



Instituto de Ciencias Básicas e Ingeniería

Área Académica de Ingeniería y Arquitectura

Licenciatura en Ingeniería Industrial

Asignatura: Estadística y Probabilidad

Unidad 1

Tema: Tipos de gráficas y tablas estadísticas



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Tema

Tipos de graficas y tablas estadísticas

Resumen:

Se presentan algunas formas de representar información estadística de manera gráfica con el uso del software R



Palabras Clave: Software R, Gráficos, Estadística Descriptiva



Topic:

Types of charts and statistical tables

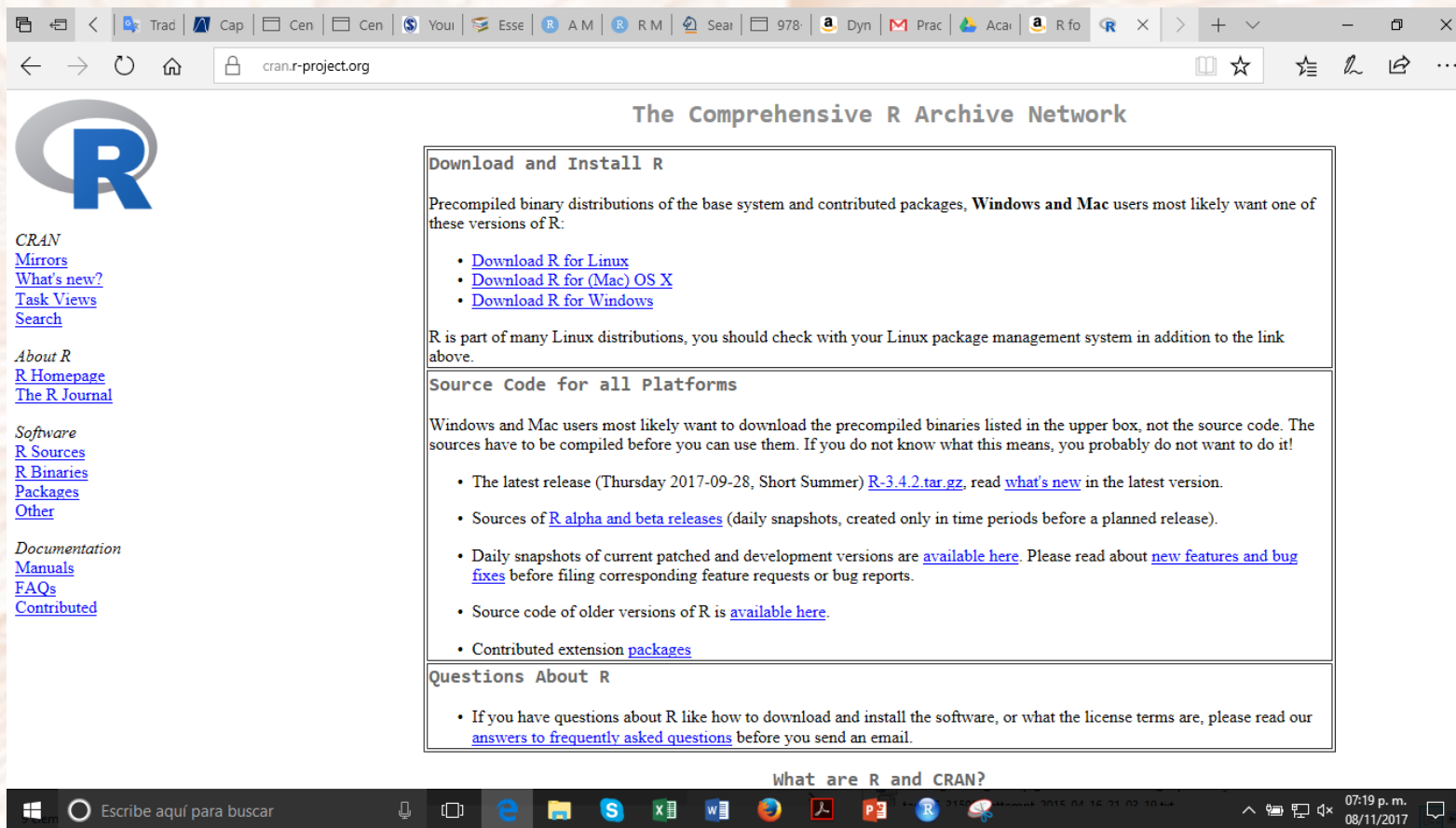
Abstract:

