

R, RStudio – Instalação

James Hunter

7 de fevereiro de 2017

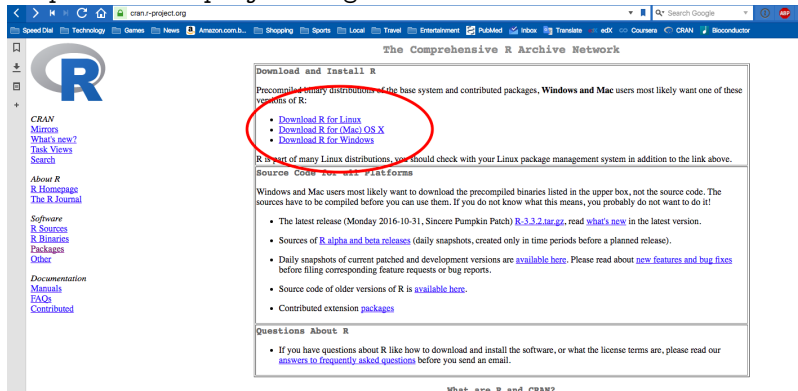
- R - software de base que faz todos os cálculos e programas
- RStudio - IDE (Interactive Development Environment) GUI para R
 - ▶ Cheio de recursos para ajudar com R

- Vídeo no canal YouTube

Instalação de R

- R tem home page no site de CRAN

► <http://cran.r-project.org>



The screenshot shows the CRAN website with the title "The Comprehensive R Archive Network". The main content area is titled "Download and Install R". It states: "Precompiled binary distributions of the base system and contributed packages. **Windows and Mac** users most likely want one of these versions of R:

- [Download R for Linux](#)
- [Download R for \(Mac\) OS X](#)
- [Download R for Windows](#)

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.

Source Code for all Platforms

Windows and Mac users most likely want to download 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 (Monday 2016-10-31, Sincere Pumpkin Patch) [R-3.3.2.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](#)

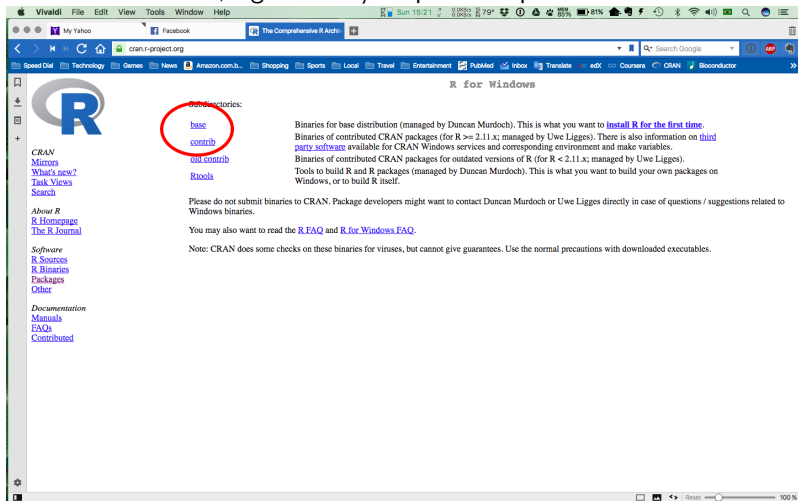
Questions About R

- 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?

Quem Tem Windows

- Clique no “Download R for Windows”
 - ▶ Para Mac ou Linux, siga as direções paralelos para esses OS



- Clique no “Download R 3.3.2 for Windows”

The screenshot shows a web browser window displaying the CRAN (Comprehensive R Archive Network) website. The browser's address bar shows the URL cran.r-project.org. The page title is "R 3.3.2 for Windows (32/64 bit)". The main content area features a large blue "R" logo on the left and a list of links on the right. The link "Download R 3.3.2 for Windows (62 megabytes, 32/64 bit)" is circled in red. Below this link are two smaller links: "Installation and other instructions" and "New features in this version". The page also includes a section for "Frequently asked questions" and "Other builds".

