprehensive...", "Microsoft PowerPoi...", and a system tray showing "PT", a clock, and "00:12".

# Introdução ao Software

The screenshot shows a web browser window with the address bar displaying `http://cran-r.c3sl.ufpr.br/`. The browser's address bar also shows a search bar and several folders: Pesquisa, Estatística, Genética, Agricultura, Política, Gastronomia, Blogs, Radios, Jornais, and Outros favoritos. The main content area features the R logo and the title "R-2.11.1 for Windows (32 bit build)". Below the title, there is a box containing the following text:

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

Below this box, the text reads: "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."

The "Frequently asked questions" section includes the following links:

- [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.

The "Other builds" section includes the following links:

- 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

The left sidebar contains the following links:

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

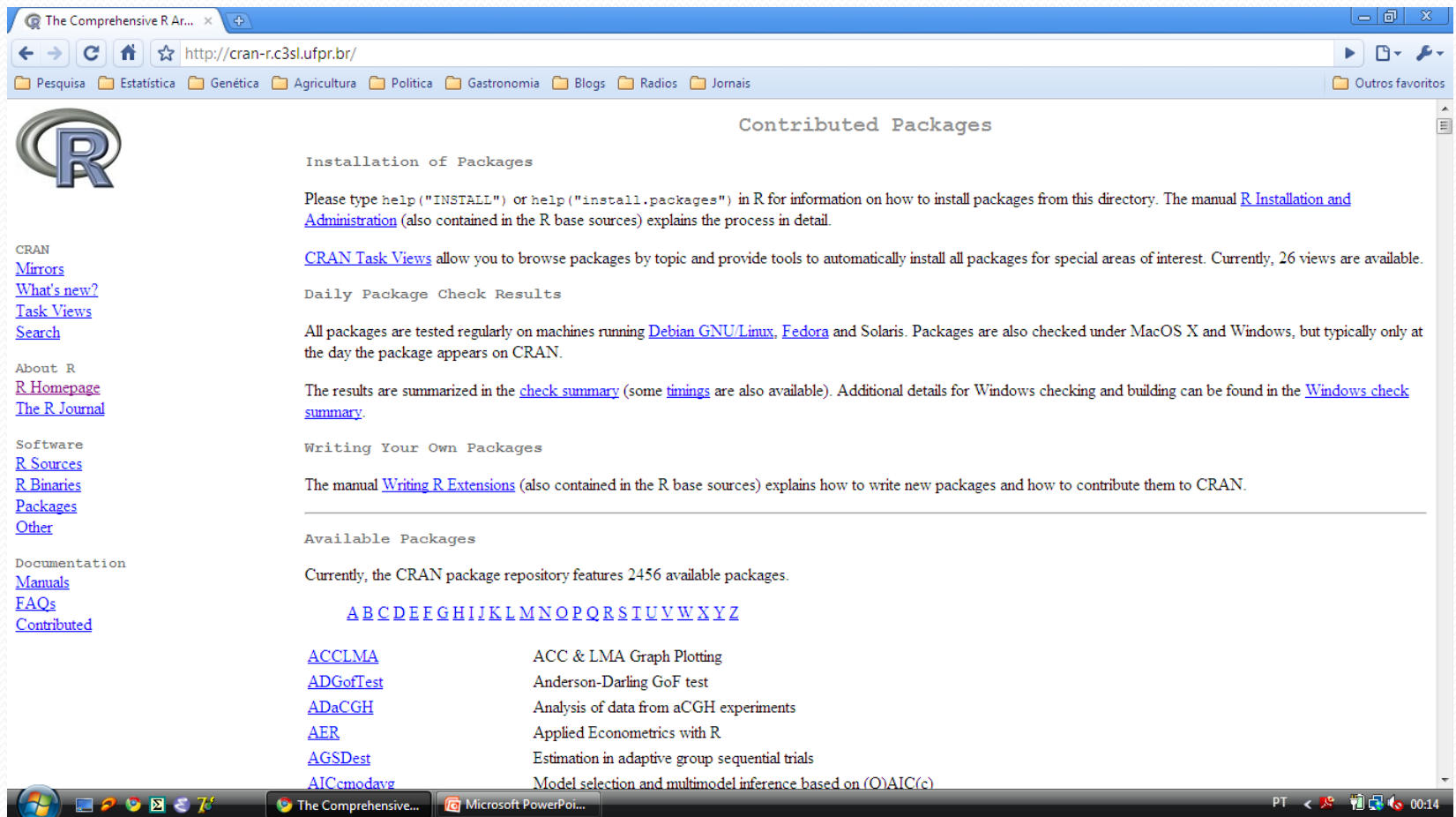
About R  
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[The R Journal](#)

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

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

The browser's taskbar at the bottom shows the Windows logo, several application icons, and the system tray with the time 00:12.