Some ways of representing statistical information graphically with the use of software R are presented

Keywords: R software, Charts



Introducción al lenguaje R



The screenshot shows a web browser window displaying the CRAN (Comprehensive R Archive Network) homepage. The browser's address bar shows 'cran.r-project.org'. The page content includes the CRAN logo, navigation links, and instructions for downloading and installing R. The main content area is titled 'The Comprehensive R Archive Network' and contains the following 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:

- [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 (Thursday 2017-09-28, Short Summer) [R-3.4.2.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.

At the bottom of the browser window, the Windows taskbar is visible, showing the search bar with the text 'Escribe aquí para buscar', several application icons, and the system clock displaying '07:19 p. m. 08/11/2017'.



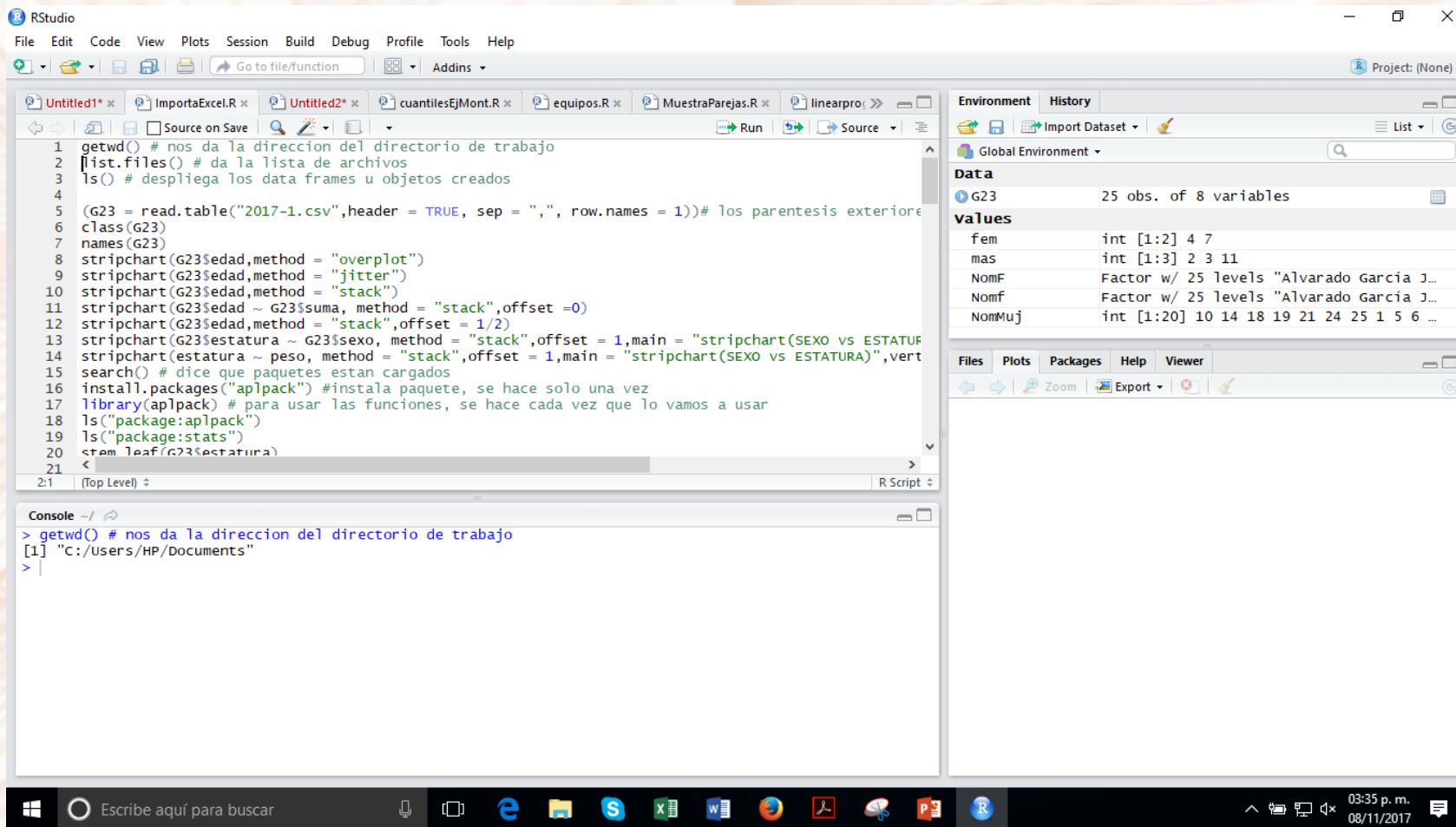
Introducción al lenguaje R

A continuación se muestran tres instrucciones básicas del lenguaje

- `getwd()` # nos da la dirección del directorio de trabajo
- `list.files()` # da la lista de archivos
- `ls()` # despliega los data frames u objetos creados



Pantalla de RStudio



The screenshot displays the RStudio environment with the following components:

- Menu Bar:** File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, Help.
- Toolbar:** Includes icons for file operations, running code, and navigating between panes.
- Script Editor:** Contains R code for reading a CSV file, listing files, and creating stripcharts.


```

1 getwd() # nos da la direccion del directorio de trabajo