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 3.3.2 for Windows](#) (62 megabytes, 32/64 bit)

[Installation and other instructions](#)

[New features in this version](#)

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

- [Does R run under my version of Windows?](#)
- [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.](#)
- [Previous releases](#)

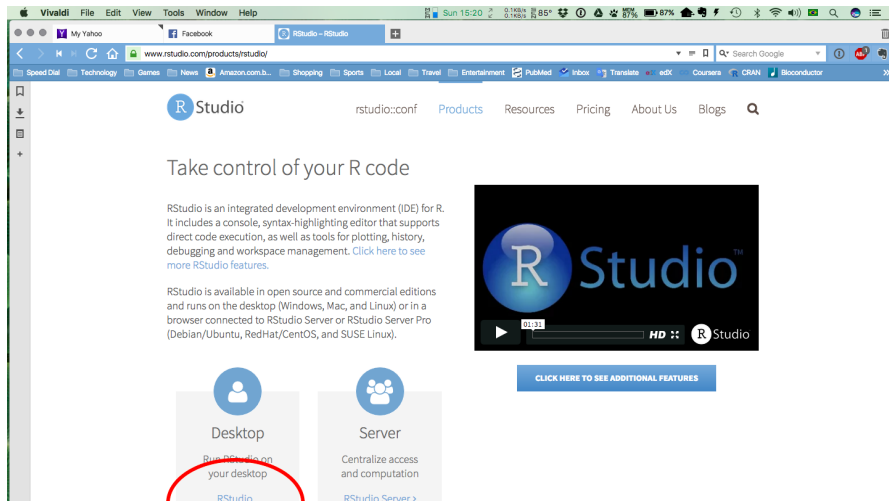
Note to webmasters: A stable link which will redirect to the current Windows binary release is [<CRAN MIRROR>/bin/windows/base/release.htm](#).

Last change: 2016-10-31, by Duncan Murdoch

O Que Acontece

- Programa e recursos download como normal
- Precisa Instalar como normal para OS
- Vai pôr um ícone no Desktop

- RStudio seria nosso interface com R
- Navegue ao site de RStudio (www.rstudio.com/products/rstudio/)



The screenshot shows the RStudio website in a web browser. The browser's address bar displays www.rstudio.com/products/rstudio/. The website's navigation bar includes links for [rstudio::conf](#), [Products](#), [Resources](#), [Pricing](#), [About Us](#), and [Blogs](#). The main heading is "Take control of your R code". Below this, a paragraph describes RStudio as an integrated development environment (IDE) for R, highlighting its features like syntax-highlighting editor, direct code execution, and tools for plotting, history, debugging, and workspace management. A link points to [more RStudio features](#). Another paragraph states that RStudio is available in open source and commercial editions, running on desktops (Windows, Mac, Linux) or in a browser connected to RStudio Server or RStudio Server Pro (Debian/Ubuntu, RedHat/CentOS, and SUSE Linux).

Two installation options are presented:

- Desktop**: Represented by a user icon. The text below says "Run RStudio on your desktop" and "RStudio". A red circle highlights the "Desktop" option.
- Server**: Represented by a group of people icon. The text below says "Centralize access and computation" and "RStudio Server".

A video player is embedded on the right side of the page, showing the RStudio logo and the text "R Studio". Below the video player is a button that says "CLICK HERE TO SEE ADDITIONAL FEATURES".