# Introdução ao Software



The screenshot shows a web browser window displaying the CRAN (Comprehensive R Archive Network) website. The browser's address bar shows the URL <http://cran-r.c3sl.ufpr.br/>. The page title is "Contributed Packages".

The main content area is titled "Contributed Packages" and contains the following sections:

- Installation of Packages**: A paragraph explaining how to install packages from this directory, mentioning the manual [R Installation and Administration](#).
- CRAN Task Views**: A paragraph stating that these allow browsing packages by topic and provide tools for automatic installation of packages for special areas of interest. Currently, 26 views are available.
- Daily Package Check Results**: A paragraph explaining that all packages are tested regularly on machines running [Debian GNU/Linux](#), [Fedora](#), and Solaris. Packages are also checked under MacOS X and Windows, but typically only at the day the package appears on CRAN.
- Writing Your Own Packages**: A paragraph explaining that the manual [Writing R Extensions](#) explains how to write new packages and how to contribute them to CRAN.
- Available Packages**: A section listing 2456 available packages, with a list of letters [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](#) for navigation.

The left sidebar contains a navigation menu with the following links:

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  - [R Binaries](#)
  - [Packages](#)
  - [Other](#)
- Documentation
  - [Manuals](#)
  - [FAQs](#)
  - [Contributed](#)

The bottom of the browser window shows the Windows taskbar with the system clock at 00:14 and the language set to PT.