2 list.files() # da la lista de archivos
3 ls() # despliega los data frames u objetos creados
4
5 (G23 = read.table("2017-1.csv",header = TRUE, sep = ",", row.names = 1))# los parentesis exteriores
6 class(G23)
7 names(G23)
8 stripchart(G23$edad,method = "overplot")
9 stripchart(G23$edad,method = "jitter")
10 stripchart(G23$edad,method = "stack")
11 stripchart(G23$edad ~ G23$suma, method = "stack",offset =0)
12 stripchart(G23$edad,method = "stack",offset = 1/2)
13 stripchart(G23$estatura ~ G23$sexo, method = "stack",offset = 1,main = "stripchart(SEXO vs ESTATUR
14 stripchart(estatura ~ peso, method = "stack",offset = 1,main = "stripchart(SEXO vs ESTATURA)",vert
15 search() # dice que paquetes estan cargados
16 install.packages("aplpack") #instala paquete, se hace solo una vez
17 library(aplpack) # para usar las funciones, se hace cada vez que lo vamos a usar
18 ls("package:aplpack")
19 ls("package:stats")
20 stem.leaf(G23$estatura)
21 <
            
```
- Console:** Shows the output of the first command:


```

> getwd() # nos da la direccion del directorio de trabajo
[1] "c:/Users/HP/Documents"
> |
            
```
- Environment Pane:** Shows the 'Global Environment' with a data object 'G23' containing 25 observations of 8 variables.

Variable	Class	Values
fem	int [1:2]	4 7
mas	int [1:3]	2 3 11
NomF	Factor w/ 25 levels	"Alvarado Garcia J..."
NomMuj	Factor w/ 25 levels	"Alvarado Garcia J..."
NomMuj	int [1:20]	10 14 18 19 21 24 25 1 5 6 ...
- Files Pane:** Shows the current project directory structure.
- Taskbar:** Windows taskbar at the bottom with search, task view, and application icons. System tray shows the time as 03:35 p.m. on 08/11/2017.