Da Tela de Produtos

- Clique no botão de “Download RStudio Desktop”

R Studio rstudio::conf Products Resources Pricing About Us Blogs

	Open Source Edition	Commercial License
Overview	<ul style="list-style-type: none">• Access RStudio locally• Syntax highlighting, code completion, and smart indentation• Execute R code directly from the source editor• Quickly jump to function definitions• Easily manage multiple working directories using projects• Integrated R help and documentation• Interactive debugger to diagnose and fix errors quickly• Extensive package development tools	<p>All of the features of open source; plus:</p> <ul style="list-style-type: none">• A commercial license for organizations not able to use AGPL software• Access to priority support
Support	Community forums only	<ul style="list-style-type: none">• Priority Email Support• 8 hour response during business hours (ET)
License	AGPL v3	RStudio License Agreement
Pricing	Free	\$995/year
	DOWNLOAD RSTUDIO DESKTOP	BUY NOW

Selecione a Versão “Open Source License”

	RStudio Desktop Open Source License	RStudio Desktop Commercial License	RStudio Server Open Source License	RStudio Server Pro Commercial License
	FREE	\$995 per year	FREE	\$9,995 per year
Integrated Tools for R	●	●	●	●
Priority Support		●		●
Access via Web Browser			●	●
Enterprise Security				●
Project Sharing				●
Manage Multiple R Sessions & Versions				●
Admin Dashboard				●
Load Balancing				●
License	AGPL	Commercial	AGPL	Commercial
Pricing	FREE	\$995/yr	FREE	\$9,995/yr
	Learn More	Learn More	Learn More	Learn More
	DOWNLOAD	BUY NOW	DOWNLOAD	DOWNLOAD


Figure 4:

Selecione a versão para seu OS

RStudio Desktop 1.0.136 — [Release Notes](#)

RStudio requires R 2.11.1+. If you don't already have R, download it [here](#).

Installers for Supported Platforms

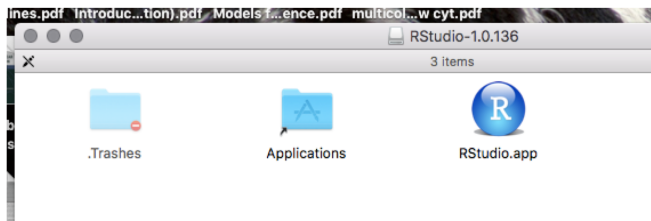
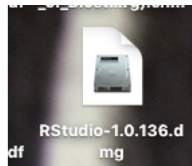


Installers	Size	Date	MD5
RStudio 1.0.136 - Windows Vista/7/8/10	81.9 MB	2016-12-21	93b3f307f567c33f7a4db4c114099b3e
RStudio 1.0.136 - Mac OS X 10.6+ (64-bit)	71.2 MB	2016-12-21	12d6d6ade0203a2fcef6fe3dea65c1ae
RStudio 1.0.136 - Ubuntu 12.04+/Debian 8+ (32-bit)	85.5 MB	2016-12-21	0a20fb89d8aaeb39b329a640ddadd2c5
RStudio 1.0.136 - Ubuntu 12.04+/Debian 8+ (64-bit)	92.1 MB	2016-12-21	2a73b88a12a9fbaf96251cecf8b41340
RStudio 1.0.136 - Fedora 19+/RedHat 7+/openSUSE 13.1+ (32-bit)	84.7 MB	2016-12-21	fa6179a7855bff0f939a34c169da45fd
RStudio 1.0.136 - Fedora 19+/RedHat 7+/openSUSE 13.1+ (64-bit)	85.7 MB	2016-12-21	2b3a148ded380b704e58496befb55545

Figure 5:

Instalar RStudio

- Quando RStudio fica no seu computador, siga o processo para instalar RStudio



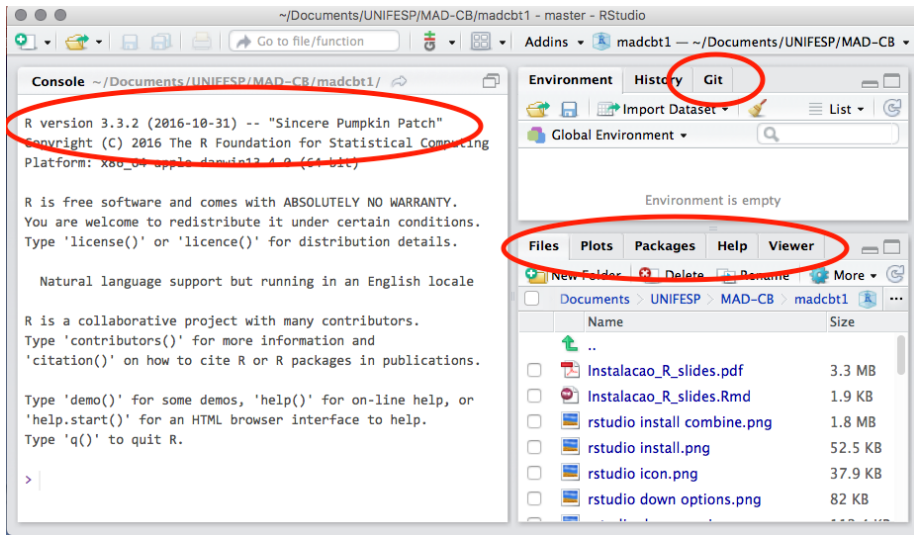


Figure 7:

Opening a Markdown Document

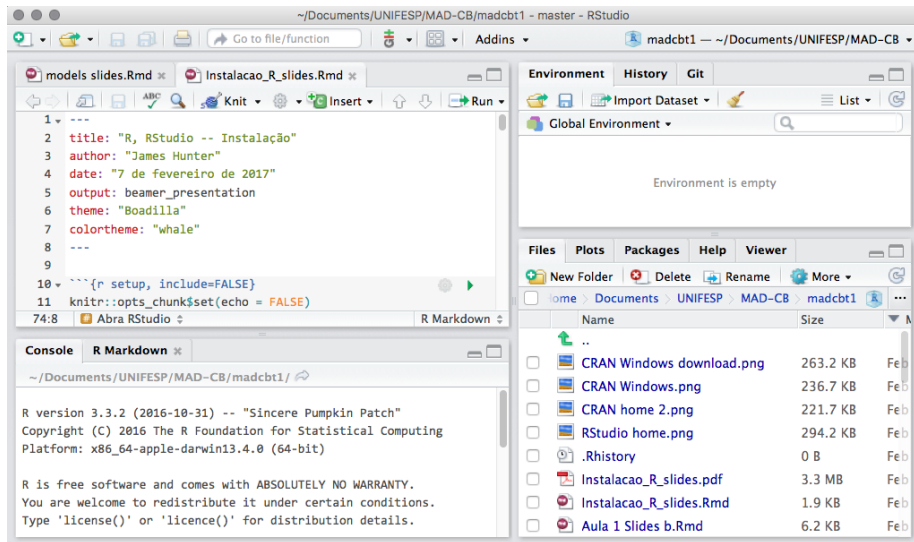


Figure 8:

- RStudio tem um número de “cheat sheets” para ajudar você
 - ▶ Interface
 - ▶ Comandos de R e os pacotes importantes
- Pode achar eles na página:
<https://www.rstudio.com/resources/cheatsheets/>
- Cheat sheets recomendados para RStudio:
 - ▶ RStudio IDE Cheat Sheet
 - ▶ R Markdown Cheat Sheet
- Cheat Sheets para R e os pacotes importantes:
 - ▶ Data Import Cheat Sheet (tidyverse)
 - ▶ Data Transformation Cheat Sheet (tidyverse)
 - ▶ Data Visualization Cheat Sheet (ggplot2)

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- Arquivos markdown pode produzir documentos em pdf (como estes slides), doc (Word) ou html (para os browsers)
- Para ver vários exemplos, vá para repositório em GitHub, onde coloquei todos os arquivos.