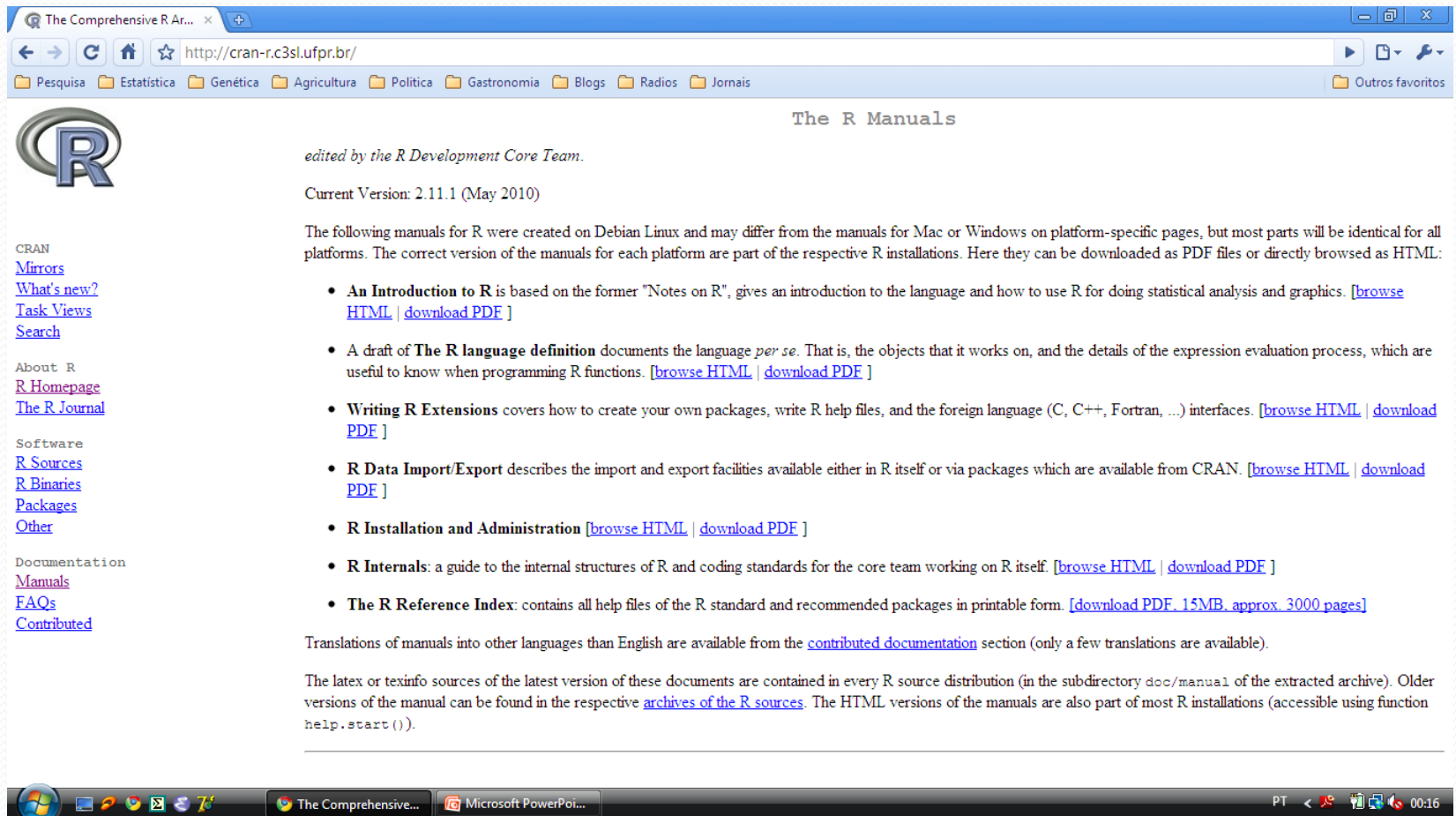


The screenshot shows a web browser window with the following elements:

- Browser Title:** The Comprehensive R Ar...
- Address Bar:** http://cran-r.c3sl.ufpr.br/
- Navigation Bar:** Back, Forward, Home, Star, and search icons.
- Page Content:**
  - Logo:** The R logo.
  - Section Header:** agricolae: Statistical Procedures for Agricultural Research
  - Description:** Agricolae was presented on 28 August 2009 in the thesis "A statistical analysis tool for agricultural research" to obtain the degree of Master on science, mention Systems Engineering, of the facultad de ingenieria industrial y de sistemas - Universidad Nacional de Ingenieria, Lima-Peru (UNI), being approved with the qualification of 18.14 in a scale from 0 to 20. The thesis includes a satisfaction survey of the library, with an index quality of the software of 0.8 in scale of 0-1. These functions are currently used by the International Potato Center (CIP), the Universidad Nacional Agraria La Molina (UNALM-PERU), and the Instituto Nacional de Innovacion Agraria (INIA-PERU). It comprises the functionality of statistical analysis into experimental designs applied specially in field experiments in agriculture and plant breeding: Lattice, factorial, complete and incomplete block, Latin Square, Graeco, Alpha designs, Cyclic, augmented block, split and strip plot designs, comparison of multi-location trials, comparison between treatments, resampling, simulation, biodiversity indexes and consensus cluster.
  - Metadata:**
    - Version: 1.0-9
    - Suggests: [akima](#), [kjaR](#), [MASS](#), [cluster](#)
    - Published: 2010-02-24
    - Author: Felipe de Mendiburu
    - Maintainer: Felipe de Mendiburu <f.mendiburu at cgiar.org>
    - License: [GPL](#)
    - URL: <http://tarwi.lamolina.edu.pe/~fmendiburu>
    - In views: [ExperimentalDesign](#)
    - CRAN checks: [agricolae results](#)
  - Downloads:**
    - Package source: [agricolae\\_1.0-9.tar.gz](#)
    - MacOS X binary: [agricolae\\_1.0-9.tgz](#)
    - Windows binary: [agricolae\\_1.0-9.zip](#)
    - Reference manual: [agricolae.pdf](#)
    - Old sources: [agricolae archive](#)
- Left Sidebar:**
  - CRAN
    - [Mirrors](#)
    - [What's new?](#)
    - [Task Views](#)
    - [Search](#)
  - About R
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    - [The R Journal](#)
  - Software
    - [R Sources](#)
    - [R Binaries](#)
    - [Packages](#)
    - [Other](#)
  - Documentation
    - [Manuals](#)
    - [FAQs](#)
    - [Contributed](#)

The browser's taskbar at the bottom shows the Windows Start button, several application icons, and the system tray with the date and time (00:14).