Consola de RStudio

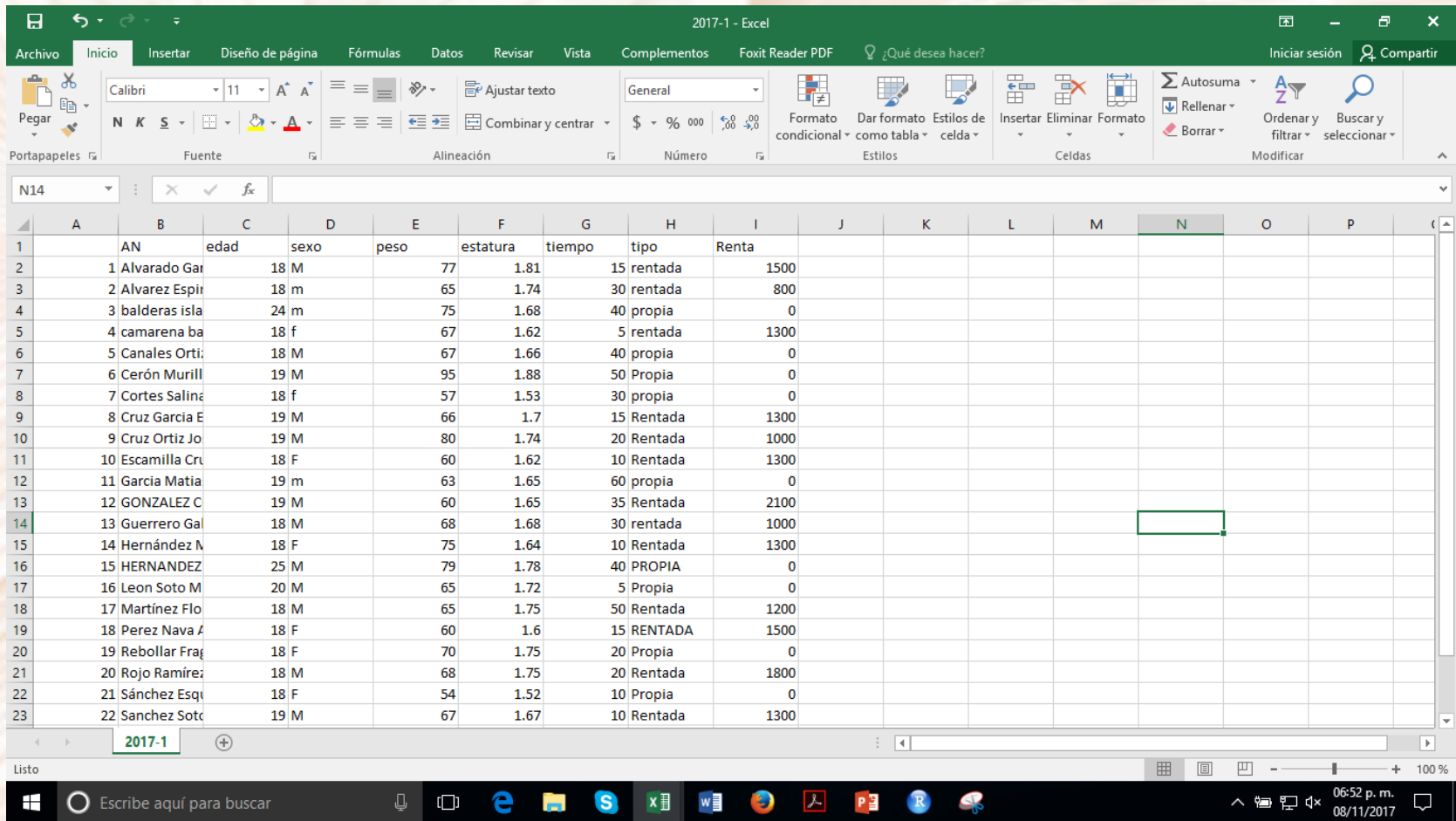
```

Console ~/ ↵
> getwd() # nos da la direccion del directorio de trabajo
[1] "C:/Users/HP/Documents"
> list.files() # da la lista de archivos
[1] "~$ común que los inversionistas eaten .docx"
[2] "~$per for the I Big Data and DSS in Agriculture Int.docx"
[3] "01.docx"
[4] "2017-1.csv"
[5] "2017-2.csv"
[6] "class_07_06_2017__19_40_QZ_quizriskmgm13q (Autoguardado).xlsx"
[7] "Copia de Catalog Marketing.csv"
[8] "Database1.accdb"
[9] "Database2.accdb"