- Um formato simples para os scripts ou programas de R

“.R” Arquivos

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- Tem o mesmo formato interno que um arquivo “.txt”

- Um formato simples para os scripts ou programas de R
- Tem o mesmo formato interno que um arquivo “.txt”
- Para download os pacotes que precisa usar, criei um script para automatizar o download dos pacotes que precisamos na primeira parte de MAD-CB

Texto de Instalar Pacotes

```
## Programa para automatizar o download dos pacotes
## necessários para iniciar MAD-CB
## Author: James Hunter
## Date: 6/2/17
## Version: 1.0

pacotes <- c("tidyverse", "boot", "car", "caret", "caTools",
             "data.table", "DescTools", "e1071", "ggvis",
             "gmodels", "knitr", "lattice", "lubridate",
             "nortest", "nycflights13", "outliers", "pROC",
             "psych", "RColorBrewer", "Rcpp", "readxl",
             "ROCR", "rpart", "rpart.plot", "seqinr",
             "shiny", "swirl", "titanic", "yarrr")

install.packages(pacotes)
```


Como Download instalar_pacotes.R

1 – GitHub Projeto Tela Principal

jameshunterbr / MAD-CBt1

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Arquivos, programas, etc. para Matéria de Análise de Dados - Ciências Biomédicas Turma 1

New Add topics Edit

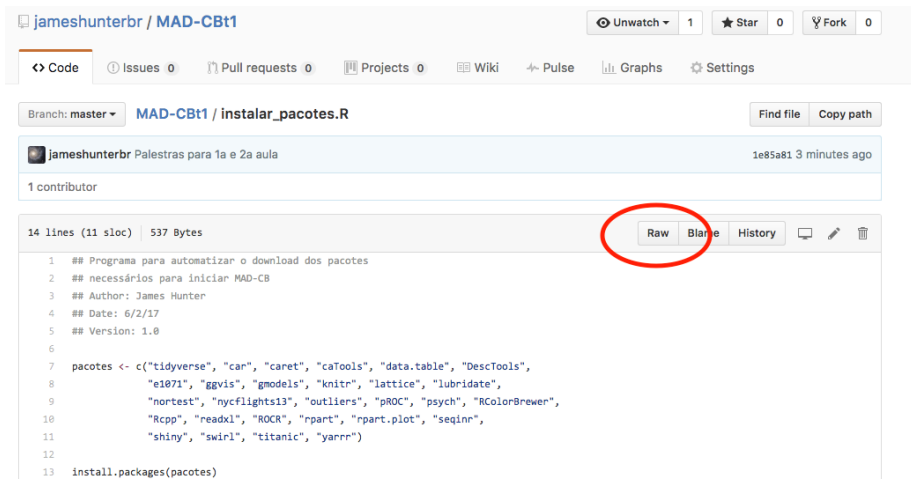
4 commits 1 branch 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find file Clone or download

jameshunterbr Palestras para 1a e 2a aula	Latest commit 1e85a81 2 minutes ago
Aula 1 Slides b.Rmd	Palestras para 1a e 2a aula 2 minutes ago
Aula_1_Slides_b.pdf	Palestras para 1a e 2a aula 2 minutes ago
Instalacao_R_slides.Rmd	Palestras para 1a e 2a aula 2 minutes ago
Instalacao_R_slides.pdf	Palestras para 1a e 2a aula 2 minutes ago
instalar_pacotes.R	Palestras para 1a e 2a aula 2 minutes ago

Figure 9:

2 – Escolhe Formato “RAW”



James Hunter

Branch: master ▾ MAD-CBT1 / instalar_pacotes.R Find file Copy path

jameshunterbr Palestras para 1a e 2a aula 1e85a81 3 minutes ago

1 contributor

14 lines (11 sloc) | 537 Bytes

Raw Blame History

```
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2 ## necessários para iniciar MAD-CB
3 ## Author: James Hunter
4 ## Date: 6/2/17
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6
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9             "nortest", "nycflights13", "outliers", "pROC", "psych", "RColorBrewer",
10            "Rcpp", "readxl", "ROCR", "rpart", "rpart.plot", "seqinr",
11            "shiny", "swirl", "titanic", "yarr")
12
13 install.packages(pacotes)
```

