

# A brief introduction to R and Rstudio

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## R version

- ▶ version 3.3.1 (2016)

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- ▶ 32 bit / 64 bit (3.0)

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- ▶ 32 bit / 64 bit (3.0)
- ▶ Microsoft R Open 3.3.1 (revolutionanalytics)

# Program installment

- ▶ R website: <http://www.r-project.org/>

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# Program installment

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- ▶ Microsoft R(Revolution Analytics):<https://msdn.microsoft.com/en-us/microsoft-r/>
- ▶ Integrated Development Environment (IDE):Notepad++, Submile, Eclipse (StatET)...
- ▶ Rstudio: <http://www.rstudio.com/>

# Rstudio settings

- ▶ menu: Tools-> Global options
- ▶ appearance (tomorrow night bright)
- ▶ default directory (preference->default working directory)
- ▶ default text encoding:utf-8
- ▶ svn/git (details about version control later)

```
Sys.getlocale()
```

```
## [1] "C"
```

```
Sys.setlocale(category = "LC_ALL", locale = "zh_cn.utf-8")
```

```
## [1] "zh_cn.utf-8/zh_cn.utf-8/zh_cn.utf-8/C/zh_cn.utf-8/C"
```

# Rstudio interface

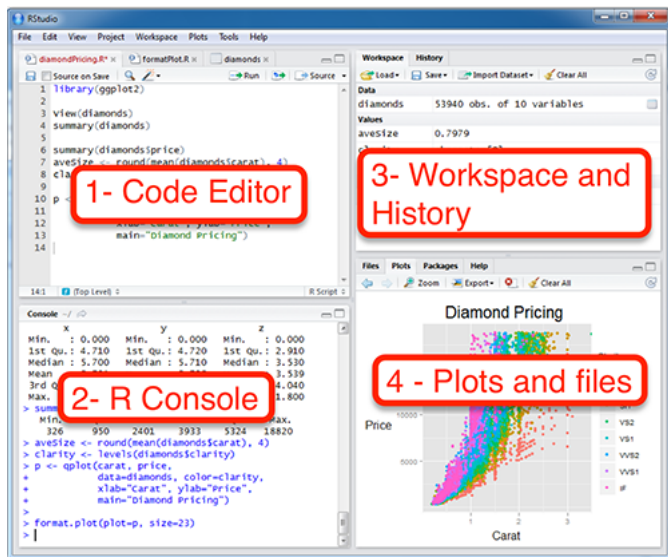


Figure 1: interface

# Rstudio interface

- ▶ console: interactive

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# Rstudio interface

- ▶ console: interactive
- ▶ source: shortcuts(ctrl+enter), cursor
- ▶ Enviornment, history, presentation
- ▶ plot, packages



# Hello world!

```
'Hello world!'
```

```
## [1] "Hello world!"
```

```
print('Hello world!')
```

```
## [1] "Hello world!"
```

```
cat ('Hello world!')
```

```
## Hello world!
```

# help

```
help('lm')      #" can be omitted, but not for +-*/  
?lm  
example('lm')  # " can be omitted  
apropos("mean") # " can't be omitted  
vignette("caret") # " can't be omitted
```

- ▶ English
- ▶ [www.google.com](http://www.google.com)
- ▶ <http://stackoverflow.com/tags>
- ▶ <http://www.r-bloggers.com/>

# packages

Packages are collections of R functions, data, and compiled code in a well-defined format.

- ▶ <https://mirrors.ustc.edu.cn/CRAN/>

# Workspace

```
# library()  
search() #loaded package
```

```
## [1] ".GlobalEnv"          "package:stats"      "package:graphics"  
## [4] "package:grDevices"   "package:utils"      "package:datasets"  
## [7] "package:methods"     "Autoloads"          "package:base"
```

## R 初始状态载入包列表

包	描述
stats	常用统计函数
graphics	基础绘图函数
grDevices	基础或 grid 图形设备
utils	R 工具函数
datasets	基础数据集
methods	用于 R 对象和编程工具的方法和类的定义
base	基础函数

# Workspace

```
ls() #user-defined object  
#up/down arrow: command history  
getwd()  
list.files()  
# setwd("~/desktop") # special case for windows.
```

## file and folder

<b>R</b>	<b>Stata/Linux</b>
<code>getwd()</code>	<code>pwd</code>
<code>setwd()</code>	<code>cd</code>
<code>list.files()/dir()</code>	<code>ls</code>
<code>dir.create()</code>	<code>mkdir</code>

Figure 3: plot

## packages installment

- ▶ `search() .libPaths()`
- ▶ `install.packages()` ## need "", with menu
- ▶ `install.packages("packageName.tgz", repos = "http://cran.us.r-project.org/", type="source")`
- ▶ `system('R CMD INSTALL packageName.tgz')` ## local package
- ▶ `install.packages("packageName.tgz", repos = NULL)` ## local package
- ▶ `install_github(repo =, username = )` `library(devtools)` #be cautious.

## packages loading/unloading

- ▶ `library(foreign); require(foreign)`

```
if(!require(foreign)) install.packages('foreign')
```



## packages loading/unloading

- ▶ `library(foreign); require(foreign)`
- ▶ `detach(package:foreign)`

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## packages loading/unloading

- ▶ `library(foreign); require(foreign)`
- ▶ `detach(package:foreign)`
- ▶ bonus

```
if(!require(foreign)) install.packages('foreign')
```

# options

- ▶ `options()`
- ▶ `options()$digits`
- ▶ `options(stringsAsFactors)`