```



Un archivo Excel



The screenshot displays the Microsoft Excel 2017 interface. The ribbon is set to 'Inicio' (Home), and the 'Fuente' (Font) group is active. The spreadsheet contains a table with the following data:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1		AN	edad	sexo	peso	estatura	tiempo	tipo	Renta							
2	1	Alvarado Gar		18 M		77	1.81	15 rentada	1500							
3	2	Alvarez Espir		18 m		65	1.74	30 rentada	800							
4	3	balderas isla		24 m		75	1.68	40 propia	0							
5	4	camarena ba		18 f		67	1.62	5 rentada	1300							
6	5	Canales Orti		18 M		67	1.66	40 propia	0							
7	6	Cerón Murill		19 M		95	1.88	50 Propia	0							
8	7	Cortes Saline		18 f		57	1.53	30 propia	0							
9	8	Cruz Garcia E		19 M		66	1.7	15 Rentada	1300							
10	9	Cruz Ortiz Jo		19 M		80	1.74	20 Rentada	1000							
11	10	Escamilla Cru		18 F		60	1.62	10 Rentada	1300							
12	11	García Matia		19 m		63	1.65	60 propia	0							
13	12	GONZALEZ C		19 M		60	1.65	35 Rentada	2100							
14	13	Guerrero Gal		18 M		68	1.68	30 rentada	1000							
15	14	Hernández M		18 F		75	1.64	10 Rentada	1300							
16	15	HERNANDEZ		25 M		79	1.78	40 PROPIA	0							
17	16	Leon Soto M		20 M		65	1.72	5 Propia	0							
18	17	Martínez Flo		18 M		65	1.75	50 Rentada	1200							
19	18	Perez Nava A		18 F		60	1.6	15 RENTADA	1500							
20	19	Rebollar Fra		18 F		70	1.75	20 Propia	0							
21	20	Rojo Ramírez		18 M		68	1.75	20 Rentada	1800							
22	21	Sánchez Esq		18 F		54	1.52	10 Propia	0							
23	22	Sanchez Sot		19 M		67	1.67	10 Rentada	1300							

The taskbar at the bottom shows the Windows Start button, a search bar with the text 'Escribe aquí para buscar', and several application icons including File Explorer, Microsoft Edge, Word, and PowerPoint. The system tray on the right indicates the time as 06:52 p.m. on 08/11/2017 and shows a 100% zoom level.



Data frames en R

Console ~/ ↗

```
[31] "Rockwell.Automation.Arena.v14"  
[32] "Scanned Documents"  
[33] "simio3Dstatus.log"  
[34] "simioActions.log"  
[35] "simioModels"  
[36] "T2_U2_6.jpg"  
[37] "TestGen"  
[38] "tiendas.xlsx"  
[39] "uruguay 2017.pdf"  
[40] "web20.cmap.jpg"  
[41] "writevpr.txt"  
[42] "Zoom"  
> ls() # despliega los data frames u objetos creados  
[1] "fem" "G23" "mas" "Nomf" "NomF" "NonMuj"  
> |
```




Lectura de un archivo de datos en Excel

`(G23 = read.table("2017-1.csv",header = TRUE, sep = ",", row.names = 1))`# los paréntesis exteriores causan que se imprima una asignación



Lectura de un archivo de datos en Excel

```
Console ~/ 
[42] ZOOM
> ls() # despliega los data frames u objetos creados
[1] "fem" "G23" "mas" "Nomf" "NomF" "NomMuj"
> ls() # despliega los data frames u objetos creados
character(0)
> (G23 = read.table("2017-1.csv",header = TRUE, sep = ",", row.names = 1))# los parentesis exteriores ca
usan que se imprima una asignacion
      AN edad sexo peso estatura tiempo  tipo Renta
1 Alvarado García Jazari 18 M 77 1.81 15 rentada 1500
2 Alvarez Espinoza Roberto 18 m 65 1.74 30 rentada 800
3 balderas islas jorge luis 24 m 75 1.68 40 propia 0
4 camarena barrera perla 18 f 67 1.62 5 rentada 1300
5 Canales Ortiz Fernando 18 M 67 1.66 40 propia 0
6 Cerón Murillo Jorge 19 M 95 1.88 50 Propia 0
7 Cortes Salinas Yazmin 18 f 57 1.53 30 propia 0
8 Cruz García Eusebio 19 M 66 1.70 15 Rentada 1300
```

Instrucciones : class() y names()