Figure 10:

3 – Salvar o Texto

- Usando o comando de browser para salvar o arquivo, salvé-lo
- Você quer que o sufixo seja “.R” e não “.txt”
 - ▶ Alguns browsers tentam de forçar a escolha de “.txt”
 - ▶ Insiste em “.R”
- Escolhe a pasta onde guarda os arquivos desta matéria



The screenshot shows a web browser window with the address bar displaying `raw.githubusercontent.com/jameshunterbr/MAD-CBT1/master/instalar_pacotes.R`. The browser's tab bar includes several tabs: "Speed Dial", "Technology", "Games", "News", "Amazon.com.b...", "Shopping", "Sports", "Local", "Travel", and "E". The main content area displays the raw text of the R script file. The script is a comment-based header followed by a list of R packages to be installed.

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## Programa para automatizar o download dos pacotes
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pacotes <- c("tidyverse", "car", "caret", "caTools", "data.table", "DescTools",
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            "Rcpp", "readxl", "ROCR", "rpart", "rpart.plot", "seqinr",
            "shiny", "swirl", "titanic", "yarr")

install.packages(pacotes)
```

Figure 11:

Como Executar `instalar_pacotes.R`

- Acerte que tem conexão à Internet
- Na aba de 'Files', navegue à pasta com o arquivo
- Clique no "More" / "Set as Working Directory"
- Clique no arquivo
 - ▶ Vai abrir na área dos arquivos
- Coloque a seta (cursor) na linha que começa com pacotes
 - ▶ MAC: toque CMD-Return
 - ▶ Windows: toque CTRL-Return
- Você colocou em memória a lista dos pacotes
- A seta vai à linha de `install.packages(pacotes)`
 - ▶ CMD-Return ou CTRL-Return
- Assiste enquanto ele executa

Instalar Pacotes por Comando

- A função (comando) para instalar pacotes é: `install.packages()`

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- Exemplo: `> install.packages("forecast")` ou

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- Dentro dos parênteses, coloque o nome de pacote **em aspas**
- Exemplo: `> install.packages("forecast")` ou
- `> install.packages("forecast", "foreign")`

Tela de Instalação



The screenshot shows the RStudio interface with the 'Console' tab selected. The path in the top bar is `~/Documents/UNIFESP/MAD-CB/madcbt1/`. The console output shows the command `> install.packages("forecast")` being executed. It reports the URL `https://cran.rstudio.com/bin/macosx/mavericks/contrib/3.3/forecast_7.3.tgz`, the content type `application/x-gzip`, and the file size `1552825 bytes (1.5 MB)`. A separator line of equals signs follows, and then it says `downloaded 1.5 MB`. Below this, a message states: `The downloaded binary packages are in` followed by the path `/var/folders/g7/r7dc0nqd5xzbcbtrtqv26ffxc0000gn/T/Rtmp3iJWUS/downloaded_packages`. The prompt `>` is visible at the bottom of the console.

```
> install.packages("forecast")
trying URL 'https://cran.rstudio.com/bin/macosx/mavericks/contrib/3.3/forecast_7.3.tgz'
Content type 'application/x-gzip' length 1552825 bytes (1.5 MB)
=====
downloaded 1.5 MB