# Introdução ao Software



The Comprehensive R Ar... x

← → ↻ ⌂ ☆ http://cran-r.c3sl.ufpr.br/

Pesquisa Estática Genética Agricultura Política Gastronomia Blogs Radios Jornais

Outros favoritos

## The R Manuals

*edited by the R Development Core Team.*

Current Version: 2.11.1 (May 2010)

The following manuals for R were created on Debian Linux and may differ from the manuals for Mac or Windows on platform-specific pages, but most parts will be identical for all platforms. The correct version of the manuals for each platform are part of the respective R installations. Here they can be downloaded as PDF files or directly browsed as HTML:

- **An Introduction to R** is based on the former "Notes on R", gives an introduction to the language and how to use R for doing statistical analysis and graphics. [[browse HTML](#) | [download PDF](#) ]
- A draft of **The R language definition** documents the language *per se*. That is, the objects that it works on, and the details of the expression evaluation process, which are useful to know when programming R functions. [[browse HTML](#) | [download PDF](#) ]
- **Writing R Extensions** covers how to create your own packages, write R help files, and the foreign language (C, C++, Fortran, ...) interfaces. [[browse HTML](#) | [download PDF](#) ]
- **R Data Import/Export** describes the import and export facilities available either in R itself or via packages which are available from CRAN. [[browse HTML](#) | [download PDF](#) ]
- **R Installation and Administration** [[browse HTML](#) | [download PDF](#) ]
- **R Internals**: a guide to the internal structures of R and coding standards for the core team working on R itself. [[browse HTML](#) | [download PDF](#) ]
- **The R Reference Index**: contains all help files of the R standard and recommended packages in printable form. [[download PDF, 15MB, approx. 3000 pages](#)]

Translations of manuals into other languages than English are available from the [contributed documentation](#) section (only a few translations are available).

The latex or texinfo sources of the latest version of these documents are contained in every R source distribution (in the subdirectory `doc/manual` of the extracted archive). Older versions of the manual can be found in the respective [archives of the R sources](#). The HTML versions of the manuals are also part of most R installations (accessible using function `help.start()`).

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 Comprehensive... Microsoft PowerPoi...

PT < 00:16

# Grupo de discussão

The screenshot shows a web browser window with the address bar displaying `http://br.groups.yahoo.com/group/R_STAT/`. The page title is "R\_STAT - Linguagem de programação R".

**Left Sidebar:**

- Início
- Mensagens
  - Enviar
  - Anexos
- Arquivos
- Fotos
- Links
- Banco de dados
- Enquetes
- Promover
- Laboratórios de Grupos (Beta)
- Aplicativos
- Informações Opções

**Informações sobre o grupo:**

- Associados: 1104
- Categoria: Estatística
- Criado em: Jan 28, 2004
- Idioma: Português

**Dicas:**

- Você sabia...
- Você pode incluir fotos no seu grupo.

**Main Content:**

### Início

Atividade nos últimos 7 dias: **134 novas mensagens**

**Descrição**  
R é uma linguagem de programação que permite manipular dados, fazer cálculos e gráficos estatísticos. Esta lista de discussão tem como objetivo a troca de informações, perguntas e respostas sobre o uso da linguagem R.  
O R esta disponível no site: <http://www.r-project.org/>



**Novas mensagens** (Ver todas)   [Avançado](#) [Adicionar tópico](#)

**Re: Res: [R\_STAT] transformar uma matriz do R em tabela do Excel**  
Rodrigo, A ideia do separador foi ótima, rodei o exemplo aqui e também deu certinho. Abraço! Nory Daniel ... -- Nory Daniel de Carvalho Erazo Técnico em  
Enviada em - Sex, 9 de Jul de 2010 12:23 am

**Re: Res: [R\_STAT] transformar uma matriz do R em tabela do Excel**  
Gente, deu tudo certo! ã Consegui todas as soluções! E Realmente Rodrigo, vc tem razão! Alex, e a todos, ã muito obrigada! abraços Si ã  
Enviada em - Sex, 9 de Jul de 2010 12:19 am