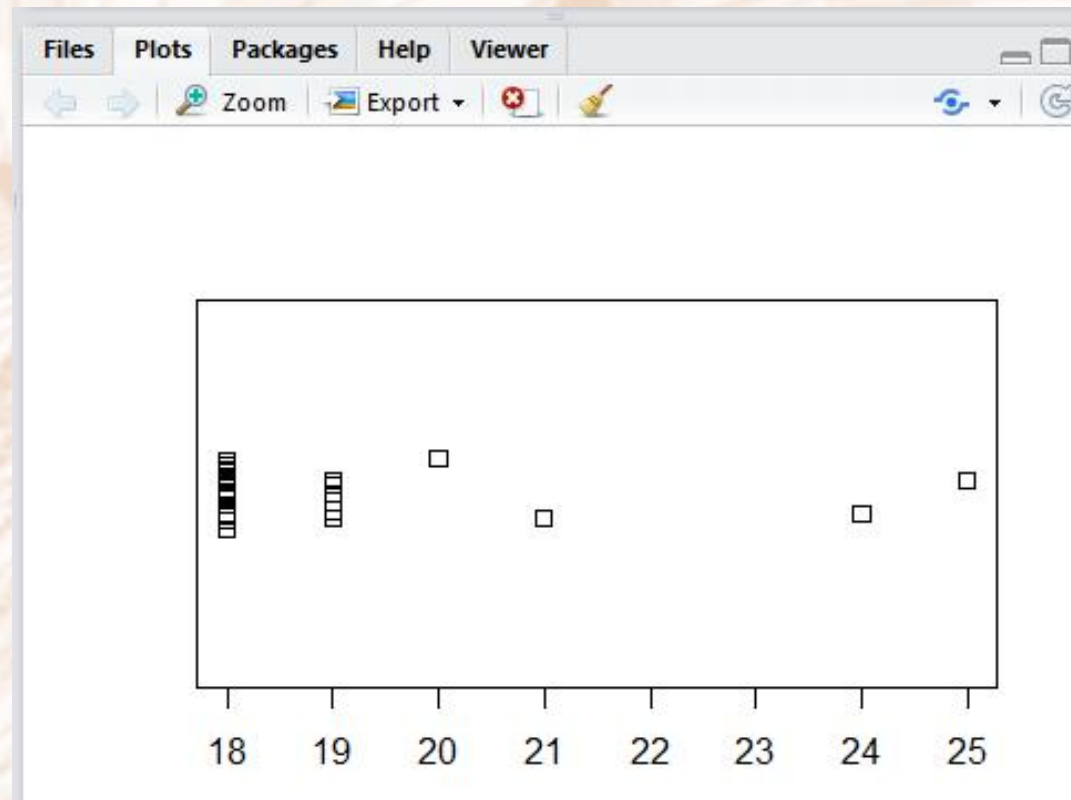
```
> class(G23)
[1] "data.frame"
> names(G23)
[1] "AN"      "edad"    "sexo"    "peso"    "estatura" "tiempo"  "tipo"    "Renta"
> |
```



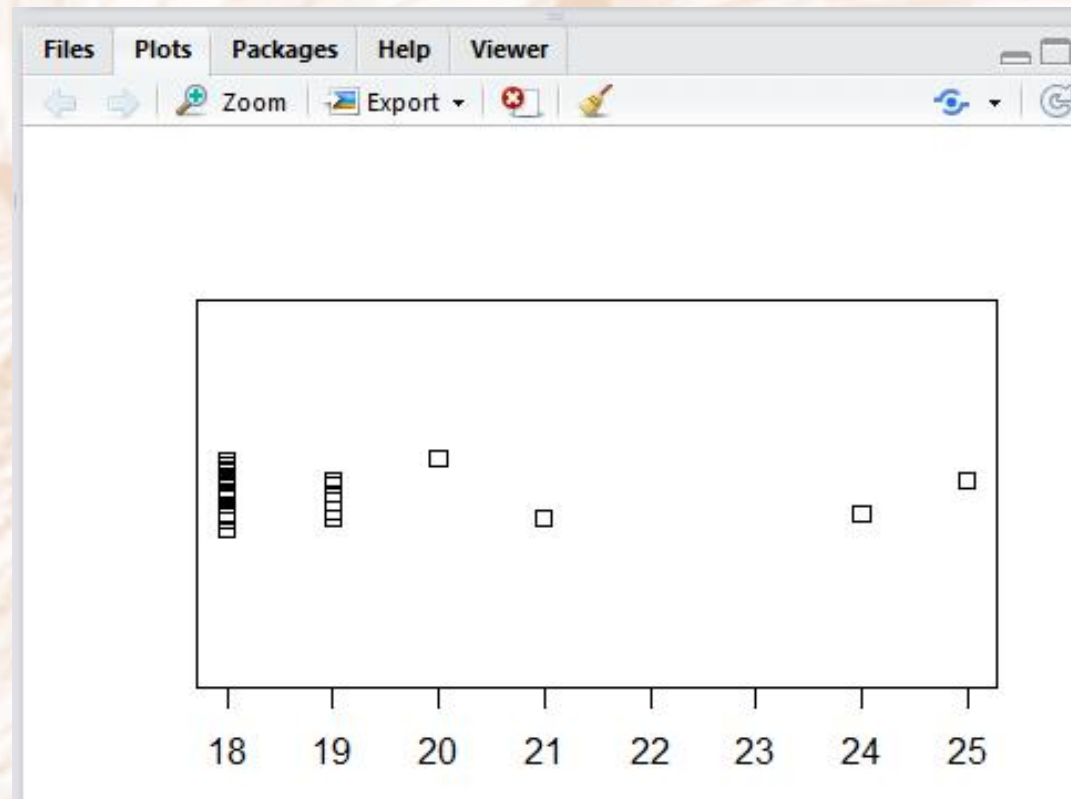
stripchart(G23\$edad,method =
"overplot")