The downloaded binary packages are in
  /var/folders/g7/r7dc0nqd5xzbcbtrtqv26ffxc0000gn/T/Rtmp3iJWUS/downloaded_packages
>
```

Figure 12:

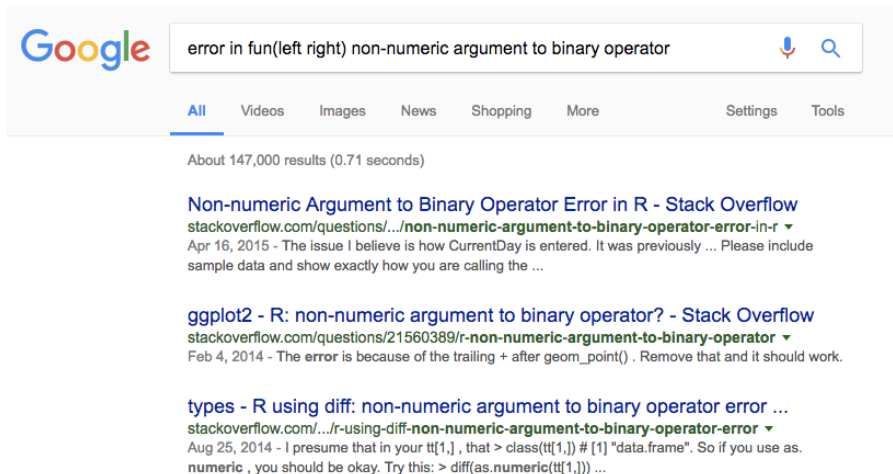
- Para manter os pacotes atualizados:
- `> update.packages()` – todos os pacotes ou
- `> update.packages(forecast)`
- Em RStudio: – Tools/Check for Package Updates

- Telas excelentes de ajuda para funções acessível através do comando
 - ▶ `help(<palavra chave>)`
- Também, `? <palavra chave>` dá acesso às mesmas telas
- Se você não tem certeza se ajuda existe para uma palavra, pode procurá-la com o comando:
 - ▶ `?? <palavra chave>`
- Aba de Help no RStudio produz a mesma informação

Sites e Blogs com Ajuda

- <https://stat.ethz.ch/mailman/listinfo/r-help> (site oficial para ajuda)
- <http://leg.est.ufpr.br/doku.php/sokware:rbr> (User Group do Brasil)
- RBloggers: <http://www.r-bloggers.com/>
- StackOverflow: <http://stackoverflow.com/> (site para perguntas e respostas)
- Togaware (Graham Williams) One-Pagers: <http://onepager.togaware.com>
- Hadley Wickham's Advanced R book/site: <http://adv-r.had.co.nz>

- Coloque sua mensagem de erro diretamente em Google; vai ter vários hits



The screenshot shows a Google search interface. The search bar contains the text "error in fun(left right) non-numeric argument to binary operator". Below the search bar, there are tabs for "All", "Videos", "Images", "News", "Shopping", and "More". The "All" tab is selected. To the right of the tabs are links for "Settings" and "Tools". Below the tabs, it says "About 147,000 results (0.71 seconds)". The search results list three items:

- Non-numeric Argument to Binary Operator Error in R - Stack Overflow**
stackoverflow.com/questions/.../non-numeric-argument-to-binary-operator-error-in-r ▼
Apr 16, 2015 - The issue I believe is how CurrentDay is entered. It was previously ... Please include sample data and show exactly how you are calling the ...
- ggplot2 - R: non-numeric argument to binary operator? - Stack Overflow**
stackoverflow.com/questions/21560389/r-non-numeric-argument-to-binary-operator ▼
Feb 4, 2014 - The error is because of the trailing + after geom_point(). Remove that and it should work.
- types - R using diff: non-numeric argument to binary operator error ...**
stackoverflow.com/.../r-using-diff-non-numeric-argument-to-binary-operator-error ▼
Aug 25, 2014 - I presume that in your tt[1,], that > class(tt[1,]) # [1] "data.frame". So if you use as.numeric, you should be okay. Try this: > diff(as.numeric(tt[1,])) ...

- Datacamp
- Coursera/Johns Hopkins: serie de cursos do departamento de Bioestatística
 - ▶ Programação em R (R Programming – Roger Peng)
- Coursera/Duke U: Data Analysis and Statistical Inference
- edX/HarvardX: Statistics and R for the Life Sciences (1 of 8 courses)
 - ▶ mais avançado

Próxima Aula - Operações e Cálculos Iniciais in R