**Re: Res: [R\_STAT] transformar uma matriz do R em tabela do Excel**  
Tentem especificar o separador `A = matrix(c(seq(1,9,1)),3,3) write.table(A,file='t.xls', row.names = FALSE,sep='\t')` Ele vai dar um alerta do excel quando for  
Enviada em - Sex, 9 de Jul de 2010 12:12 am

**Re: Res: [R\_STAT] transformar uma matriz do R em tabela do Excel**  
ã ã% Nory, dessa "arranjo tecnico" eu tb jã sabia, mas acredito q tenha um jeito mais fácil de fazer! Se eu descobrir eu posto aqui!  
Muito obrigada gente!  
Enviada em - Sex, 9 de Jul de 2010 12:00 am

**Participants:**

- Nory Erazo [norydaniel](#)  
Offline  
[Enviar e-mail](#)
- Simone D. Sartorio [sisartorio](#)  
[Enviar mensagem instantânea](#)  
[Enviar e-mail](#)
- Rodrigo Coster [rcoster87](#)  
Offline  
[Enviar e-mail](#)
- Simone D. Sartorio [sisartorio](#)  
[Enviar mensagem instantânea](#)  
[Enviar e-mail](#)

# Grupo de discussão

Yahoo! Mail (mnt.oliveira) x R\_STAT : Linguagem de ... x

http://br.groups.yahoo.com/group/R\_STAT/

Pesquisa Estatística Genética Agricultura Política Gastronomia Blogs Radios Jornais Outros favoritos

Categoria: Estatística  
Criado em: Jan 28, 2004  
Idioma: Português

Dicas  
Você sabia...  
Você pode incluir fotos no seu grupo.

**Re: Res: [R\_STAT] transformar uma matriz do R em tabela do Excel**  
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Enviada em - Sex, 9 de Jul de 2010 12:12 am

Rodrigo Coster  
rcoster07  
Offline  
Enviar e-mail

**Res: Res: [R\_STAT] transformar uma matriz do R em tabela do Excel**  
À À% Nory, dessa "arranjo tecnico" eu tb j'Ái sabia, mas acredito q tenha um jeito mais f'Ácil de fazer! Se eu descobrir eu posto aqui!  
Muito obrigada gente!  
Enviada em - Sex, 9 de Jul de 2010 12:00 am

Simone D. Sartorio  
sisartorio  
Enviar mensagem instant'Ánea  
Enviar e-mail

**Re: Res: [R\_STAT] transformar uma matriz do R em tabela do Excel**  
Ol'Ái Simone, Eu rodei o exemplo: `A = matrix(c(seq(1,9,1)),3,3) write.table(A,file='t.xls', row.names = FALSE)` E de fato o resultado 'Á uma matriz com dimens'Áo  
Enviada em - Qui, 8 de Jul de 2010 11:44 pm

Nory Erazo  
norydaniel  
Offline  
Enviar e-mail

Hist'Árico de mensagens

	Jan	Fev	Mar	Abr	Mai	Jun	Jul	Ago	Set	Out	Nov	Dez
2010	394	485	514	499	625	476	145					
2009	170	214	318	566	418	421	449	486	444	452	341	317
2008	86	179	157	123	203	171	176	240	363	524	375	213
2007	41	61	19	85	137	44	131	180	133	133	98	126
2006	50	24	54	55	84	76	28	100	63	54	56	52
2005	6	1	19	46	40	27	11	37	38	54	40	44
2004	6	45	36	8	11	6	12	32	4	14	18	16

Endereços de e-mail do grupo

Link relacionado: <http://www.r-project.org/>  
Enviar mensagem: [R\\_STAT@yahoogrupos.com.br](mailto:R_STAT@yahoogrupos.com.br)  
Entrar no grupo: [R\\_STAT-subscribe@yahoogrupos.com.br](mailto:R_STAT-subscribe@yahoogrupos.com.br)  
Sair do grupo: [R\\_STAT-unsubscribe@yahoogrupos.com.br](mailto:R_STAT-unsubscribe@yahoogrupos.com.br)  
Propriet'Ário da lista: [R\\_STAT-owner@yahoogrupos.com.br](mailto:R_STAT-owner@yahoogrupos.com.br)

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