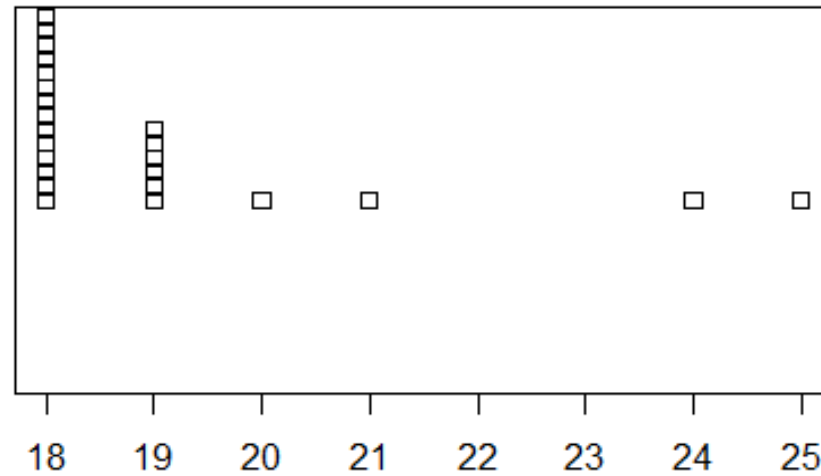
```
stripchart(G23$edad,method = "jitter")
```



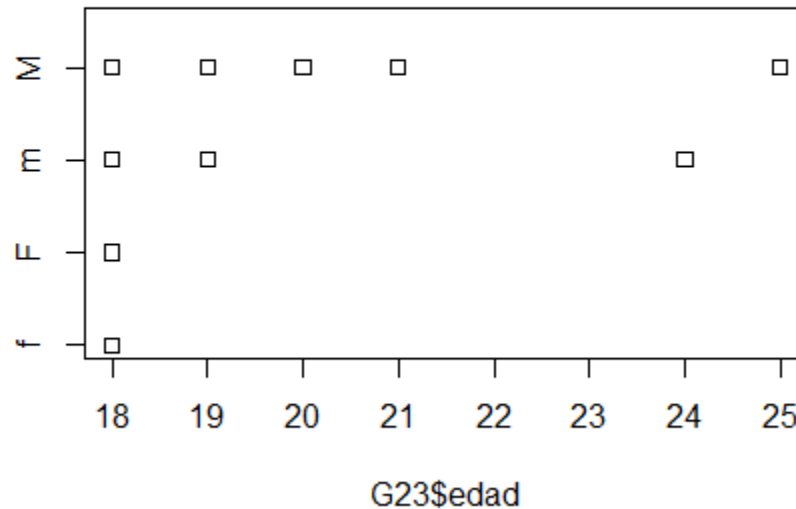
stripchart(G23\$edad,method = "jitter")



stripchart(G23\$edad,method =
"stack")




```
stripchart(G23$edad ~ G23$sexo,
method = "stack",offset =0)
```



Referencias:

1. Applied Statistics and Probability for Engineers (2015) Douglas C. Montgomery and George C. Runger, John Wiley, USA.
2. Probabilidad y Estadística para Ingeniería y Ciencias (2016), J. Devore , Cangage; México



Por su atención ...

Gracias

Statistics are like bikinis. What they reveal is suggestive, but what they conceal is vital. ~Aaron Levenstein

Contacto

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Material desarrollado en la Academia de Ingeniería Industrial

